

2014 Product Catalog

Industrial Control



www.usa.siemens.com/pushbuttons

With Siemens innovative technology and design for rapid installation, our complete range of oil tight Pilot Devices provides a solution that will be aesthetically and functionally impressive. The extensive portfolio is modular, well-proven in practice, and is 100% fit for industrial environments.

Whether the application requires Chrome or BlackMax, incandescent or LED, standard duty or hazardous location, plastic or glass – Siemens has done the work for you.

See Section 10 of this catalog.

Answers for industry.

Index	Product Overview Alphabetical Product and Catalog Number Index	
IEC Power Control	MSPs – 3RV10 Motor Starter Protectors 3RV17, 3RV27, 3RV28 Circuit Breakers 3RA19/29 & 3RV19/29 Accessories	1
	Contactors – 3RT, 3TF, 3TC Contactors 3RA13/23 Reversing Contactors 3RH Control Relays; 3RA19/29 & 3RT19/29 Accessories	2
	Overload Relays – 3RU Thermal Overload Relays 3RB Solid State Overload Relays 3UF SIMOCODE pro Intelligent Motor Protection	3
	Combination Starters – 3RA11/21 Combination Starters 3RA12/22 Reversing Combination Starters 3RA6 Compact Combination Starters	4
	Power Distribution Systems – 8US Fast Bus Busbar Power Distribution System	5
Solid State Control	Hybrid Motor Starters – 3RM1 Motor Starters	6
	Soft Starters – 3WR30, 3RW40 Soft Starters 3RW44 High Feature Soft Starters Class 73 & 74 Enclosed Soft Starters	7
	Solid-State Relays & Contactors – 3RF20 45mm Relays; 3RF21 22.5mm Relays; 3RF22 3-Phase Relays; 3RF23 Contactors; 3RF24 3-Phase Contactors; 3RF29 Modules	8
General Purpose Control	Manual Starters & Switches; NEMA Contactors, Starters, Combination Starters; Overload Relays; Duplex Controllers; Pump Control Panels; Reduced Voltage Starters; Lighting contactors; Transformers	9
Control Circuit Components	Pilot devices – 3SB, 50, 51, 52 Pushbuttons, Selector Switches, Pilot Lights & Stations; 8WD Signal Columns	10
	Function relays – 3RN Thermistor Motor Protection; 3RP & 7PV Timers; 3RS Temperature Monitoring Relays & Interface Converters; 3UG Monitoring Relays; 3TG Power Relays; 3TX71 Plug-In Relays	11
	Terminal blocks – 8WA / 8WH Terminal Blocks 8WA Special Label Marking Instructions	12
	Limit Switches – 3SE5 (IEC) & 3SE03 (NEMA) Mechanical Safety – 3SE5 Hinge & Interlock, 3SE6 Magnet, and 3SE7 Cable-operated Switches; 3SK1 & 3TK28 Safety Relays; 3RK3 MSS	13
	AS-Interface – 6GK7 Masters; 3RK Slaves, I/O Modules, & Safety Modules; 3SF2 Cable Pull, 3SF1 Limit & Interlock Switches IO-Link – 6ES7 Masters; 3RK Input Modules	14
	Programmable Relays - LOGO! 6ED Modular Relays Power Supplies - SITOP 6EP Power Supplies Ethernet Switches - 6GK Unmanaged Ethernet Switches	15
Control Circuit Protection	5SJ4 Miniature Circuit Breakers to UL 489 5SP & 5SY Supplementary Protectors to UL 1077 3NW7 & 3NC1038 Fuse Holders to UL 512	16
Circuit Breakers	120/240 V Lug In/Lug Out and DIN Rail Breakers 15 to 3200A Molded Case Circuit Breakers	17
Switches	Safety Switches – VBII Enclosed Switches – VBII & 3LD2 Disconnect Switches – LBR, 3LD2, CFS, MCS & VBII	18
Appendix - General Information	UL and CSA File & Guide Numbers; On-line References; General Information; Spring-Loaded Terminal Overview; ICE Quick Reference List	19

	New to the Catalog	Pages	
1	3RV21 SIRIUS Innovations MPS's 3RV27 & 28 Circuit Breakers 3RV29 Infeed System with Enhanced Plug & Play	1/4 1/6 1/14 to 1/17	IEC Power Control
2	3RT2 SIRIUS Innovations Contactors & Accessories 3RA27 Function Modules for Communication 3RH2 SIRIUS Innovations Control Relays	2/8, 2/11, 2/13 2/24 to 2/36 2/50 to 2/52	
3	3RU2 SIRIUS Innovations Thermal Overloads 3RB3 SIRIUS Innovations Solid-State Overload Relays 3UF7 SIMOCODE pro with Safety and PROFINET	3/8 to 3/17 3/18 to 3/31 3/63 to 3/82	
4	3RA6 Compact Starters with IO-Link 3RA21 SIRIUS Innovations Non-Reversing Starters 3RA22 SIRIUS Innovations Reversing Starters	4/2 to 4/11 4/36, 4/38 4/40, 4/42	
5	FBCB Breaker Assemblies for NGG, HGG and LGG 8US12 Fast Bus Shoes for SIRIUS Innovations Starters	5/7 5/8	
6	3RM1 SIRIUS Hybrid Motor Starters from 0.5 to 3 HP 3RM1 Hybrid Starters with Safety-Related Shutdown 3ZY1 Device Connectors for Reduced Control Wiring	6/2 to 6/4 6/3 to 6/4 6/6 to 6/8	Solid State Control
7	3RW44 Soft Starters with PROFINET Communication	7/25	
8	3RF34 3-Phase Solid-State Non-Reversing Contactors 3RF34 3-Phase Solid-State Reversing Contactors	8/16 8/17	
9	Class LE Open & Enclosed Lighting Contactors Class LC Field Convertible Lighting Contactors	9/79 to 9/84 9/85 to 9/89	General Purpose Control
10	3SF2, 3SE3 Foot Switches New layout for faster selection of 30mm Pilot Devices	10/108 to 10/109 10/143 to 10/162	Control Circuit Components
11	7PV15 Solid-State Timers with Wide Voltage Range 3UG45 Insulation Monitoring Relays 3RS17 Interface Converters with 3-Phase Isolation	11/27 11/45 to 11/54 11/77	
12	New Terminal Block Supplemental Catalog 8WH6 iPo Plug-in & Installation Terminals 8WH1 Screw Terminals	12/1 to 12/2 12/1 12/2	
13	3SE5 Compact Design Metal Limit Switches 3SE6 RFID Non-Contact Safety Switches 3SK1 Modular Safety Relays	13/45 to 13/46 13/107 to 13/110 13/117 to 13/128	
14	AS-interface Function Modules for SIRIUS 3RA Starters IO-Link Function Modules for SIRIUS 3RA Starters SIRIUS Monitoring Relays with IO-Link Communication	14/1 14/3 14/3	
15	LOGO! Logic Module 24C LOGO!Soft Comfort V7.0 Programming Software SITOP Compact, Lite & Direct Mount Power Supplies	15/3 15/4 15/13 to 15/15	
16	5SY6 Supplementary Protectors	16/15 to 16/16	Control Circuit Protection
17	HQJ2 65KAIC at 240V and 100KAIC at 208/120V Breakers 125A HGG (35KAIC) and LGG (65KAIC) Circuit Breakers	s 17/11 17/13	Circuit Breakers
18	Type 3R Window Switches 1000VDC, 200Amp Photovoltaic Switches 400Amp Compact Fusible Switch (CFS)	18/6 18/10 18/28	Switches
19	Updated UL and CSA File & Guide Numbers by Product References for On-line Tools & Information Standard Terms & Conditions of Sale	19/2 to 19/3 19/3 19/18	Appendix - General Information

Contents Pages

Things you should know about the 2014 Industrial Catalog

		This Catalog contains all selection and order-relevant data.	More information can be found on the on-line version of this catalog at www.usa.siemens.com/iccatalog	
Delivery time (DT) Preferred type		Preferred types are available from stock Normal quantities of the products are usually delivered within the specified time following receipt	The delivery times specified here represent the state as of 1/2014. For up-to-the-minute information, please visit our Industry Mall website at www.usa.siemens.com/industrymall	
A B C D	9 to 10 working days 11 to 13 working days 14 to 23 working days 24 to 38 working days On request	of an order. In exceptional cases, the actual delivery time may differ from that specified.	Note: Delivery Time (DT) does not appear on all selection pages due to space constraints or coil voltage variations.	
Pr	ice units (PU)	The price unit defines the number of units, sets or lengths to which the price and weight apply.		
Pa	ckaging sizes (PS)	The packaging size defines the number of units, sets or length, for outer packaging. Only the quantity defined by the packaging size or a multiple thereof can be ordered.		

Symbols

On many selection pages in this catalog, you will find these symbols to aid in the quick identification of critical product features.

Connections	Combicon connection	
	Insulation piercing method	₫:}
	Fast Connect	H
	Spring-type terminals	8
	Flat connectors	0
	Solder pin connections	Н
	Ring terminal lug connections	(1)
	Screw terminals	+
Types of coordination	Type of coordination "1"	ToC 1
	Type of coordination "2"	ToC 2
Distinguishing between units	Complete units	
	Modular system	
Support function	Configurator available in the Industry Mall	E

Section 1

IEC Motor Starter Protectors



SIRIUS 3RV Motor Starter Protectors (MSPs) are built for a wide range of applications and meet the requirements of control users worldwide. Each MSP features a manual ON/OFF switch, a Class 10 adjustable bimetallic overload relay (Class 20 available in the two largest frame sizes), and magnetic trip elements for short circuit protection.

3RV10 / 20 MSPs can be used in a variety of applications:

- * Manual Motor Starter
- * Manual Self-Protected Combination Motor Controller, Type E
- * Combination Motor Controller Type F when combined with a 3RT contactor
- * IEC Circuit Breaker for export applications

3RV17 / 27 are UL listed as a Circuit Breaker for branch circuit protection of both motor and non-motor loads

3RV28 is UL listed as a Circuit Breaker for transformer protection

3RV29 is an infeed system for quick installation of MSP and contactor assemblies

Section 2

IEC Contactors



High contact reliability, a narrow design, long life time, and the ability to operate under extreme conditions (up to 60° C), ensure that SIRIUS 3RT Contactors are suited for almost any application. A large array of easily installed, standard accessories may be used to customize the contactors for different applications.

3RT*0 - 3 Pole Standard

3RT12 - 3 Pole Vacuum

3RT*3 - 4 Pole with 4 normally open poles for switching Resistive loads (AC-1)

3RT*4 – 3 Pole for switching Resistive loads (AC-1)

3RT*5 - 4 Pole with 2 normally open & 2 normally closed poles

3RT*6 – 3 Pole for switching capacitors

3RA*9 - Contactor Accessories

3RA*3 - Reversing contactor assemblies

3TB5 – 3 Pole with true DC coils

3TC – 2 Pole for switching DC loads

3TF6 – 3 Pole Vacuum, 630 & 700A

Section 3

IEC Overload Relays



Complete motor protection can be achieved through the SIRIUS family of overload relays (OLR's).

3RU11 / 21 - Thermal OLR's, up to 100 A, are ambient compensated bimetallic

in Trip Class 10

3RB20 / 30 – Solid State OLR's, up to 630 A, with an internal power supply and 4:1 FLA adjustment range in Trip Class 10 or 20

3RB21 / 31 – Features of the 3RB20 / 30 plus adjustable Trip Class 5 to 30, ground fault detection, and remote reset

3RB22 / 23 – Features of the 3RB21 / 31 plus status LED's and external power supply

3RB24 - Features of the 3RB23 plus communication via IO-Link

3UF7 – SIMOCODE pro intelligent motor protection is more than just a programmable overload relay. By linking the motor and automated control circuits, SIMOCODE allows for predictive and conditional maintenance on critical systems.

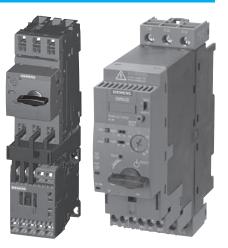
IEC Combination Starters

Section 4

The SIRIUS 3RA1/2 Combination Starters consist of a pre-wired and mechanically connected 3RV MSP and 3RT contactor, allowing for quick installation of a complete branch circuit. The Non-Reversing or Reversing assemblies come on a Fast Bus mounting shoe or as a Panel Mount version.

The SIRIUS 3RA6 Compact Starters provide the functionality of an MSP, Contactor and Electronic Overload Relay in one easy to install housing, saving wiring and installation time. Available in both non-reversing and reversing starters that can be mounted on a Fast Bus shoe. The SIRIUS 3RA6 Infeed system further saves line side wiring in multiple motor panels.

3RA11 / 21 – Non-Reversing Combination Starters
 3RA12 / 22 – Reversing Combination Starters
 3RA6 – Compact Non-Reversing & Reversing Combination Starters



Fast Bus Power Distribution System

Section 5

The UL508A Fast Bus Multi-Motor Control System is a 3 phase insulated busbar system used to reduce wire connections and hole drilling when building control panels. Quickly mount Sirius 3RA combination starters and/or Siemens circuit breaker assemblies.

The Siemens Fast Bus system uses standard off-the-shelf components, with both domestic and international approvals, to allow for economical installation, compact panel designs, touch safe equipment, that allow for easy expansion and maintenance.

FB - Installation kits for quick ordering & installation

FBCB - Circuit breakers pre-assembled on Fast Bus adapter shoes

3RA – Combination starters for Fast Bus mounting (see section 4)

8US – Fast Bus components for Field assembly



Hybrid Motor Starters

Section 6

SIRIUS 3RM1 motor starters are compact devices with a width of 22.5 mm, combining a large number of functions in a single unit. They consist of combinations of relay contacts, power semiconductors (hybrid technology), and a solid state overload relay for operational switching of three phase motors up to 3 HP @ 480 V.

Hybrid technology provides reduced size, lower heat losses and longer service life in motor starter applications. Even the reversing units are only 22.5mm wide.

3RM10 – Non-reversing starters

3RM11 – Non-reversing starters with safety related shutdown

3RM20 – Reversing starters

3RM21 - Reversing starters with safety related shutdown



Section 7

Solid State Soft Starters





SIRIUS Solid State Soft Starters are designed to ramp up your efficiency at every turn. Easy to specify, integrate, operate, and maintain, our controls fulfill your need for more thoughtful system-wide solutions. With innovations, such as 2 phase control up to 300HP@ 480V to a high end Profibus DP capable soft starter, Siemens is your trusted source for soft start control.

3RW30 – Soft Starters in compact frame sizes up to 75HP for standard applications
 3RW40 – A compact Soft Starter from 7.5 to 300HP, with built-in bypass contacts, overload protection and device self protection

3RW44 – A high feature Soft Starter offering, from 15HP to 900HP, with built-in bypass contacts, overload protection, torque control functionality, multiple parameter settings, braking and slow speed capability, programmable inputs and outputs, and kick start and multiple starting and stopping modes

Class 73 - Non-Combination Enclosed Soft Starters

Class 74 - Combination Enclosed Soft Starters with circuit breaker or fusible disconnect

Section 8

Solid State Switching Devices



Designed for high operating switching frequency the Sirius Solid State Relays and Contactors feature a long lifespan of rugged reliability in adverse conditions, quiet operation, compact size, and snap on function modules for convenient flexible use.

3RF20 - 1-Phase Relays in a 45mm wide "hockey-puck" design

3RF21 – 1-Phase Relays in a 22.5mm narrow width design

3RF22 - 3-Phase Relays in a 45mm wide design

3RF23 – 1-Phase Contactors, a 22.5mm wide relay mounted to a heat sink

3RF24 – 3-Phase Contactors, a 45mm wide relay mounted to a heat sink

3RF29 - Function Modules, such as, converters, load monitors and power controllers

3RF34 - 3-Phase non-reversing and reversing Contactors for switching

Section 9

General Purpose Control



Siemens NEMA controls are built rugged to withstand the most severe and demanding industrial and continuous duty commercial applications. Siemens offers the most complete and diverse product line in the world of NEMA. This includes standard full NEMA sizes and motor matched half sizes exclusive to Siemens. All are available as open or enclosed devices with a wide selection of accessories and spare parts.

Manual Starters & Switches
Non-Reversing & Reversing Starters & Contactors

Multi-Speed Starters

Reduced Voltage Starters - Autotransformer and Wye-Delta

Combination Starters

Pump Controllers

Overload Relays - Solid State & Bimetallic with Replaceable Heaters

Current Sensitive Relays

Lighting & Heating Contactors

Control Power Transformers

Pilot Devices Section 10

Siemens offers an extensive array of Pilot Devices and Signal Columns for a wide variety of applications.

3SB2 - 16mm SIRIUS Pilot Devices for applications where panel space is a premium

3SB3 – 22mm SIRIUS Pilot Devices offer maximum flexibility, industry best time install savings and environmental ratings in round-metal and round & square-plastic versions

Class 50 - Standard Duty Control Stations

Class 52 – 30mm is the classic pushbutton design for the NEMA markets offering both standard die cast metal and the ultra rugged BLACK MAX for corrosion resistant applications

Class 51 – 30mm in NEMA 7 & 9 for hazardous locations

8WD – Signal Columns offer twist and connect technology in both 50mm and 70mm diameter styles. Single element signal beacons add additional options for OEMs and panel builders



Function Relays Section 11

The SIRIUS family of compact, DIN rail mountable function relays offers complete solutions for monitoring, switching, interfacing and timing applications.

3RN – Thermistor Motor Protection

3RP – Solid State Timing with single or multiple timing functions

3RS10 / 20 - Temperature Monitoring in solid, liquid and gaseous media

3RS17 - Interface Converters

3RS18 - Relay Interfaces

3TG10 - Compact Power Relays/Contactors

3TX70 - Interface Relays & Semiconductor Interfaces

3TX71 - Plug-in Relays & Timers

3UG4 - Line Monitoring of voltage and insulation or load monitoring of Current & Cos Phi,

Level Monitoring of conductive liquids, and under speed monitoring



Terminal Blocks Section 12

For the wiring of machines and control systems, Siemens Terminal Blocks meet or exceed the requirements of CSA, IEC, NEMA, UL, VDE and other international standards. Meeting these requirements, combined with worldwide acceptability and availability, enables Siemens Terminal Blocks to be used domestically, as well as, in equipment which will be exported.

8WA1 / 8WH1 - Terminals with Screw Connection

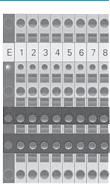
8WH2 – Terminals with Spring-Loaded Connection

8WH3 - Terminals with Insulation Displacement Connection

8WH5 – Terminals with Combination Plug-in Connection

8WH6 - Terminals with iPo Plug-in and Installation Connections

Section 12 contains the 'Table of Contents' of the Terminal Block Supplemental Catalog, Order No. PDCA-TERMB-1013; Labeling Plates for Ink Plotter System; and, Special Label Instructions for 8WA terminal block labeling plate inscriptions.



Section 13

Safety Systems



Siemens Switches and Machine Safety devices provide the means for protecting workers and equipment where hazardous conditions exist. Compliance with NEMA, OSHA and international standards (IEC) are a critical requirement for machine OEMs and end users. Siemens has provided safety relay and contactor products to the international community for almost 50 years.

3SB38 - Two-Hand Control Stations

3RK3 - Modular Safety System (MSS)

3SE03 - North American (NEMA) Limit Switches

3SE5 - International (IEC) Limit Switches

3SE5 / 3SE2 – Interlock Switches & Hinge Switches

3SE6 – RFID Non-Contact Safety Switches & Magnetic Monitoring Systems

3SE7 - Cable-Operated Switches

3SK1 - Modular Safety Relays

3TK28 - Safety Relays with special functions.

Section 14

AS-Interface & IO-Link Systems



Actuator-Sensor Interface is the simple and effective networking system for the field level. It is extremely rugged even under the toughest of conditions. With compatible safety components, AS-Interface offers safety applications according to Safety Category 4. AS-Interface is easily linked to higher-level networks for a complete automation solution — simple, safe and fast in the field.

IO-Link is an open communication standard based on point-to-point connection between a Master and up to 4 devices. For an OEM wiring multiple motor starters, IO-Link technology can greatly reduce control cabinet wiring for motor starters while increasing diagnostics. For End Users, IO-Link provides a cost effective way in to monitor common analog values such as motor current, power consumption, temperature and voltage without adding an additional network.

Section 15

Programmable Relays & Power Supplies



The LOGO! Programmable Relay is a compact, easy to use and low cost solution for simple control tasks. Functions can be changed at the touch of a button through the integrated operator panel or remote display.

SITOP offers a broad offering of compact single- and 3-phase switched mode power supplies and 24VDC power security components, which provide reliable solutions for the most common power interruptions, helping to minimize downtimes and increase the efficiency of production.

SCALENCE Managed and Unmanaged Industrial Ethernet Switches with up to eight RJ45 ports.

6ED1 - LOGO! Programmable Relays

6EP1 - SITOP Power Supplies and Power Security Components

6EK5 - SCALENCE Industrial Ethernet Switches

Control Circuit Protection

Section 16

Siemens UL 489 miniature circuit breakers and accessories are designed to provide branch circuit and feeder protection.

Siemens UL 1077 Supplementary Protectors are designed to provide additional protection where branch circuit protection is already provided or, not required at all. Since Siemens Supplementary protectors are made to trip faster than other components, they are able to provide additional protection for more sensitive devices inside a panel.

5SJ4 - Miniature Circuit Breakers up to 480Y / 277 VAC, 63A

5SY - High feature Supplementary Protectors from 0.3 to 63A

5SP – High amperage Supplementary Protectors from 80 to 125A

3NW7 - Cylindrical Fuse Holders meeting UL 512 and IEC 60269-1, -2, -3

3NC1 - Open type Cylindrical Fuse Holders meeting UL 512



Circuit Breakers Section 17

Siemens offers a full line of interchangeable and non-interchangeable thermal-magnetic trip circuit breakers with a wide variety of interrupting ratings from 10KAIC to 200KAIC. These circuit breakers are available with multi-functional internal accessories, which are field installable on most breakers, and a full line of external accessories. Electronic trip circuit breakers are available for 150A through 1600A breakers.

Molded Case Circuit Breakers

BQ and QJ - 240VAC Breakers CQD - 480VAC Breakers

GG, Sentron, and VL - 600VAC Breakers

Insulated Case and Power Circuit Breakers

WL frame - 600VAC



Switches Section 18

Siemens offers a complete line of both enclosed and open style switches to meet a wide range of applications.

HF & HNF – Heavy Duty Safety Switches with Side Mounted Operating Handle 3LD2 – Rotary Switches in Non-metallic Enclosures

VBF & VBNF - Open Switches with Flange Mounted Operating Handle

MCS - Open Switches with Flange or Rotary Operating Handle

CFS - Open Compact Fusible Switches with Rotary Operating Handle



Index

Alphabetical Product Index

A	
AC/DC Power Supplies15/11 to 15/2	6
Acoustic elements	
Actuator Sensor Interface see AS-interfac	
Actuators see operators for Pushbutton	
Adapter shoes for Fastbus	
Addressing units	2
Ampere ratings for AC motors 19/	8
Approvals	3
Arc chutes	n
AS-Interface	6
cables	つつ
communication modules	ے ا
I/O modules	
master modules	4
modules w/ special functions	4
motor starters	
network links	<u>ر</u> ابا
power supply units	'n
safety at work	
SIRIUS pilot devices	'n
system components	2
ASISafe	
Audible signal device	/
Auto transformer reduced	_
voltage starters9/44 to 9/4	7
Auxiliary contact blocks	
for miniature circuit breakers 16/	7
for control relays2/51, 2/66, 2/6	8
for IEC contactors	
- 3RT, SIRIUS	8
- 3TC	
- 3TF	
for lighting & heating contactors 9/10	
for manual starters & switches	
for motor starter protectors 1/	7
for NEMA contactors & starters9/10	3
for supplementary protectors 16/1	9
D.	
В	
Base mounted contact blocks 10/92, 10,9	
Bimetal overload relays see Overload Relay	
BlackMax, pilot devices 10/143 to 10/15	9
Blanking plugs for pilot devices 10/83, 10/16	7
Blocks, terminal	
Boot, protective cover	
BQ circuit breakers 17/9, 17/1	0
Branch terminals	2
Breakers see Circuit Breaker	S
Bulbs10/18, 10/80, 10/81, 10/16	
Busbar adapter for Fastbus 5/	
Busbar adapter system5/1 to 5/2	2
Busbar for motor starter protectors (MSP) 1/	
Busbar holder	6
Busbar, UL489 for 5SJ	7
Busbar, UL508 for 5SY	1
Busbars, busbar systems5/1 to 5/2	2
Button see Pushbutton	S
C	
Cable glands	8
Cable-operated switches 13/76 to 13/8	0
Cable-operated switches	0
Cable-operated switches	0
Cable-operated switches	0 2 s
Cable-operated switches	0 2 s
Cable-operated switches	0 2 s 9 0
Cable-operated switches	0 2 s 9 0
Cable-operated switches	0 2 s 9 6
Cable-operated switches	0 2 1s 9 0 6
Cable-operated switches	0 2 1 8 9 0 6 9
Cable-operated switches	02 18906 696
Cable-operated switches	02 18906 696
Cable-operated switches	02 18906 6967
Cable-operated switches	02 18906 6967
Cable-operated switches	02 18906 6967 79
Cable-operated switches	02 18906 6967 798

Combinations, safety see Safety combinations Combination starters
compact starters
lighting and heating contactors
NEMA non-reversing
NEMA reversing
reduced voltage, solid state
7/32 to 7/35, 7/38 to 7/41 reduced voltage, electro-mechanical
two speed
type E, self-protected manual 1/4, 1/5, 1/20
type F, with MSP/contactor 4/36 to 4/43
Communication-capable devices
motor protection and control devices
pushbuttons and indicator lights 14/1
safety devices
soft starters
Communication module (IO-Link)
Compact modules (AS-interface)
Compact Starters
Conditions of sale
Conduit adaptors
Configurators, Industry Mall
Ø 16 mm 10/11, 10/12
Ø 22 mm
Ø 30 mm
for enclosed
Contact block holders for pushbuttons Ø 16 mm
Ø 22 mm
Contactor combinations
IEC
- for reversing duty
- for wye-delta starting
- for reversing duty
Contactors
arc chutes for
for capacitor switching
DC coil versions
2/40 to 2/44, 2/53 to 2/55
DC power switching 2/55, 2/56
IEC 2 2012 2/12 2/12 2/15 to 2/22 2/5
- 3-pole 2/8 to 2/10, 2/12, 2/15 to 2/23, 2/53
- 4-pole
- for resistive loads
- reversing
- vacuum
NEMA
- non-reversing
- reversing
- vacuum
miniature contactors
vacuum contactors
with Spring loaded terminals 2/8, 2/9, 2/17
2/18, 2/20 to 2/23
with tab connectors
Control circuit classifications
Control circuit protection
Control circuit transformers9/93 to 9/97
Control power transformers
Control relays
Control stations Ø 22 mm
With ΔS-interface 10/07 to 10/10/

hazardous location - Ø 30 mm 10/139 heavy duty - Ø 30 mm
standard duty 10/123 to 10/131 Control transformers 9/93 to 9/97 Controls Express 7/89, 9/2
Converters, interface
Counter module
auxiliary circuits
Coupling devices (interfaces) for contactor mounting
plug-in relays
Coupling relays
CQD circuit breakers
Current sensitive relays
D
DC contactors
general purpose
DC power supplies see Power supply units DG circuit breakers
DIN rail
Diode terminals
compact non-fusible
fusible, VBII
fusible, MCS
Door-mounted operating handles for circuit-breakers 17/44, 17/45, 17/110
for motor starter protectors, MSPs 1/13
Electrical formulas
Electromagnetic interference suppression module
Electronic overload relays see Overload Relays Electronic starters, hybrid 6/2 to 6/8 EMERGENCY-STOP
Ø 16 mm pushbuttons 10/7, 10/9 Ø 22 mm pushbuttons 10/29, 10/39, 10/44,
10/53, 10/60, 10/64, 10/88, 10/89, 10/98,
safety switches
Enclosed rotary switches
Combination Starters Enclosed softstarters
Enclosed switches, limit 13/74, 13/75
Enclosures descriptions
for IEC contactors & starters
for NEMA contactors & starters. 9/109 to 9/114 for pushbuttons and indicator lights
- Ø 22 mm
- Ø 30 mm, heavy duty 10/129, 10/174, 10/175 - Ø 30 mm, standard duty10/124 to 10/128
- Ø 30 mm, hazardous location 10/139 ESP100 see ESP200
ESP200
general information
starters
Export applications

Index Alphabetical Product Index

Fastbus . Fault signal contacts . FG circuit breakers . Field modification kits . Flat module . Foot switches . Four-tier terminals . Fractional HP starters . Front plates . Full voltage starters .	see Modifications 5/1 to 5/22 16/7, 16/19 17/20 to 17/22 see Modifications 14/1 10/109 12/1 9/4, 9/5 1/13 see Starters & Combination Starters 16/26 to 16/30
Fuse terminals G GG circuit breakers	
Grounding requirements . Group installation starters	
Heater elements, heater the Heating and lighting continued the Heavy duty safety switch High-current terminals Hinge switches	devices .10/132 to 10/142 ables9/10 to 9/126 actors9/79 to 9/92 es18/2 to 18/15 13/101 to 13/106 6/2 to 6/8 12/2
compact starters	
- non-reversing 2/8 ! - reversing	2/18, 2/23, 2/53 to 2/56 2/37 to 2/44 2/10, 2/53 2/14, 2/15, 2/50 to 2/52 18/16 to 18/19
- bimetal	
Ø 16 mm	
plastic roundplastic square	
- hazardous location oil tight. signal beacons. signal columns Industrial plug-in relays. Industry Mall	BlackMax . 10/152, 10/153
3RA6 Innovations Input coupling devices Insta terminals Installation terminals Interface converters Interface coupling devices Interface relays	

Interlock switches
with separate actuator13/81 to 13/92
with solenoid locking 13/93 to 13/100
International control equipment
IO-Link
components
overload relays
overview
I/O modules for installation in
the control cabinet
I/O modules for use in the field
iPO installation terminals
iPO plug-in terminals
Isolating blade terminals
Isolating terminals
and the second s
J
Joystick Switch
The second secon
<u>-</u>
Labelling accessories for terminal blocks 12/2
Labels for pushbuttons and indicator lights
Ø 16 mm
Ø 22 mm
Ø 30 mm 10/130, 10/176
Lamp holders for pushbuttons and indicator lights
Ø 16 mm 10/11, 10/12
Ø 22 mm
Lamps, LEDs
10/92, 10/168
Latching relays
Later in greadys
LEDsee Lamps, LED
LED module for contactors
Legend plates see Labels for pushbuttons
Lens for indicator lights
Ø 16 mm
Ø 22 mm
Ø 30 mm
Light poles10/110 to 10/118
Lighting and heating contactors 9/79 to 9/92
Lighting and heating contactors 9/79 to 9/92
Lighting and heating contactors 9/79 to 9/92
Lighting and heating contactors 9/79 to 9/92 Limit switches, International (IEC) accessories
Lighting and heating contactors

Manual starters and switches 1/4, 1/5, 9/4 to 9/9 Master modules
Max Flex flange mount
operators
Mechanically held contactors 2/70, 9/90 to 9/92
Mechanically latched relay
Metric to US conversions
Miniature circuit breakers 16/3 to 16/6
Miniature contactors
Modifications
field modifications
 NEMA starters & contactors 9/100 to 9/106
- IEC contactors
- lighting and heating contactors .9/100 to 9/106
- manual starters & switches 9/98, 9/99
- NEMA overload relays
- reduced voltage solid state starters 9/100 to
9/106
factory modifications
- NEMA starters & contactors 9/115 to 9/119
- lighting and heating contactors . 9/115 to 9/119
- reduced voltage solid state 9/115 to 9/119
Modular Safety System (MSS) 13/143 to 13/154
Modular terminals see Terminals
Modules
I/O modules for use
- in the control cabinet
- in the field
for motor starters
for pilot devices
specific integration solutions
with special functions
Molded case circuit breakers 17/2 to 17/89
Molded case switch 17/40, 17/97
Monitoring relays
for current monitoring
for level monitoring (fluids)
for line monitoring
for underspeed monitoring
for phase monitoring
for power factor monitoring
for voltage monitoring
Motor ampere ratings
Motor management see SIMOCODE
Motor protection
communication capable3/69 to 3/76
intelligent3/69 to 3/76
motor starter protectors
overload relays see Overload relays
SIMOCODE
Motor starter see Starters
Motor starter (AS-Interface) 14/2
Motor starter protector (MSP)1/4, 1/5
Mounting accessories
for circuit-breakers 17/43, 17/48 to 17/57.
17/106 to 17/109
for motor starter protectors, MSP 1/9 to 1/12,
1/14 to 1/17
for terminal blocks
MSP1/4, 1/5
MSS
Mushroom pushbuttons
Ø 16 mm pushbuttons 10/7, 10/9
Ø 22 mm pushbuttons10/29, 10/32,
10/39, 10/42, 10/44, 10/49, 10/53,
10/60, 10/64, 10/88, 10/89, 10/98,
Ø 30 mm pushbuttons
10/144 to 10/151, 10/156,
Multi function time-delay relay11/21,11/27
Multi-speed starters
main speed starters
N
N-conductor isolating terminals
NEMA enclosure descriptions
NEMA terminal markings
NGG circuit breakers 17/13

Index

Alphabetical Product Index

Nomenclature, NEMA control	() '6
Non-contact RFID	C
safety switches	С
Non-reversing starters see Starter	3
Nordic Controls see Soft starter	S
North American approvals 19/2, 19/ North American limit switches 13/62 to 13/7	3
North American limit switches13/62 to 13/7	С
0	
OFF-delay	
for contactor mounting 2/69, 2/7	C
for NEMA starters	9
timing relays	7
Oil tight pilot devices	2
ON-delay for contactor mounting 2/69, 2/7	r
for NEMA starters	
timing relays	7
On-line References	3
Open transition wve-delta starters	
IEC	8
NEMA9/52 to 9/5	t
Operator panels	L
Ø 16 mm 10/9, 10/1	r
Ø 22 mm, metal round 10/31 to 10/3	c
Ø 22 mm, plastic round10/48 to 10/5	5
Ø 22 mm, plastic square 10/61 to 10/6	4
Ø 30 mm, Class 51 10/133, 10/136, 10/13	7
Ø 30 mm, Class 52 10/145 to 10/150 10/156 to 10/15)
Output coupling device	
Overload relays	C
IEC, bimetal	C
IEC, solid state	4
with IO-Link connectivity	4
NEMA, bimetal	6
NEMA, solid state	7
with Profibus connectivity	C
with PROFINET connectivity	c
SIMOCODE	6
Overvoltage limiters see Surge suppressor	3
Overvoltage protection module 14/	1
P	
Part winding reduced voltage starter 9/48 to 9/5	1
Parts, replacement	
DC Contactors 2/5	5
IEC Contactors2/82 to 2/8	6
lighting and heating contactors 9/13 NEMA Contactors & Starters 9/127, 9/12	C
Pg cable gland	2
Pilot Control wiring schematics	
Pilot devices	
Ø 16 mm	C
Ø 22 mm	
- metal round	8
- plastic round	5
- plastic square	4
Ø 30 mm	C
- corrosion resistant, BlackMax .10/143 to 10/16	3
- hazardous location 10/132 to 10/14	2
- oil tight	G
- parts & accessories 10/166 to 10/16	
Wiring schematics	5
Pilot device stations	6
Ø 22 mm	
hazardous locations - 30 mm 10/37	ç
heavy duty - class 50	ç
oil tight - class 5210/174 to 10/17	6
standard duty - class 50 10/124 to 10/12	8
signal columns	
Pilot lights see Indicator light Plug-in relays	د. د
Position switches See Limit Switche	25

Potentiometer operators
for AS-Interface
Press control devices
PROFINET communication-capable overload relay
Pushbuttons and indicator lights Ø 16 mm
Ø 22 mm - AS-Interface adapter for E-Stop 10/97 - AS-Interface assembled enclosures 10/98 - enclosed 10/88 to 10/90 - metal round
Ø 30 mm, - corrosion resistant
Q QJ circuit breakers
Reduced voltage starters electro-mechanical
current sensitive. 9/66, 9/67 overload see Overload relays plug-in. 11/85 to 11/90 power. 11/85 to 11/90 power. 11/85 to 11/90 power. 11/81 programmable (LOGO!) 15/2 to 15/8 solid state. see Solid state relays timing 11/21, 11/27 Remaining lifetime (RLT) 2/9, 2/94 Remote motorized operating mechanism for circuit breakers 17/112 Repeaters/extenders 14/2 Replacement parts DC contactors, general purpose 2/82 to 2/86 IEC contactors, 3RT 2/82 to 2/86 IEC contactors, 3TB, 3TF 2/88 to 2/90 lighting & heating contactors 9/130 NEMA contactors & starters 9/127, 9/128 Reversing combination starters see Combination Starters Reversing starters see Starters RFID non-contact safety switches .13/107 to 13/110 Rope pull switches See Cable-operated Switches Rotary operators for circuit-breakers 17/44, 17/45, 17/110 for motor starter protectors, MSPs 1/13
Safety at work
Safety foot switches

Safety interlock switches. .13/81 to 13/100 Safety magnet switches. .13/111 to 13/115 Safety monitor. .14/1 Safety relays, mechanical .13/117 to 13/142 Safety relays, MSS .13/143 to 13/154 Safety switches
enclosed 18/2 to 18/15 RFID non-contact 13/107 to 13/110 Scalence switches 15/27 Screwdrivers for spring loaded
terminals
Ø 16 mm
- metal round
- corrosion resistant
Self-protected manual combination starter
Shunt release / trip for manual starters
Sielect see configurators Signal beacons 10/119 Signal columns 10/112 to 10/118 Signalling switch for MSP 1/7 SIGNUM see pilot devices - 16 & 22 mm SIKOSTART soft starters see soft starters SIMATIC Net 15/27 SIMOCODE 3/63 to 3/76 SIRIUS
combination starters
- 3-pole
- 4-pole
- vacuum
contactor assemblies - reversing
- wye-delta
control relays
coupling relays2/52, 11/63 to 11/66 function relays see SIRIUS Relays
interface relays
motor starter protectors1/4, 1/5
overload relays
pilot devices
soft starters
solid state contactors8/11 to 8/17
solid state relays
SIRIUS Innovations see SIRIUS SIRIUS Relays
coupling relays
interface converters
interface relays
monitoring rélays
power relay
semiconductor interfaces

Index Alphabetical Product Index

solid-state time relays
Solid-state soft starters. 7/1 to 7/41 Solid-state starters, hybrid 6/2 to 6/8 Solid-state time relays 11/20 to 11/29 Spare parts see Replacement parts Spring loaded connections
accessories - for contactors
- temperature monitoring
interfaces
Star-delta see wye-delta Starters combination see combination starters compact 4/2 to 4/8 for group installation 4/36 to 4/43 manual
Supplementary load module 2//2 Supplementary protectors. 16/11 to 16/21 Support rails . 12/1 Surge suppressors 2/71, 2/72 Switch disconnects see Disconnect switches Switched mode power supplies 15/11 to 15/26 Switches, magnet 13/111 to 13/115 Switches, manual 9/6, 9/7 Switches, RFID non-contact 13/107 to 13/110
T Temperature monitoring relays

Thermistor motor protection relays
clock-pulse generator
UL file and guide numbers
Utilization Categories
V Vacuum contactors
Web links. 19/3 Wide input interface relay 11/75 Wire ampacity 19/8 Wiring diagrams 19/14 Withdrawable coils 2/85 Wye delta reduce voltage starters EC assemblies 2/37 to 2/48
NEMA - closed transition. 9/56 to 9/59 - open transition. 9/52 to 9/55 Wye delta time delay relay 2/69, 11/21

Index

Catalog Number Index

Class/Type	Page	Class/Type	Page	Class/Type	Page	Class/Type	Page
0		3RA19 0	4/50	3RF20	8/9	3RT12	2/10
0FD	11/89			3RF21	8/8	3RT13	2/11
OND	11/89	3RA19 11	see 3RA29 11	3RF22	8/10	3RT14	2/12
		3RA19 12	see 3RA29 12	3RF23	8/12, 8/13	3RT15	2/13
1	- /-	3RA19 13	see 3RA29 13	3RF24	8/14	3RT16	2/19
11	9/9	3RA19 21	1/10, 4/48, 7/6, 7/13	3RF29	8/13, 8/23 to 8/27	3RT19 0	2/74, 3/57, 4/13,
12	17/53	3RA19 22	see 3RA29 22	01 11 20	0, 10, 0, 20 to 0, 21	0111100	4/52, 8/7, 8/17, 13/135
14	9/13 to 9/15	3RA19 23	2/77, 4/50	3RF34	8/16, 8/17	3RT19 1	2/70, 2/74 to 2/76,
		3RA19 24	2/77, 4/50				2/80, 4/45, 11/84
17	9/17 to 9/22	00410.01	1/10 1/10 1/50	3RF39	8/17	3RT19 2	2/69 to 2/71, 2/73,
18	9/23 to 9/25	3RA19 31	1/10, 4/48, 4/50, 7/6, 7/13	3RG78	14/2	3RT193	2/74, 2/80, 2/83, 4/45 1/12, 2/71, 2/75, 2/76.
2		3RA19 32	2/79, 2/80	011070	1 -1/ 2	3111133	2/80, 2/83, 2/84, 2/86,
22	9/26, 9/27	3RA19 33	2/78 to 2/80, 4/49, 4/50	3RH11	see 3RH21		3/11, 3/50, 4/47, 7/6,
	0/20, 0/21			3RH12	see 3RH22		7/12, 9/130
24177	2/90	3RA19 41	1/10, 4/48, 4/50,	3RH14	see 3RH24	3RT19 4	1/10, 1/12, 2/73, 2/75,
25	9/28	3RA19 42	7/6, 7/13 2/79, 2/80	3RH19 11	4/45		2/76, 2/80, 2/84, 2/86, 3/11, 3/50, 4/46, 7/6,
26	9/29	3RA19 43	2/78 to 2/80,	Shi ii 9 i i	4/43		7/12, 9/130
2CC	19/16	0.01.0	4/49, 4/50	3RH19 21	2/65 to 2/68, 4/45, 9/103		.,, .,
200	10/10					3RT19 5	2/71, 2/75, 2/76,
2CF7	19/16	3RA19 5	2/77 to 2/80,9/105	3RH19 24	2/73		2/80, 2/85, 2/86, 3/50,
		3RA19 6 3RA19 7	2/77, 2/78, 2/80, 9/105 2/77, 2/78, 2/80, 9/105	3RH19 26	2/73		3/57, 3/74, 7/12, 7/25,
2CQ	19/16	Shais I	2/11, 2/16, 2/60, 9/103	3RH21	2/15, 2/50, 2/52	3RT19 6	7/26, 9/130 2/72, 2/75, 2/76,
2CT	19/16	3RA21	4/36, 4/38	3RH22	2/23	0111100	2/80, 2/85, 2/86, 3/50,
201	19/10	3RA22	4/40, 4/42	3RH24	2/51		3/57, 3/74, 7/12, 7/25,
2TA	17/80, 17/102, 17/103	3RA23	2/40, 2/42				7/26, 9/105, 9/107,
0		3RA24	2/47, 2/48, 14/2	3RH29 11	2/51, 2/65 to 2/68, 2/178 to 2/182,	3RT19 7	9/127, 9/128, 9/130 2/85, 2/86,9/107,
3	0/04 +- 0/04	3RA27	2/30, 2/31, 2/34, 14/2		4/45. 9/103	301197	9/127, 9/128, 9/130
30	9/31 to 9/34	3RA28	2/27, 2/69, 2/70	3RH29 21	2/67, 2/68,		6, 127, 6, 128, 6, 188
32	9/35 to 9/42				2/181, 2/182, 4/45	3RT20 1	2/8, 2/17, 2/20,
		3RA29 08	1/12, 2/76, 3/11, 3/57,	3RH29 24	2/73	ODTOO O	2/21, 2/23, 2/26
36	9/44 to 9/59		4/13, 4/21, 4/52, 13/125, 13/135	3RK10	4/11	3RT20 2	2/8, 2/18, 2/21, 2/23, 2/26
37	9/44 to 9/59		10, 120, 10, 100	3RK11	14/2		2,20, 2,20
3KA	19/16	3RA29 10	2/27, 2/31	3RK12	14/2	3RT23	2/11
3KE	19/16	3RA29 11	1/10, 1/11, 2/27,	3RK13	14/2	3RT25	2/13
3KL	19/16	3RA29 12	4/48, 4/52 2/27, 2/79	3RK14	14/2	3RT29 0	3/57
3KM 3KX	19/16 19/16	3RA29 13	2/27, 2/30, 2/34,	3RK19	4/15, 14/2	3RT29 1	2/71 to 2/74, 2/76, 4/47
3KY	19/16		2/78 to 2/80, 4/49, 4/51		,	3RT29 2	2/70 to 2/75, 2/82, 4/47
0	10, 10	3RA29 16	2/75, 4/49	3RK22	14/2		
3LD2	18/14 to 18/17	00400.01	1/10 1/11 1/10 0/17	3RK24	14/2	3RU11	3/10
3LD9	18/15, 18/17	3RA29 21 3RA29 22	1/10, 1/11, 4/48, 8/17 2/79, 4/50	3RK27	14/2	3RU19	3/11, 3/49, 7/12,
3NA	19/16	3RA29 23	2/27, 2/30, 2/34,	3RK3	13/147 to 13/149, 14/2	011010	9/107, 10/47
OI V	10/10		2/78 to 2/80,	3RK4	14/2		
3NC	16/30, 19/16	00400.04	4/49 to 4/51	0004	0/4 0/0	3RU21	3/10
3ND	19/16	3RA29 24 3RA29 26	2/75, 4/49	3RM1	6/4, 6/8	3RU29	3/11
3NE	19/16	01112020	2/10, 4/40	3RN10	11/13		
3NG1	19/16	3RA61	4/7, 14/2			3RV10	1/5
3NH	19/16	3RA62	4/7	3RP15	11/21	3RV17	1/6
ONLI	10/16	3RA64 3RA65	4/8 4/8	3RP19	3/50, 3/57, 3/74, 7/6,	3RV18 3RV19	see 3RV28 1/7, 1/8, 1/10, 1/12,
3NJ	19/16	3RA68	4/18 to 4/21	0.11 10	11/14, 13/135, 13/149	3 10	1/13, 1/16, 1/17, 2/80,
3NP	19/16	3RA69	2/31, 3/56, 4/10,	3RP20	9/105, 11/21		4/12, 4/44, 9/99, 14/2
			4/11, 4/15	00010	11/F 11/C	0D)/00	1/4
3NW1	19/16	3RB10	3/21	3RS10 3RS11	11/5, 11/6 11/5, 11/6	3RV20 3RV27	1/4 1/6
3NW6 3NW7	19/16 9/108, 16/27	ONDTO	0/21	011011	11/0, 11/0	3RV28	1/6
3NW8	19/16	3RB19	3/50, 3/57, 3/74, 9/99	3RS17	11/77	3RV29	1/7, 1/8, 1/10, 1/12,
		ODDOO	0/01 0/00 0/00	3RS18	11/71		1/13, 1/16, 1/17, 2/80,
3NX	19/16	3RB20 3RB21	3/21, 3/22, 9/66 3/21, 3/23	3RS20	11/6		4/11 to 4/13, 4/44, 4/46, 4/52, 13/125
3NY	19/16	3RB22	3/34	3RS21	11/6		11 TO, TIOZ, 10/120
3RA11	4/37, 4/39	3RB23	3/35			3RW22	see 3RW40 / 44
3RA12	4/41, 4/43	3RB24	3/54	3RT10 1	see 3RT20 1	ODIA/OO	7.5
004101	00400	3RB29	3/34, 3/35, 3/49,	3RT10 2 3RT10 3	see 3RT20 2 2/8, 2/23	3RW30 3RW34	7/5 see 3RW40 / 44
3RA13 1	see 3RA23	OI IDZ	3/50, 3/55, 3/57	3RT10 3	2/8, 2/23 2/8, 2/23	3111104	3CC 3NVV40 / 44
3RA13 2 3RA13 3	see 3RA23 2/43		, , 0/0/		· =; == ==	3RW40	7/9 to 7/11
3RA13 4	2/44	3RB30	3/22	3RT10 5	2/9, 2/23	3RW44	7/17 to 7/19, 7/75, 7/76
		3RB31	3/23	3RT10 6 3RT10 7	2/9, 2/23 2/9	3RW49	7/12, 7/13, 7/25, 7/26
				0111107	L1 J	01 10 048	1/12, 1/10, 1/20, 1/20

Index Catalog Number Index

Class/Type	Page	Class/Type	Page	Class/Type	Page	Class/Type	Page
3RX8	13/48, 13/86, 13/97	3SE30 3SE31	see 3SE5 see 3SE5	3SX32	13/79, 13/87, 13/104, 13/112	3UG30	see 3UG4
3RX90	14/2	3SE32	see 3SE5		10/101, 10/112	3UG32 07	11/56
3RX95	14/2	3SE37	see 3SE5	3SX56	13/110	000020.	11/00
		3SE38	see 3SE5			3UG35	see 3UG4
3SB10	10/47	3SE39	10/109	3SX9	13/86, 13/97		
3SB12	10/56, 10/57					3UG45	11/31, 11/49, 11/54,
3SB14	10/58	3SE50 00	13/9, 13/14, 13/18,	3SY1	10/81	01.10.40	11/55
20010.01	10/74 to 10/76 10/04		13/21, 13/22, 13/25,	001/0	10/40 10/06 10/07	3UG46	11/31, 11/37, 11/42,
3SB19 01 3SB19 02	10/74 to 10/76, 10/94 10/80 to 10/84,		13/26, 13/29, 13/30, 13/34, 13/37, 13/38,	3SY3	13/48, 13/86, 13/97		11/60
00019 02	10/86, 10/95, 10/168		13/40 to 13/42, 13/44,	ЗТА	17/37, 17/52, 17/53,	3UL22	11/42, 19/16
3SB19 04	10/77		13/49, 13/86, 13/97,	0171	17/80, 17/101 to 17/103	COLLE	11/12, 10/10
3SB19 06	10/58, 10/76		13/102, 13/103		,	3VU2	19/16
3SB19 10	10/81	3SE50 50	13/47	3TC	2/55, 17/13, 17/52,	3VX	19/16
00000	10/0 10/10	3SE50 60	13/49		17/53, 17/101	01407	10/10
3SB20	10/9, 10/10	00FE1 10	10/50	OTEC	0/50	3WX	19/16
3SB22 3SB23	10/7, 10/8 10/11	3SE51 10 3SE51 12	13/50 13/31 to 13/33, 13/43,	3TF6	2/53	3WY	19/16
3SB24	10/11, 10/12	33L31 12	13/49, 13/85, 13/103	3TG10	11/81	3ZS1	3/75, 7/23, 7/24, 13/150
OODLI	10/11, 10/12	3SE51 14	13/31 to 13/33, 13/85	01010	11/01	0201	0/10, 1/20, 1/24, 10/100
3SB29	10/11 to 10/19, 10/81	3SE51 15	13/33, 13/85	3TK	19/16	3ZX10	7/6, 7/13, 7/26, 13/149
				3TK28	13/125, 13/127,		
3SB30	3/11, 3/49, 7/12,	3SE51 20	13/50		13/128, 13/134, 13/135	3ZY1	6/7, 13/124, 13/125
00004	10/47 to 10/54	3SE51 22	13/35 to 13/37, 13/43,	OT)/42	0.000	4	
3SB31	10/43, 10/54,		13/49, 13/85	3TX40	2/90		0/60 0/61
3SB32	10/55, 10/61 to 10/64 10/41 to 10/47	3SE51 30	13/50	3TX42	10/84	40 43	9/60, 9/61 9/62
00002	10/41 to 10/4/	3SE51 32	13/15 to 13/17, 13/26,	3TX65	2/56	40	3/02
3SB33	10/59, 10/60	00201 02	13/83, 13/102	017.00	2/00	48	9/66, 9/129
3SB34	10/65 to 10/68,	3SE51 34	13/17	3TX70 02	11/64, 11/66		,
	10/92, 10/93			3TX70 03	11/64	49A	9/66, 9/103, 9/104, 9/128
3SB35	10/31 to 10/40	3SE51 60	13/50	3TX70 04	11/64, 11/66		
3SB36	10/26 to 10/30	3SE51 62	13/39, 13/40, 13/43,	3TX70 05	11/64, 11/66	49C	9/103, 9/105
3SB38 0	10/88 to 10/91		13/49	3TX70 14	11/64	49D 49E	9/104, 9/105, 9/107 2/81, 9/105, 9/109, 9/110
3SB38 6	13/116	3SE52 10	13/50	3TX70 14 3TX70 15	11/64	49L	9/112 to 9/114
00200 0	10, 110	3SE52 12	13/27 to 13/29, 13/49,	01741010	, .	49F	9/108
3SB39 01	10/68, 10/73, 10/75,		13/84, 13/103	3TX70 90	2/54	49G	9/105
	10/80, 10/81,	3SE52 14	13/29			49H	9/105
	10/84 to 10/86,	00550.00	10/50	3TX71 0	11/85	49J	9/105, 9/108
	10/92, 10/93, 10/95,	3SE52 30 3SE52 32	13/50	3TX71 1 3TX71 2	11/85 to 11/8 11/87	49L	9/102, 9/103, 9/105, 9/130
3SB39 02	13/48, 13/116 10/73, 10/76	33E32 32	13/9, 13/10 to 13/13, 13/23, 13/24, 13/49,	3TX712	11/86, 11/88	49M	2/81, 9/104, 9/106
3SB39 03	10/73, 10/76		13/82, 13/102	3TX71 4	11/85 to 11/87, 11/89		2/01, 6/101, 6/100
	,	3SE52 34	13/10 to 13/13, 13/82		,	49P	9/102
3SB39 05	10/73, 10/76			3TX74 02	2/56	49S	2/81
3SB39 06	10/94	3SE52 40	13/50	3TX74 62	2/56	49V	9/105
3SB39 10	10/81	3SE52 42	13/19 to 13/21, 13/23, 13/24, 13/49, 13/82	0TV75 00	0/50	49Z	9/105, 9/128
33039 10	10/01		13/24, 13/49, 13/62	3TX75 22 3TX75 7	2/56 2/54	4A	19/16
3SB39 21	10/82 to 10/86, 10/95	3SE52 50	13/47	317737	2/04	4B	19/16
3SB39 22	10/55, 10/78			3TX76 8	2/54	4C	19/16
3SB39 23	10/78	3SE53	13/95, 13/96	3TX76 9	2/54	4E	19/16
3SB39 25	10/78	3SE54	13/46			4F	19/16
00000 00	10/70	0050	10/110 10/110	3TY24	2/55	40.10	10/10
3SB39 30 3SB39 31	10/79 10/85	3SE6	13/110, 13/112	3TY25	2/55	4NC	19/16
3303331	10/60	3SE7	13/77 to 13/79	3TY48	2/88 to 2/90	4PK	19/16
3SB39 40	10/74	OOLI	10,777 to 10,70	01140	2/00 to 2/00		16/16
3SB39 41	10/82 to 10/84, 10/86	3SF1	14/2	3TY64	2/55, 2/89, 2/90	5	
3SB39 43	10/78	3SF2	14/2	3TY65	2/55, 2/89, 2/90	50	10/124 to 10/130
		3SF5	10/97 to 10/99, 14/2				
3SB39 50	10/79	0014	10/100 +- 10/00	3TY74	2/55, 2/88 to 2/90	51A	9/106, 10/135, 10/140,
3SB39 51	10/85	3SK1	13/120 to 13/23	3TY75 3TY76	2/53, 2/55, 2/88, 2/90 2/53, 2/88		10/141
3SBES	3/11, 3/49, 10/47	3SR	10/168	31170	2/33, 2/66	51C	10/139
CODEO	0/11, 0/10, 10/11	0011	10, 100	3UB8	9/66, 9/67, 9/104	010	16/166
3SE03	13/64 to 13/67, 13/74,	3SX03	13/68, 13/69		, - ,	51E	10/139
13/75				3UF19	3/74		
2052/	2055	3SX13	3/11, 3/49, 7/12,	01.155	01.157	51PA	10/133
3SE21	see 3SE5		10/47, 10/86	3UF5	see 3UF7	F1D0	10/104 10/105
3SE22	13/87, 13/104	20V17.0	10/90 10/96	OLIE7	2/56 2/60 +0 2/74 2/70	51PC	10/134, 10/135
3SE23 3SE24	see 3SE5 see 3SE5	3SX17 0 3SX17 3	10/80, 10/86 10/80	3UF7	3/56, 3/69 to 3/74, 3/76	51PD	10/133
3SE28	see 3SE5	03/(17-0	.0,00	3UF79	7/25, 13/149,	011 0	.0/ 100
3SE29	10/109	3SX19	13/48		17/56, 17/57	51PE	10/134, 10/135

Index

Catalog Number Index

Class/Type	Page	Class/Type	Page	Class/Type	Page	Class/Type	Page
51R	10/140	5TG	19/16	8US12 1	4/13, 5/8	CJD	17/70, 17/91, 17/97 17/25, 17/26
51SA 51SB	10/136, 10/137 10/136	5TT 6	19/16	8US12 5 8US12 6	4/51, 5/8 5/8	CLD	17/74, 17/91, 17/97 17/48, 17/49
52A	9/104, 10/80, 10/141, 10/167, 10/168	6AG10	15/4	8US19 2	5/6	CLK CLM	9/91, 9/102, 9/103, 9/105, 9/130
52BA	,	6ED10	15/3 to 15/8, 15/10	8US19 4	5/6	CLR	17/113
52BJ 52BL	10/141, 10/167 10/141, 10/167 10/153	6EP13	15/9, 15/12 to 15/17, 15/21	8US199	4/51, 4/52, 5/8, 5/9	CMB CMD	9/92 17/81, 17/91, 17/97
52BM 52BP	10/145 10/147, 10/149	6EP14 6EP15	15/18 to 15/20 15/21	8WA	9/108, 12/1 to 12/5	CMF CMN	9/92 9/92
52BR 52BT	10/147, 10/149 10/150, 10/151 10/155	6EP16	15/21	8WH	12/1 to 12/3	CMT	9/92 17/32, 17/33
52C	10/167, 10/173, 10/174	6EP19	15/22 to 15/24	8WC50	5/6	CND CNT	17/84, 17/97 17/35, 17/36
52K	10/140, 10/167	6EP41	15/24	8WD42 8WD43	10/113, 10/114 10/114, 10/117, 10/118	COM	17/56, 17/57
52M	10/140, 10/167	6GK12 6GK14	14/2 14/2	8WD44	10/114 to 10/118	CPD	17/87
52NA 52ND	10/176 10/168	6GK19	14/2, 15/27	8WD53	10/119	CPT	17/38
52NE 52NL	10/168 10/168	6GK5	15/27	8ZX	19/16	CQD 17/110	17/12, 17/14, 17/109,
52PA	see 52PL & PT	6GK7	14/2	9 97	9/67, 9/104	CRH	17/110, 18/26
52PB 52PL	see 52PM 10/153	6SL35	14/2	958	9/67	CSO	17/109
52PM 52PP	10/145 10/147, 10/149	6XV18	15/27	A		D	
52PR	10/150, 10/151	7 70	see 73	A01	17/65, 17/68, 17/72, 17/76, 17/79, 17/86,	D11	17/110
52PT 52PX	10/155 see 52BL, BM & BT	71	see 74	A02	17/90 9/103, 17/65, 17/68,	DC	17/48, 17/49
52R	10/140, 10/165, 10/166	73 74	7/31, 7/36, 7/37 7/32, 7/33 to 7/35,	7.02	17/72, 17/76, 17/79, 17/86, 17/90	DK E	17/110, 18/22
52S	10/157, 10/159, 10/161, 10/162	754	7/38 to 7/41	AMB	17/23, 17/30, 17/39	E1	9/123, 9/124
5SA	19/16	75A 75B	9/128 9/128	ASK	17/23, 17/30, 17/39,	E2	9/123, 17/63, 17/108, 17/109, 17/110
5SB 5SC	19/16 19/16	75C 75D	9/128 9/105, 9/106, 9/127,	17/59	17/00 17/00 17/00	E3 E4	9/123, 9/124 9/123, 9/124
5SD 5SE	19/16 19/16		9/128	ASWP	17/23, 17/30, 17/39	E5	9/123, 9/124
5SF	19/16	75E 75F	9/128 9/128	B	17/65, 17/68, 17/86,	E6 E7	9/123, 9/124 9/123, 9/124
5SG 5SH	19/16 5/6, 5/9, 19/16	75G 75H	9/128 9/128	17/90 B01	17/72, 17/76	E8 E9	9/123, 9/124 9/123, 9/124
5SJ4	16/4 to 16/6	75I	9/128	BHP	10/130	EA	17/63
5SM	19/16	75J	9/128	BQ	17/9, 17/10, 17/97,	EB	17/10, 17/11, 17/63
5SP4 5SQ	16/17 19/16	75Z	9/127	BR	17/106, 17/108 17/106	ED	9/112, 17/63, 17/74, 17/91, 17/97, 17/108
5ST2	16/22	7KM	19/16	BZL	17/56, 17/57	EC2	17/66
5ST3	16/7, 16/19 to 16/22	7KT	19/16	C		EC4	17/70
5SU	19/16	7LF	19/16	C01	17/68	ECB ECH	17/106 18/13
5SV8	19/16	7LQ	19/16	CB	17/54, 17/55	ECM ECP	17/106 17/106
5SW	19/16	7PV15	11/27	CCE CCF	17/63, 17/103 17/66, 17/103	ECQ	17/106
5SX2	see 5SY4	7ZX	19/16	CCL	17/69, 17/71, 17/73, 17/103	EE	17/70
5SX9	See 5ST3	83	9/69	CCM	17/103 17/103	EP	17/56, 17/57, 17/100
5SY4 5SY5	16/13, 16/14 16/18	84	9/70, 9/71	CCQ	17/103	EX	17/108
5SY6	16/15, 16/16	87 88	9/74 to 9/76 9/77, 9/78	CED	17/63, 17/64, 17/91, 17/97	F F6N	17/66
5SZ	19/16	8JH	19/16	CFD	17/67, 17/91, 17/97	F6R	17/110
5TE	19/16	8UB	19/16	CFS CFT	18/18, 18/28, 18/29 17/21, 17/22	FBB FBC	5/6 5/7, 5/9, 17/50, 17/51

Index Catalog Number Index

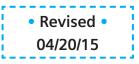
Class/Type	Page	Class/Type	Page	Class/Type	Page	Class/Type	Page
FBS FBT	5/8 5/6	HLC HLD HLK	17/42, 18/12, 18/23 17/74 17/28, 17/29	JXD K	17/69, 17/91, 17/97	MFM MFS	17/46, 17/47, 17/111 17/46, 17/47
FC	18/25			K2	9/125, 9/126	MI	17/109
FD FE	18/26, 17/66, 17/67, 17/108, 17/111 18/26	HLMD HLMXD	17/41 17/78 17/78	K3 K4 K5	9/125, 9/126 9/125, 9/126 9/125, 9/126	MMS	9/7
FHO FHV	17/111, 18/21, 18/26 17/46	HLR	17/40	K6 K7	9/125, 9/126 9/125, 9/126	MN6 MND	17/108 17/80, 17/82, 17/83
FMH	17/110	HLV	17/28	K8 K9	9/125, 9/126 9/125, 9/126	MO	17/112
FMP	17/109	HLXD	17/97	KCC	9/108	MRS	9/7
FP	17/106	HMC HMD	17/42 17/81	KT	9/103, 9/108	MS	17/54, 17/55, 17/109
FXD	9/112, 17/66, 17/91, 17/97	HMG HMM HMS	17/32, 17/33 17/41 17/40	L LCE	9/87, 9/88	MT MTA MTC	9/96 17/100 17/100
G GF01	17/65	HMXD	17/81	LEB LED	9/84 9/84	MTG MTR MTZ	9/97 2/81 17/100
GSGK	18/12, 18/15	HN2 HN6	18/11, 18/22 18/11, 18/22	LEF LENO	9/84 9/81	MXD	17/80, 17/81,
GSR H	18/11	HNB HNC	9/106, 9/112 17/42	LBR LBT	18/15, 18/18 18/18	N	17/91, 17/97
HA1	17/111 18/12, 18/23	HNF2	17/84 18/5	LD1 LD6	17/63, 17/102 17/70, 17/73, 17/74	N0 N1	17/71, 17/75, 17/82, 17/85 17/85, 17/88
HA2 HA3	9/103, 18/12, 18/23 18/12, 18/23	HNF4	18/5, 18/6, 18/8 to 18/10, 18/14 18/7	LDK	17/18, 17/19	N2 ND6	17/66 17/83, 17/84
HB	9/106, 9/112, 17/9, 17/54, 17/55, 17/108	HNF6	18/7, 18/11 17/35, 17/36	LFG LFK LFS	17/21, 17/22 17/21 17/40	NDK NFG	17/18, 17/19 17/21, 17/22
HCL	18/13	HNM HNS	17/41 17/40	LGG	17/13	NFK	17/21
HDC HDK HDP	17/42 17/18, 17/19 17/41	HNXD	17/84	LJG LJS	17/25, 17/26 17/40	NGS NGS	17/13 17/56, 17/57
HDR HED	17/40 17/64	HP6	18/11, 18/23 17/42	LLK LLR	17/28, 17/29 17/40	NJG NJJ	17/25, 17/26 17/25
HF2	18/3 to 18/4	HPD HPG	17/87 17/38	LMA	17/37, 17/51	NLK	17/28, 17/29
HF3	18/3 to 18/4, 18/6, 18/8 to 18/10 18/7, 18/15, 18/18	HPL HPS	17/54, 17/55, 17/108 17/40	LMD LMG LMS	17/77, 17/78 17/32, 17/33 17/40	NMG NNG	17/32, 17/33 17/35, 17/36
HFB	9/106, 9/112	HPX	17/37, 17/87	LMXD	17/77, 17/91, 17/97	NPG	17/38
HFC HFD	9/106, 9/112 17/42 17/67	HQJ	17/11	LN1	17/63, 17/102	NPX	17/37
HFK	17/21	HR2	9/106, 9/112, 18/11, 18/22	LNG	17/35, 17/36	NXD	17/83, 17/97
HFG HFM HFS	17/21, 17/22 17/41 17/40	HR6	9/106, 9/112, 18/11, 18/22	LNS	17/38 17/38	O OFCK	18/25
HFXD	17/97	HRD	17/89	LPS LPX	17/36 17/40 17/37	ОН	17/110
HG	7/13, 18/12, 18/23	HRXD	17/89	LXD	17/73, 17/91, 17/97	P P30EM	10/175
HHED	17/64	HSBE HSK6	17/109 18/11, 18/23	LZX	19/16	PC	17/48, 17/49, 17/113
HHFD HHJD HHLD	17/67 17/70 17/74	нт	18/11, 18/22	M MB	17/37, 17/51, 17/87 to	PD	17/87
HJC HJD	17/42 17/70	IO	17/106		17/89, 17/85, 17/86, 17/106	PL PRD	17/113 17/88
HJG HJM	17/70 17/25, 17/26 17/41	IPB	17/50, 17/51	MCS	18/25, 18/26	PXD	17/87, 17/97
HJS	17/40	J J6N	17/70	MD	17/80, 17/81	Q	
HJXD	17/97	JD	17/69, 17/70, 17/73,	MFC MFH MFK	17/46, 17/47, 17/111 17/46, 17/47, 17/111 17/46, 17/47, 17/111	QJ	17/11, 17/97, 17/108

Index

Catalog Number Index

Class/Type	Page	Class/Type	Page	Class/Type	Page	Class/Type	Page
RD RD	17/89	TC1	17/10, 17/11, 17/13, 17/52, 17/53, 17/63, 17/66, 17/69, 17/71,				
RHF	17/44, 17/45, 17/110		17/73, 17/101, 17/103,				
RHO	17/110, 18/26	TC2	17/106 17/53, 17/69, 17/71,				
RHS RHV	17/44, 17/45 17/44, 17/45, 17/110		17/73, 17/80, 17/82, 17/83, 17/103				
RS	17/113	TC3	17/53, 17/80, 17/82, 17/83, 17/103				
RTL	17/50, 17/51	TC5	17/37, 17/53, 17/87 to 17/89, 17/103				
RXD	17/89, 17/97	TCE	17/113				
S		TCF	17/113				
S01-S18	17/65, 17/68, 17/72,	TCH TCJ	17/106 17/113				
	17/76, 17/79, 17/86, 17/90	TCL	17/113				
	17790	TCM	17/113				
SADU	17/72, 17/76, 17/79,	TCN	17/113				
0.1.1	17/86, 17/90, 17/100	TFAK	18/11				
SA1	17/63, 17/102	THE	17/57				
SCJD SCLD	17/71 17/75	TNK	17/52, 17/53, 17/101				
SCMD SCND	17/82 17/85	TS3	17/100				
SEAF	17/48	TSC	17/54, 17/55				
SEAL SEAM	17/49 17/49	TSL TSS	17/50, 17/51 17/50, 17/51, 17/108				
SHJD	17/71	TW1	17/52, 17/53				
SHLD	17/75	U					
SHMD SHND	17/82 17/85	U01-U16	17/65, 17/68, 17/72, 17/76, 17/79, 17/86, 17/90				
SJD	17/71	UVR	17/23, 17/30, 17/39,				
SLD	17/75	OVIT	17/59				
SMB	17/106	V					
SMD	17/82	VBF	18/21				
SMF	9/5, 9/98, 9/122	VBH VBL	18/21, 18/22 18/22				
SND	17/85	VBN VBW	18/21 18/22				
SRT	17/50, 17/51	VH9	17/110				
SSH	18/13	W					
SSRK	18/26	W01-W16	17/68				
STR	17/23, 17/30, 17/39, 17/59	W4	18/11				
т		W60	17/70, 17/74				
TA1	17/10, 17/11, 17/52,	W63	17/78, 17/80, 17/82,				
1/1	17/10, 17/11, 17/52, 17/53, 17/63, 17/66,		17/83				
	17/69, 17/71, 17/73, 17/101 to 17/103,	WB	17/10, 17/11, 17/54,				
17/106	17/50 17/00 17/71		17/55				
TA2	17/53, 17/69, 17/71, 17/73, 17/77, 17/80,						
	17/13, 17/77, 17/80,						
TA3	17/52, 17/53, 17/77,						
	17/80, 17/82, 17/83, 17/102						
TA4	17/37, 17/87, 17/103						
TA5	17/37, 17/53, 17/87,						
TAO	17/88, 17/102						
TA6	17/52, 17/53, 17/87 to 17/89, 17/102, 17/103						
	,						





Contents	Pages
Section Overview	1/2 - 1/3
Motor Starter Protectors	
3RV20 MSP, Class 10/20	
Circuit Breakers	
3RV17 Circuit Breaker UL 489	
Accessories	
Auxiliary Switches	
Auxiliary Releases	
Busbars	
Mounting Accessories	
Enclosures & Front Plates	
3RV29 Infeed System	
General Data for Motor Starter Protectors	
Manual Motor Starter Ratings	1/18
Group Installation Ratings	
Combination Motor Controller Ratings	
3RV27 and 3RV28 Circuit Breaker Ratings	
Export Application Ratings	
Rules for Mounting	
Overview of MSP Functions & Applications	
Application as a Combination Motor Controller	
Application in DC Switching	1/31
Design	
Characteristics	
Circuit Diagrams	
Dimensions	. 1/33 - 1/34
General Data for Accessories	
Mountable Accessories Overview	1/35 - 1/36
Circuit Diagrams	
Dimensions	
Busbar Accessories	
Overview	1/39
Dimensions	. 1/40 - 1/41
Operating Mechanisms	4.440
Overview	
Circuit Diagrams	
Enclosures & Front Plates	. 1/45 - 1/44
Overview	1/45
Dimensions	
Spring Terminal Infeed System	
Design	
Technical Data	
Dimensions	1/48

SIRIUS 3RV motor starter protectors up to 100 A



Size S00, S0



For motor protection CLASS 10

Selection and ordering data

Rated Current	Page
up to 16 A	1/4
the state of the s	1/4
	1/5
up to 100 A	1/5
	up to 16 A up to 40 A up to 65 A



For motor protection CLASS 20

Selection and ordering data

Size	Rated Current	Page
S2	up to 65 A	1/5
S3	up to 100 A	1/5

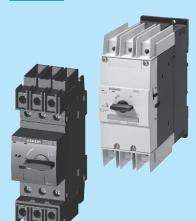


General data for SIRIUS motor starter protectors

	Page
Technical data	1/18
Overview	1/28
Characteristics	1/32
Circuit diagrams	1/32
Dimension drawings	1/33

Ciruit Breakers 3RV17, 3RV27, 3RV28





Page Selection and ordering data 1/6

Dimension drawings 1/34

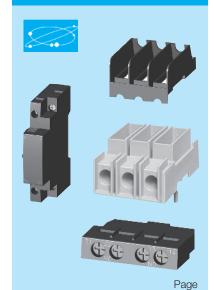
SIRIUS 3RV29 infeed system



Page Selection and ordering data 1/16-1/17

Technical data 1/47 Overview 1/14-1/15 Dimension drawings 1/48

3RV MSP auxiliaries and accessories

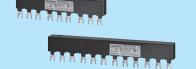


Selection and ordering data 1/7-1/8

Technical data	1/27
Overview	1/35
Circuit diagrams	1/37
Dimension drawings	1/38

3RV busbar and accessories





Page Selection and ordering data 1/8

Overview 1/39
Technical data 1/40

Accessories for motor starter protectors with Spring-Type terminals





Page Selection and ordering data 1/7

Technical data 1/28

Mounting Accessories





Selection and 1/9 -1/12 ordering data

Overview 1/36 Technical data 1/38

Page

Rotary operating mechanisms





Page
Selection and ordering data 1/13

Technical data 1/28
Overview 1/42
Circuit diagrams 1/43
Dimension drawings 1/43

Enclosures and front plates



Page **Selection and ordering data** 1/13

Overview 1/45 Dimension drawings 1/46

3RV Motor Starter Protectors

For Motor Protection

3RV20 Class 10 up to 40A



Description

The 3RV20x MSP's are UL approved as Self Protected Combination Motor Controllers which are also called Type E. In this application, all the required functions for a motor branch are provided in one device: disconnect, short circuit protection, motor control and overload protection. A type E terminal adaptor is required. The 3RV20x MSP's are also approved for use as follows:

- Manual Motor Controller: Motor starter, motor disconnect, control and overload protection.
- Group Installation: Motor starter only, motor disconnect, control and overload protection.
- Tap conductor Protection in Group Installation acc. NEC: Motor starter only; motor disconnect, control and overload protection.

When the 3RV20x is used with one of the 3 above mentioned approvals, the 3RV20x can be installed downstream of one circuit breaker or fuse set.

For more detailed application information and rules how to apply, size and rate the 3RV20x in control panels in general, in group installations or in accordance to international IEC standards visit our website: www.usa.siemens.com/controlpaneldesign

Ordering Information

- ON/OFF rotary handle with lockout and visible trip indication.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 13 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Terminal versions: screw, spring, ring lug.
- Auxiliaries and Accessories see pages 1/7–1/17.
- General Information see pages 1/29–1/32.
- Technical Data see pages 1/18–1/28.
- Dimensions see page 1/33.

Note: Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.

	FLA	Single-F HP Ratii		Three-F HP Rat				Instant- aneous short circuit	UL short- circuit breaking capacity	Size S00 ^{2) 4)}	Size S0 ^{2) 4)}
Illustration	Adjustment Range [A]	115V	230V	200V	230V	460V	575V	release [A]	@ 480V [kA]	Order Number	Order Number
	0.11-0.16	I —	I —	1—	—	l —	—	2.1	65	3RV2011-0AA • •	_
	0.14-0.2	—	—	—	—	—	—	2.6	65	3RV2011-0BA●●	_
	0.18-0.25	—	—	—	_	—	—	3.3	65	3RV2011-0CA • •	_
	0.22-0.32	_	_	<u> </u> —	_	<u> </u>	l —	4.2	65	3RV2011-0DA●●	_
	0.28-0.4	—	—	—	—	—	—	5.2	65	3RV2011-0EA●●	_
1. 1. 16	0.35-0.5	—	—	—	l —	—	—	6.5	65	3RV2011-0FA • •	_
4 8 20	0.45-0.63	l —	-	—	_	l —	—	8.2	65	3RV2011-0GA●●	3RV2021-0GA●●
	0.55-0.8	_	_	—	_	—	—	10	65	3RV2011-0HA ••	3RV2021-0HA●●
The second secon	0.7-1	_	_	 -	_	_	1/2	13	65	3RV2011-0JA • •	3RV2021-0JA●●
C	0.9-1.25	l —	-	—	_	1/2	1/2	16	65	3RV2011-0KA • •	3RV2021-0KA●●
" and and	1.1-1.6	l —	1/10	l —	—	3/4	3/4	21	65	3RV2011-1AA • •	3RV2021-1AA●●
	1.4-2	l —	1/8	—	—	3/4	1	26	65	3RV2011-1BA • •	3RV2021-1BA●●
9 654	1.8-2.5	l —	1/6	1/2	1/2	1	1 ½	33	65	3RV2011-1CA • •	3RV2021-1CA ••
	2.2-3.2	1/10	1/4	1/2	3/4	1 ½	2	42	65	3RV2011-1DA • •	3RV2021-1DA ••
	2.8-4	1/8	1/3	3/4	3/4	2	3	52	65	3RV2011-1EA • •	3RV2021-1EA●●
	3.5-5	1/6	1/2	1	1	3	3	65	65	3RV2011-1FA ••	3RV2021-1FA●●
	4.5-6.3	1/4	1/2	1	1 ½	3	5	82	65	3RV2011-1GA ••	3RV2021-1GA • •
	5.5-8	1/3	1	2	2	5	5	104	65	3RV2011-1HA ••	3RV2021-1HA●●
	7-10	1/2	1 ½	2	3	5	7 ½	130	65	3RV2011-1JA • •	3RV2021-1JA●●
	9-12.5	1/2	2	3	3	7 ½	10	163	65	3RV2011-1KA • •	3RV2021-1KA • •
	11-16	1	2	3	5	10	—	208	65	3RV2011-4AA	3RV2021-4AA●●
	14-20	1 ½	3	5	5	10	—	260	65	_	3RV2021-4BA●●
	17-22	1 ½	3	5	7 ½	15	l —	286	65	_	3RV2021-4CA • •
	20-25	2	3	5	7 ½	15	l —	325	65	_	3RV2021-4DA ••
	23-28	2	5	7 1/2	10	20	<u> </u>	364	50	_	3RV2021-4NA • •
	27-32	2	5	7 ½	10	20	l —	400	50	_	3RV2021-4EA●●
	30-36 ³⁾	3	5	10	10	25	l —	432	12	_	3RV2021-4PA●●
	34-40 ³⁾	3	7 ½	10	10	30	<u> </u>	480	12	_	3RV2021-4FA●●

Screw terminals, no auxiliary: ● = 10
Screw Terminals, with 1NO/1NC Aux: ● = 15
Spring terminals, no auxiliary: ● = 20

Spring Terminals, with 1NO/1NC Aux: ●● = 25 Ring Lug Terminals, no Auxiliary: ●● = 40

¹⁾ Select motor starter protector by motor full load amps. Horse power ratings for reference only.

²⁾ The motor starter protectors rated up to 32 A can be used as manual motor controllers or as Type E combination motor controllers. For use as a Type E combination motor controller, a Type E terminal is required. See accessories page 1/10.

These products are NOT certified as Type E combination motor controllers. They can only be used as manual motor controllers.

 ³RV2 MSP's can only be used with Innovations contactors and accessories



Revised 04/20/15

3RV Motor Starter Protectors For Motor Protection

3RV10 Class 10 & 20 up to 100A

Description **Ordering Information**

The 3RV203 / 104 MSP's are UL approved as Self Protected Combination Motor Controllers which are also called Type E. In this application, all the required functions for a motor branch are provided in one device: disconnect, short circuit protection, motor control and overload protection. A type E terminal adaptor is required for all S2 frame 3RV2031 above 45A and all S2 frame 3RV2032 as well as for all S3 frame motor starter protectors.

The 3RV203 / 104 MSP's are also approved for use as follows:

- Manual Motor Controller: Motor starter, motor disconnect, control and overload protection.
- Group Installation: Motor starter only, motor disconnect, control and overload protection.
- Tap conductor Protection in Group Installation acc. NEC: Motor starter only; motor disconnect, control and overload protection.

When the 3RV203 /104 is used with one of the 3 above mentioned approvals, they can be installed downstream of one circuit breaker or fuse set.

For more detailed application information and rules how to apply, size and rate these MSP's in control panels in general, in group installations or in accordance to international IEC standards visit our website: www.usa.siemens.com/controlpaneldesign

- ON/OFF rotary handle with lockout and visible trip indication.
- Adjustment dial for setting to motor FLA.
- Class 10 overload trip characteristics.
- Short circuit trip at 13 times the maximum setting of the FLA adjustment dial.
- Short circuit current rating:
- Ambient compensated up to 140° F (applies to side by side mounting).
- Phase loss sensitivity.
- Test trip function.
- Auxiliaries and Accessories see pages 1/7–1/17.
- General Information see pages 1/29-1/32.
- Technical Data see pages 1/18-1/28.
- Dimensions see page 1/33.

Note: Select MSP by motor Full Load Amperes. Horsepower ratings are for reference only.

	FLA Adjustment				3 Phase Inst. HP Rating 1) Short- Circuit UL AIC		Trip Class 10	Trip Class 20			
Illustration	Range [A]	115V	240V	200V	230V	460V	575V	Release [A]	(480V) [kA] ⁶⁾	Order Number ⁴⁾	Order Number ⁴⁾
	3RV203 Fra	ame Siz	e S2]	
E. FLETZER	9.5 - 14	1.5	3	5	5	10	15	208	65	3RV2031-4SA10	3RV2031-4SB10
	12 - 17	1.5	3	5	7.5	15	15	260	65	3RV2031-4TA10	3RV2031-4TB10
电量量 /	14 - 20	1.5	3	7.5	7.5	15	20	260	65	3RV2031-4BA10	3RV2031-4BB10
- 0	18 - 25	2	5	7.5	10	20	25	325	65	3RV2031-4DA10	3RV2031-4DB10
3 2 3	22 - 32	3	5	10	10	25	30	416	65	3RV2031-4EA10	3RV2031-4EB10
	28 - 36	3	7.5	15	15	30	40	520	65	3RV2031-4PA10	3RV2031-4PB10
	32 - 40	3	7.5	15	15	30	40	585	65	3RV2031-4UA10	3RV2031-4UB10
	35 - 45	3	10	15	15	40	50	650	65	3RV2031-4VA10	3RV2031-4VB10
2	42 - 52	5	10	15	20	40	50	741	65	3RV2031-4WA10	3RV2031-4WB10
	49 - 59	5	15	20	25	50	60	845	30	3RV2031-4XA10	3RV2031-4XB10
000	54 - 65	5	15	20	25	50	60	845	30	3RV2031-4JA10	3RV2031-4JB10
C Service	3RV104 Fr	ame Siz	e S3								
C	28 - 40	3	7.5	15	15	30	40	520A	65	3RV1041-4FA10	3RV1042-4FB10
	36 - 50	5	10	15	20	40	50	650A	65	3RV1041-4HA10	3RV1042-4HB10
00	45 - 63	5	15	20	25	50	60	819A	65	3RV1041-4JA10	3RV1042-4JB10
10	57 - 75	7.5	15	25	25	60	75	975A	65	3RV1041-4KA10	3RV1042-4KB10
	70 - 90	10	20	30	30	75	100 3)	1170A	65	3RV1041-4LA10	3RV1042-4LB10
	80 - 100	10	25	40	40	75	100 3)	1235A	65	3RV1041-4MA10	3RV1042-4MB10

- 1) Select motor starter protector by motor full load amps. Horse power ratings for reference only.
- 2) Size S2 and S3 are listed as type E combination motor controllers. For required Type E terminals see page 1/10. 4) Pre-assembled motor starter protector and transverse auxiliary switch with 1NO + 1NC is available. Replace t do not require a type E terminal and fulfill the spacing requirements of UL508.
- 3) Shaded ratings apply for group installation only. These ratings do not apply as UL listed manual combination starters.
 - auxiliary switch with 1NO + 1NC is available. Replace the last digit of the order no. with a "5"
- 5) 3RV1 MSP's can only be used with 3RT1 contactors and accessories. 3RV2 MSP's can only be used with 3RT2 contactors and accessories.
- 6) For 100kA SCCR rated MSP's, change the part number from 3RV2031 to 3RV2032. (applies to S2 frame only through 65A)

Refer to pages 1/18 to 1/20 when using an MSP in a Manual Motor Starter or a Manual Self-Protected Combination Motor Controller.

3RV up to 70 A



A	
Thermal overload release (non-adignstant) Thermal intentity Ther	
Innovations Frame Size S00	eight
0.16	[]
0.2 0.2 — 65 10 2.6 3RV2711-0BD10 0.390 4.2 3RV2811-0BD10 0.00 0.00 0.25 0.25 — 65 10 3.3 3RV2711-0CD10 0.390 5.2 3RV2811-0CD10 0.00 0.00 6.5 3RV2811-0DD10 0.00 0.00 6.5 3RV2811-0DD10 0.00 0	
0.25 0.25 — 65 10 3.3 3RV2711-0CD10 0.390 5.2 3RV2811-0CD10 0.00 0.32 0.32 — 65 10 4.2 3RV2711-0DD10 0.390 6.5 3RV2811-0DD10 0.00 0.4 0.4 — 65 10 5.2 3RV2711-0DD10 0.390 8.2 3RV2811-0DD10 0.00 0.5 0.5 — 65 10 6.5 3RV2711-0DD10 0.390 10 3RV2811-0DD10 0.00 0.63 0.63 — 65 10 8.2 3RV2711-0DD10 0.390 13 3RV2811-0DD10 0.00 0.8 0.8 — 65 10 10 3RV2711-0DD10 0.390 16 3RV2811-0DD10 0.00 1 1 — 65 10 13 3RV2711-0DD10 0.450 21 3RV2811-0DD10 0.00 1.6 1.6 — 65 10 21 3RV2711-0DD10	.390
0.32 0.32 — 65 10 4.2 3RV2711-0DD10 0.390 6.5 3RV2811-0DD10 0. 0.4 0.4 — 65 10 5.2 3RV2711-0ED10 0.390 8.2 3RV2811-0ED10 0. 0.5 0.5 — 65 10 6.5 3RV2711-0FD10 0.390 10 3RV2811-0FD10 0. 0.63 0.63 — 65 10 8.2 3RV2711-0GD10 0.390 13 3RV2811-0FD10 0. 0.8 0.8 — 65 10 10 3RV2711-0HD10 0.390 16 3RV2811-0FD10 0. 1 1 — 65 10 13 3RV2711-0HD10 0.450 21 3RV2811-0DD10 0. 1.25 1.25 — 65 10 16 3RV2711-0KD10 0.450 26 3RV2811-1AD10 0. 1.6 1.6 — 65 10 21 3RV2711-1BD10 0.460 <td>.390</td>	.390
0.4	.390
0.5 0.5 — 65 10 6.5 3RV2711-0FD10 0.390 10 3RV2811-0FD10 0.00 0.63 0.63 — 65 10 8.2 3RV2711-0GD10 0.390 13 3RV2811-0GD10 0.00 0.8 0.8 — 65 10 10 3RV2711-0HD10 0.390 16 3RV2811-0HD10 0.00 1 1 — 65 10 13 3RV2711-0JD10 0.450 21 3RV2811-0JD10 0.00 1.25 1.25 — 65 10 16 3RV2711-0KD10 0.450 26 3RV2811-0KD10 0.00 1.6 1.6 — 65 10 21 3RV2711-1AD10 0.460 33 3RV2811-1AD10 0.00 2 2 — 65 10 26 3RV2711-1BD10 0.460 42 3RV2811-1CD10 0.00 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.00	.390
0.63 0.63 — 65 10 8.2 3RV2711-0GD10 0.390 13 3RV2811-0GD10 0.00 0.8 0.8 — 65 10 10 3RV2711-0HD10 0.390 16 3RV2811-0HD10 0.00 1 1 — 65 10 13 3RV2711-0JD10 0.450 21 3RV2811-0JD10 0.00 1.25 1.25 — 65 10 16 3RV2711-0KD10 0.450 26 3RV2811-0KD10 0.00 1.6 1.6 — 65 10 21 3RV2711-1AD10 0.460 33 3RV2811-1AD10 0.00 2 2 — 65 10 26 3RV2711-1BD10 0.460 42 3RV2811-1BD10 0.00 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.00	.390
1 1 — 65 10 13 3RV2711-0JD10 0.450 21 3RV2811-0JD10 0.450 1.25 1.25 — 65 10 16 3RV2711-0KD10 0.450 26 3RV2811-0KD10 0.450 1.6 1.6 — 65 10 21 3RV2711-1AD10 0.460 33 3RV2811-1AD10 0.460 2 2 — 65 10 26 3RV2711-1BD10 0.460 42 3RV2811-1BD10 0.460 2.5 2.5 — 65 10 33 3RV2711-1CD10 0.460 52 3RV2811-1CD10 0.460 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.460	.400
1.25 1.25 — 65 10 16 3RV2711-0KD10 0.450 26 3RV2811-0KD10 0. 1.6 1.6 — 65 10 21 3RV2711-1AD10 0.460 33 3RV2811-1AD10 0. 2 2 — 65 10 26 3RV2711-1BD10 0.460 42 3RV2811-1BD10 0. 2.5 2.5 — 65 10 33 3RV2711-1CD10 0.460 52 3RV2811-1CD10 0. 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.	.450
1.6 1.6 — 65 10 21 3RV2711-1AD10 0.460 33 3RV2811-1AD10 0. 2 2 — 65 10 26 3RV2711-1BD10 0.460 42 3RV2811-1BD10 0. 2.5 2.5 — 65 10 33 3RV2711-1CD10 0.460 52 3RV2811-1CD10 0. 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.	.450
2 2 — 65 10 26 3RV2711-1BD10 0.460 42 3RV2811-1BD10 0. 2.5 2.5 — 65 10 33 3RV2711-1CD10 0.460 52 3RV2811-1CD10 0. 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.	.460
2.5 2.5 — 65 10 33 3RV2711-1CD10 0.460 52 3RV2811-1CD10 0.460 3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.460	.460
3.2 3.2 — 65 10 42 3RV2711-1DD10 0.460 65 3RV2811-1DD10 0.	.460
	.460
4 4 — 65 10 52 3RV2711-1ED10 0.450 82 3RV2811-1ED10 0.	.460
	.460
	.460
	.460
	.460
	.460
	.470
Innovations Frame Size S0 ⁴⁾	
	0.516
	0.528
Classic Frame Size S3 ⁵⁾	
10 10 65 — 20 150 3RV1742-5AD10 0.460 — —	_
15 15 65 — 20 225 3RV1742-5BD10 0.460 — —	_
20 20 65 — 20 260 3RV1742-5CD10 0.460 — —	_
25 25 65 — 20 325 3RV1742-5DD10 0.460 — —	_
30 30 65 — 20 390 3RV1742-5ED10 0.460 — —	
35 35 — 65 20 455 3RV1742-5FD10 0.460 — —	_
40 40 — 65 20 520 3RV1742-5GD10 0.460 — —	_
45 45 — 65 20 585 3RV1742-5HD10 0.460 — —	_
50 50 — 65 20 650 3RV1742-5JD10 0.460 — —	
60 60 — 65 20 780 3RV1742-5LD10 0.460 — —	_
70 70 — 65 10 910 3RV1742-5QD10 0.460 — —	_

Refer to page 1/21 when using as upstream protection of a Manual Motor Controller or a Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations.

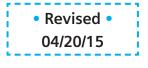
^{1) 100} % rated value acc. to UL 489 and IEC 60947-2 (100 % rated breaker).

Circuit breakers for system protection of motor and non-motor loads. Requires use of separate overload protection for motor applications.

Circuit breakers for system and transformer protection according to UL/CSA. Specially designed for transformers with high inrush current.

⁴⁾ Transverse and lateral auxiliary switches can be ordered separately (see "Mountable accessories").

Transverse auxiliary switches must not be mounted. Lateral auxiliary switches can be ordered separately (see "Mountable accessories").



3RV Motor Starter ProtectorsAccessories

Auxiliaries and Accessories

Selection and ordering data

Selection and	d ordering dat	a							
					W		Classic	I	nnovations
					d t	Fits 3RV1	Screw Connection	Fits 3RV2 Frame	Screw Connection
		Туре		Version	h	Size	Order No.	Size	Order No.
Auxiliary swi	tches ³⁾				mm		Classic	I	nnovations
3RV1901-1E	3RV2901-1E	Transverse auxi switches	liary	1 CO 1 NO + 1 NC 2 NO		S3	3RV1901-1D 1) 3RV1901-1E 1) 3RV1901-1F	S00, S0, S2	3RV2901-1D 1), 2) 3RV2901-1E 1) 3RV2901-1F
3RV1901-1G	3RV2901-1G 3RV2901-1A	Solid-state com transverse auxil switches for use and in electronic low operating curr	iary in dusty at circuits with	1 CO mosphere		S3	3RV1901-1G	S00, S0, S2	3RV2901-1G
<u>o</u>	EL .	Covering caps f auxiliary switch		of 10)		S3	3RV1901-0H	S00, S0, S2	3RV2901-0H
La Company		Lateral auxiliary switches (side mount) Width = 9 mm		1 NO + 1 NC 2 NO 2 NC 2 NO + 2 NC	9 9 9 18	S3	1) 3RV1901-1A 1) 3RV1901-1B 1) 3RV1901-1C 3RV1901-1J	S00, S0, S2	1), 2) 3RV2901-1A 1) 3RV2901-1B 1) 3RV2901-1C 3RV2901-1J
Signaling sw	itch ⁴⁾						Classic	- 1	nnovations
3RV1921-1M	3RV2921-1M	Signaling switch (side mount) Individual tripped short-circuit signa	and	1 NO + 1 NC each	18	S3	3RV1921-1M	S00, S0, S2	1), 2) 3RV2921-1M
•		Width = 18 mm	Vidth = 18 mm						
Auxiliary rele	ases 5)						Classic	I	nnovations
3RV1902-1AB4	3RV2902-1AB4	Undervoltage releases (side mount)	DC 24 V			S3	3RV1902-1AB4	S00, S0, S2	3RV2902-1AB4
		Width = 18 mm	AC 50 Hz 24 V 110 V — 230 V 400 V 415 V 500 V	AC 60 Hz		S3	3RV1902-1AB0 3RV1902-1AF0 3RV1902-1AM1 3RV1902-1AP0 3RV1902-1AV0 3RV1902-1AV1 3RV1902-1AS0	S00, S0, S2	3RV2902-1AB0 3RV2902-1AF0 1), 2) 3RV2902-1AM1 1), 2) 3RV2902-1AP0 3RV2902-1AV0 3RV2902-1AV1 3RV2902-1AS0
		Undervoltage releases with leading	230 V 400 V 415 V	240 V 440 V 480 V				S00, S0, S2	1) 3RV2922-1CP0 1) 3RV2922-1CV0 1), 2) 3RV2922-1CV1
		auxiliary contacts 2 NO (side mount) Width = 18 mm	230 V 400 V 415 V	240 V 440 V 480 V		S3	3RV1922-1CP0 3RV1922-1CV0 3RV1922-1CV1	S00, S0, S2	1) 3RV2922-1CP0 1) 3RV2922-1CV0 1), 2) 3RV2922-1CV1
		Shunt releases (side mount) Width = 18 mm	AC 50/60 H 100% ON ⁶ 20-24 V 90-110 V 210-240 V 350-415 V 500 V			\$3	3RV1902-1DB0 3RV1902-1DF0 3RV1902-1DP0 3RV1902-1DV0 3RV1902-1DS0	S00, S0, S2	1), 2) 3RV2902-1DB0 1), 2) 3RV2902-1DF0 1) 3RV2902-1DP0 3RV2902-1DV0 3RV2902-1DS0

- This product is also available with spring terminals. The order no. must be changed in the 8th position to a "2":e.g. 3RV1901-2E or 3RV2901-2E
- 2) This product is also available with ring lug terminals. The order no. must be changed in the 8th position to a "4": e.g. 3RV2901-4E
- 3) Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch 2 NO + 2 NC is used without transverse auxiliary switch.
- One signaling switch can be mounted at the left of the motor starter protector. This accessory cannot be used on the 3RV27 and 3RV28 circuit breakers.
- 5) One auxiliary release can be mounted at the right of each MSP. motor starter protector.
- 6) The response voltage at the lower limit of the voltage range at 0.85 (Tu=60°C) is valid for 100% (infinite)
- 7) The response voltage at the lower limit of the voltage range at 0.9 (Tu=60°C) applies for a duty cycle of 5 seconds at AC 50/60 Hz and DC.

3RV Motor Starter Protectors

Accessories

Revised 04/20/15



Accessories for Busbar

Selection and ord	lering d	lata								
	Modu- lar spac- ing		r of motor ors that ca ted Incl. lateral auxil- iary switch		Rated current I _n at 690 V	For motor starter protectors Size		Order No.	Order quantity	Weight approx.
Thusa whose bush	mm	owa fai	Classia	and he	A					kg
Three-phase bush	For fee	ding sevents, moun sulated, was 2 3 4	eral motor	starter p	rotectors n standar	swith screw and mounting soo, So ¹⁾²⁾ Soo, So ¹⁾²⁾ Soo, So ¹⁾²⁾ Soo, So ¹⁾²⁾		3RV19 15-1AB 3RV19 15-1BB 3RV19 15-1CB	1 unit 1 unit 1 unit	0.044 0.071 0.099
3RV19 15-1BB	55		2 3 4 5		63	\$00, \$0 ¹)2) \$00, \$0 ¹)2)		3RV19 15-1DB 3RV19 15-2AB 3RV19 15-2BB 3RV19 15-2CB 3RV19 15-2DB	1 unit 1 unit 1 unit 1 unit 1 unit	0.124 0.048 0.079 0.111 0.140
3RV19 15-1CB	63			2 4	63	S00, S0 ¹⁾²⁾ S00, S0 ¹⁾²⁾		3RV19 15-3AB 3RV19 15-3CB	1 unit 1 unit	0.052 0.120
	55	2 3 4			108	S2 ³⁾ S2 ³⁾ S2 ³⁾		3RV19 35-1A 3RV19 35-1B 3RV19 35-1C	1 unit 1 unit 1 unit	0.150 0.214 0.295
3RV19 15-1DB	75		2 3 4	2 3 4	108	S2 S2 S2		3RV19 35-3A 3RV19 35-3B 3RV19 35-3C	1 unit 1 unit 1 unit	0.161 0.262 0.369
 Not suitable for 3RV function. The 3RV19 motor starter protect 	915-5DB	connectir size S0 t	ng piece is	s availab	le for cor	For motor starter protectors Size	3)	Not suitable for 3RV UL 489 circuit l Auxiliary trip units and lateral auxilia nation. Order No.		Weight approx.
				mm					·	kg
Connecting pieces	For con busbars protects	necting t s for mot	hree-phas	se 45		S00, S0	_	For Classic and Innovations 3RV19 15-5DB	1 unit	0.042
		ables, so	s-section, lid or stra For 3RV2 MSP AWG	nded	Tighten- ing torque Nm	For motor starter protector size		3RV1 Classic ¹⁾ Order No.	3RV2 Innovations ²⁾ Order No.	
Three-phase feed	ler term	ninals								
3RV29 25-5AB	Conne		m top 104 104		34 34	S00 S0		Ξ	3RV2925-5AB 3RV2925-5AB	
3RV2915-5B	Conne		m below 104	3)	Input: 4,	S00, S0		_	3RV2915-5B	

	_	104	3-4	S0	_
000	80	102/0	4.5-6	S2	_
Do not mix 3RV1 C Innovations MSP's	lassic Accessories	with 3RV2	2) Do not mix 3R Classic MSP's		ccessories with 3RV1

Three-phase feeder terminals for constructing "Type E Starters"

10...4

Connection from top

Connection from top

14...0

3RV2935-5A

Innovations

3RV2925-5EB 3RV2925-5EB 3RV2935-5E

3RV2935-5A

3RV2935-5E

3RV1935-5A

Classic

Output: 2 ... 2.5

4-6

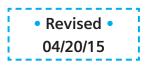
3-4

S2

S00

³⁾ This terminal is connected in place of a switch, please take the space requirement into account.





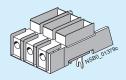
Mounting accessories

Overview

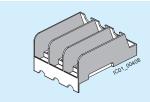
Accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508/UL 60947-4-1

The 3RV20 motor starter protectors with screw terminals are approved according to UL 508/UL 60947-4-1 as "Self-Protected Combination Motor Controllers (Type E)".

This requires increased clearance and creepage distances (1 inch and 2 inches respectively) at the input side of the device, which are achieved by mounting a terminal block or a phase barrier.



SIRIUS 3RV2928-1H terminal block



SIRIUS 3RV2938-1K phase barrier

Motor starter protectors/ circuit breakers	Size	Essential accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508/UL 60947-4-1
3RV201., 3RV202.	S00/S0	3RV2928-1H terminal block or 3RV2928-1K phase barrier
3RV2031-4B1., 3RV2031-4D.1., 3RV2031-4E1., 3RV2031-4P.1., 3RV2031-4S.1., 3RV2031-4U.1., 3RV2031-4U.1.,	\$2	
3RV2031-4J.1., 3RV2031-4K.1., 3RV2031-4R.1., 3RV2031-4W.1., 3RV2031-4X.1., 3RV2032	S2	3RV2938-1K phase barrier

-- No accessories needed

Special threephase infeed terminals are required for constructing "Type E Starters" with an insulated threephase busbar system (see page 1/8).

The 3RV29 infeed system also enables the assembly of "Type E Starters", see page 1/14 onwards.

Note:

According to CSA, these terminal blocks and the phase barriers can be omitted when the device is used as a "Self-Protected Combination Motor Controller (Type E)".

Link modules

Feeders can be easily assembled from single devices with the help of the link modules. The following table shows the different combination options for devices with screw or spring-type terminals.

3RV Motor Starter Protectors

Combination devices	3RV2 motor starter protec- tors/ circuit breakers Size	3RT2 contactors; 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors	Link modules Screw terminals	Spring-type terminals
Link modules	for connec	cting switching devers ¹⁾	ices to 3RV2 n	notor starter
3RT2 contactors with AC or	S00	S00	3RA1921- 1DA00	3RA2911- 2AA00
DC coil	S0	S00	_	
	S2	S2	3RA2931- 1AA00	
3RT2 contactors with	S0	S0	3RA2921- 1AA00	3RA2921- 2AA00
AC coil	S00	S0	-	
3RT2 contactors with	S0	S0	3RA2921- 1BA00	3RA2921- 2AA00
DC coil	S00	S0	-	
3RW30 soft starters	S00	S00	3RA2921- 1BA00	3RA2911- 2GA00
	S0	S00	-	
3RW30/ 3RW40	S0	S0	3RA2921- 1BA00	3RA2921- 2GA00
soft starters	S00	S0		
	S2 ²⁾	S2 ²⁾	3RA2931- 1AA00	
3RF34 solid- state contac- tors	S00/S0	S00	3RA2921- 1BA00	
	RV2 motor	connecting contact starter protectors		
3RT2 contactors with AC or	S00	S00	3RA2911- 2FA00	
DC coil	S0	S0	3RA2921- 2FA00	

- -- Version not possible
- The link modules cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV2.31-4K.1., 3RV2.31-4K.1., 3RV2.32-4K.1., 3RV2.32-4R.1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.
- 2) To assemble the feeder between a motor starter protector and a soft starter in size S2, the 3RA2932-1AC00 standard mounting rail adapter must be used.
- 3) The motor starter protector to contactor hybrid link modules cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers. They are only suitable for constructing direct-on-line starters.

Note:

- Link modules can be used in
 - Sizes S00 and S0: up to max. 32 A
- Size S2: up to max. 65 A
- Hybrid link modules can be used in
- Sizes S00 and S0: up to max. 32 A

3RV Motor Starter Protectors

Accessories

Mounting accessories

• Revised • 04/20/15



Selection and ordering data

Version Classic Innovations 3RV1/3RT1 3RV2/3RT2 Order Version Order No. Order No. Quantity

Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508 / UL 60947-4-1



3RV29 28-1H

3RV29 28-1K

Note:

UL 508 / UL 60947-4-1 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E".

The following terminal blocks or phase barriers must be used on 3RV motor starter protectors.

The terminal blocks or phase barriers cannot be used in combination with the 3RV19 .5 three-phase busbars.

For construction with three-phase busbars, see "Accessories for busbar



Actuating voltage of	Size 3RT	3RV motor starter	Classic 3RV1/3RT1	Innovations 3RV2/3RT2	Order
contactor	contactor	protector	Order No.	Order No.	Quantity

Screw Terminals

3RA29 21-1B

3RA29 31-1A

10 units

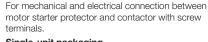
5 units

3RT1946-4GA07

Link modules for motor starter protector to contactor 1)

DC

AC/DC



S0

S2

Single-unit pa	ckaging				
AC/DC	S00	S00/S0	_	3RA19 21-1DA00	1 unit
AC	S0	S00/S0	_	3RA29 21-1AA00	1 unit
AC	S2	S2	3RA19 31-1AA00	3RA29 31-1AA00	1 unit
AC	S3	S3	3RA19 41-1AA00	_	1 unit
DC	S0	S00/S0	_	3RA29 21-1BA00	1 unit
DC	S2	S2	3RA19 31-1BA00	3RA29 31-1AA00	1 unit
DC	S3	S3	3RA19 41-1BA00	_	1 unit
Multi-unit pac	kaging				
AC/DC	S00	S00/S0	_	3RA19 21-1D	10 units
AC	S0	S00/S0	_	3RA29 21-1A	10 units



3RA29 21-1AA00



3RA29 11-2AA00

protector and contact	or with sprir	nection between motor starter ng-type terminals.	Spring-type Te	rminals	
Single-unit packagir	•				
AC/DC	S00	S00	_	3RA29 11-2AA00	1 unit
AC ²⁾	S0	SO	_	3RA29 21-2AA00	1 unit
DC	S0	S0	_	3RA29 21-2AA00	1 unit
Multi-unit packaging	9				
AC/DC	S00	S00	_	3RA29 11-2A	10 units
AC ²⁾	S0	S0	_	3RA29 21-2A	10 units
DC	S0	SO	_	3RA29 21-2A	10 units
Spacers					
For compensating hei	ght on AC o	contactors			
Single-unit packaging	S0	SO	_	3RA29 11-1CA00	1 unit
Multi-unit packaging	S0	SO	_	3RA29 11-1C	5 units

The link modules for motor starter protector to contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 motor starter protectors

Note

S00/S0

S2

Size S0 link modules can be used up to max. 32 A. Size S2 link modules can be used up to 65A max.

²⁾ A spacer for height compensation on AC contactors size S0 is optionally available



Revised 04/20/15

3RV Motor Starter Protectors

Accessories

Mounting accessories

Selection and ordering data

	Size		Order No.	PU	PS*	Weight
	3RW30, 3RW40 soft starters; 3RF34 solid-state contactors	3RV2 motor starter protectors		(UNIT, SET, M)		approx.
						kg
Link modules for n motor starter prote	notor starter protector to ector to solid-state contact	soft starter ^{1) 3)} and ctor				
10	Connection between moto starter / solid-state contact	or starter protector and soft ctor with screw terminals	Screw terminals			
Y L	Single-unit packaging					
	\$00 \$0 \$2 ³⁾	S00/S0 S00/S0 S2	3RA29 21-1BA00 3RA29 21-1BA00 3RA29 31-1AA00	1 1 1	1 unit 1 unit 1 unit	0.068 0.068 0.104
	Multi-unit packaging					
3RA29 21-1BA00	\$00 \$0 \$2 ³⁾	S00/S0 S00/S0 S2	3RA29 21-1B 3RA29 21-1B 3RA29 31-1A	1 1	0 units 0 units 5 units	0.068 0.068 0.104
	Connection between moto soft starter with spring-type		Spring-type Contemporary Contem			
ARIL	Single-unit packaging					
711	S00 S0	S00 S0	3RA29 11-2GA00 3RA29 21-2GA00	1 1	1 unit 1 unit	0.038 0.072
	Multi-unit packaging					
3RA29 21-2GA00	S00 S0	S00 S0	3RA29 11-2G 3RA29 21-2G		0 units 0 units	0.380 0.720
starter protector to so	motor starter protector to soft blid-state contactor cannot be 2. 21-4FA1., 3RV27 and 3RV2	used for the	Note: 50 link modules can be used S2 link modules can be used	, ·		
	Actuating voltage of contactor	Size 3RT2 3RV2 contactors motor starter protectors	Order No.	PU (UNIT, SET, M)	PS*	Weight approx.
Hybrid link module	es for motor starter prote	ctor to contactor ¹⁾				kg
Trybria filik filodule	For mechanical and elect					
		tector with screw terminals				



Single-unit packaging

S00

S00

SO

SO

S00

S00

SO

SO

AC/DC AC²⁾/DC



3RA29 21-2FA00

M	ulti-unit	packaging
Α	C/DC	
Α	C/DC C ²⁾ /DC	

Spacers ²⁾		
for compensating the hei	ght on AC o	contactors
Single-unit packaging	S0	S0
Multi-unit packaging	S0	S0

- 1) The hybrid link modules for motor starter protector to contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 motor starter protectors or reversing starters.
- 2) A spacer for height compensation on AC contactors size S0 is optionally available. See 3RA2911-1CA00
- 3) To assemble the starter between a motor starter protector and a soft starter in size S2, the 3RA2932-1AC00 standard mounting rail adapter must be used.

3RA29 11-2FA00

3RA29 21-2FA00

3RA29 11-2F 3RA29 21-2F

3RA29 11-1CA00

3RA29 11-1C

Hybrid link modules can be used up to max. 32 A.

0.029

0.056

0.290 0.560

0.001

0.001

1 unit

1 unit

10 units

10 units

1 unit

5 units

3RV Motor Starter Protectors

Accessories

Revised 04/20/15



Mounting accessories

Selection and ordering	data					
	Туре	Design	For SIRIUS MSP size	Order No.	Order Quantity	Weight approx. (kg)
Isolator module 1) 3RV2938-1A 3RV29 28-1A without padlock without padlock		Visible isolating distance for isolating individual motor starter protectors from the network,	S00, S0	3RV29 28-1A	1 unit	0.132
		lockable in isolating position.	\$2	3RV29 38-1A	1 unit	0.368
Auxiliary terminal, 3 po 3RT19 46-4F	le	For connection of auxiliary and control cables to the main conductor connections	S3	3RT19 46-4F	1 unit	0.10
Covers 3RV1 (size S3) with	-	A 1 122 1 1 1 1				
3RT19 46-4EA1	Terminal cover for box terminals	Additional touch guard to be fitted at the box terminals	S2	3RT29 36-4EA2	1 unit	0.014
		(2 units can be mounted per MSP)	S3	3RT19 46-4EA2	1 unit	0.019
3RV29 28-4AA00	Terminal cover for cable lug and bar connection	For maintaining the required voltage clearance and as protection against the equipment being touched if distant box terminals are used (2 units can be mounted per MSP)	S3	3RT19 46-4EA1	1 unit	0.03
3RV29 08-4AA10	Terminal cover for devices with ring lug	Main current level	S00, S0 ²⁾	3RV29 28-4AA00	1 unit	0.01
0000	terminal connection	For transverse auxiliary switches	S00, S0 ²⁾	3RV29 08-4AA10	1 unit	0.01
3RV29 08-0P	Scale cover	For covering the current setting scale. Packing unit: Bag with 10 scale covers.	S00, S0, S2 ³⁾ S3	3RV29 08-0P 3RV19 08-0P	10 units 10 units	
Fixing Material						
3RV29 28-0B	Push-in lugs For screwing the motor starter protector onto mounting plates.	Two units are required for each motor starter protector.	S00, S0	3RV29 28-0B	10 units	0.10
Tools for opening sprin						
3RA29 08-1A	Screwdriver For all SIRIUS devices with spring terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black partially insulated	S00, S0, S2	3RA29 08-1A	1 unit	0.045

- The isolator module for size S2 can be used only with 3RV2 motor starter protectors/circuit breakers up to max. 65 A. Similarly, it cannot be used with the transverse auxiliary switch or three-phase busbars.
- 2) Compatible with 3RV20 motor starter protectors.
- 3) Compatible with 3RV20, 3RV21, and 3RV24 motor starter protectors.



• Revised • 04/20/15

3RV Motor Starter ProtectorsAccessories

Rotary operating mechanisms

Selection and ordering data

Туре	Details	For SIRIUS MSP size	Order No.	Approx. Wt. (kg)
Туро	Botano	11101 0120	01401110.	W. (Rg)
and the second s				

Door-coupling rotary operating mechanisms for Classic and Innovations

3RV29 26-0B



The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door locking device prevents accidental opening of the control cabinet door in the ON postion of the motor starter protector. The OFF position can be locked with up to 3 padlocks.

Door-coupling rotary	Extension shaft 130 mm	S00, S0	3RV29 26-0B	0.111
operating mechanisms		S2, S3	3RV29 26-0B	0.1
(black)	Extension shaft 330 mm	S00, S0	3RV29 26-0K	0.324
		S2, S3	3RV29 26-0K	0.3
EMERGENCY STOP	Extension shaft 130 mm	S00, S0	3RV29 26-0C	0.110
door-coupling rotary operating mechanisms (red/yellow)		S2, S3	3RV29 26-0C	0.1
	Extension shaft 330 mm	S00, S0	3RV29 26-0L	0.316
(IOC/ yOllOW)		S2, S3	3RV29 26-0L	0.3

Door-coupling rotary operating mechanisms for arduous conditions

3RV29 26-2C



The door-coupling rotary operating mechanisms consist of a knob, a coupling driver, an extension shaft of 300 mm length (8 mm x 8 mm), a spacer and two metal brackets, into which the MSP is is inserted. The door-coupling rotary operating mechanisms are designed for degree of protection IP 65. The door locking device reliably prevents accidental opening of the control cabinet door in the ON position of the MSP. The OFF postion can be locked with up to 3 padlocks. Laterally mountable auxiliary releases and two-pole auxiliary switches can be used. The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60 947-2.

Door-coupling rotary operating mechanisms		S00, S0	3RV29 26-2B	1.2
		S2	3RV29 36-2B	1.6
(gray)		S3	3RV29 46-2B	1.7
EMERGNCY STOP door-coup	•	S00, S0	3RV29 26-2C	1.2
rotary operating mechanisms		S2	3RV29 36-2C	1.5
(red/yellow)		S3	3RV29 46-2C	1.7

Enclosures and front plates

	Туре	Details	For SIRIUS MSP size	Order No.	Approx. Wt. (kg)
Front Plates					
3RV19 23-4B + 3RV19 23-4G	Molded-plastic front plate with rotary operating mechanism, lockable. For actuation of 3RV motor starter protectors in any enclosure	For actuation of 3RV MSP's in any enclosure, degree of protection IP 55 (front plate)	S00, S0 S2, S3	3RV19 23-4B	0.08
	Molded-plastic front plate with EMERGENCY STOP door-coupling rotary operating mechanisms (red/yellow)	EMERGENCY-STOP operation of 3RV MSP's in any enclosure, degree of protection IP 55	S00, S0 S2, S3	3RV19 23-4E	0.08
	Holders for front plates	Holder is mounted on front plate, MSP size S00 or S0 with or without accessories is snapped in	S00, S0	3RV19 23-4G	0.19
Enclosures for wa	all mounting ²⁾				
3RV19 23-1CA00	Molded-plastic enclosure for wall mounting with rotary operating mechanism,	Degree of protection IP 55, with N and PE terminals, lockable in 0 position overall width:			
	lockable, with metric cable gland	54 mm (for switch + lateral auxiliary switch)	S00, S0	3RV19 23-1CA00	0.26
		72 mm (for switch + lateral auxiliary switch + auxiliary release)	S00, S0	3RV19 23-1DA00	0.30
3RV19 23-1DA01	Cast aluminum surface-mount enclosure with rotary operating mechanism,	Degree of protection IP 65, with PE terminals, 1) lockable in 0 position overall width:			
	lockable, with metric cable gland	72 mm (for MSP + lateral auxiliary switch + auxiliary release)	S00, S0	3RV19 23-1DA01	1.02
	Cast aluminum surface-mount enclosure with EMERGENCY-OFF rotary	Degree of protection IP 65, with PE terminals, 1) lockable in 0 position overall width:			
	operating mechanism, red/yellow, lockable, with metric cable gland	72 mm (for MSP + lateral auxiliary switch + auxiliary release)	S00, S0	3RV19 23-1GA01	1.01

¹⁾ If required, an additional N terminal can be mounted (e.g. 8WA10 11-1BG11).

2) For S2 versions, see 3RV1933-1DA00 (black) or 3RV1933-1GA00 (red/yellow)

3RV Motor Starter Protectors

Accessories

3RV29 infeed system

• Revised • 04/20/15



Overview

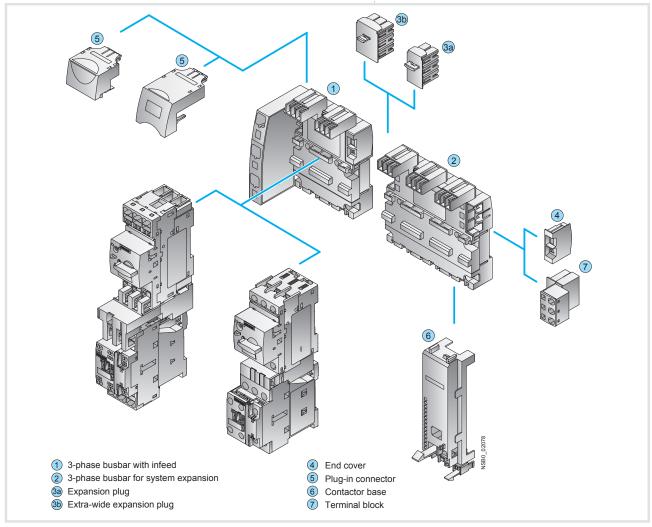
The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete motor starters with a screw or spring-type connection in sizes S00 and S0 (exception: this system cannot be used for the 3RV21, 3RV27 and 3RV28 motor starter protectors/circuit breakers).

The 3RV29 infeed system is approved in accordance with IEC to 500V. It is also UL approved and authorized for "Self-Protected Combination Motor Controller" (Type E starter) as well as for Type F starter (Type E starter + contactor). The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed). This infeed with spring-type terminals is mounted on the right or left depending on the version and can be supplied with a maximum conductor cross-section of 4 AWG (with end sleeve). A basic module has two sockets onto each of which a motor starter protector can be snapped.

Expansion modules are available for extending the system (three-phase busbars for system expansion). The individual modules are connected through an expansion plug.

The electrical connection between the three-phase busbars and the motor starter protectors is implemented through plug-in connectors. The complete system can be mounted on a TH 35 standard mounting rail to EN 60715 and can be expanded as required up to a maximum current carrying capacity of 63 A.

The system is mounted extremely quickly and easily thanks to the simple plug-in technique. Thanks to the lateral infeed, the system also saves space in the control cabinet. The additional overall height required for the infeed unit is only 30 mm. The alternative infeed possibilities on each side offer a high degree of flexibility for configuring the control cabinet: Infeed on left-hand or right-hand side as well as infeed on one side and outfeed on the other side to supply further loads are all possible. A terminal block with spring-type connections in combination with a standard mounting rail enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components such as 5SY miniature circuit breakers or SIRIUS relay components.



3RV29 infeed system



3RV29 infeed system

1) Three-phase busbars with infeed

A three-phase busbar with infeed unit is required for connecting the energy supply. This module comprises one infeed module and 2 sockets which each accept one motor starter protector. A choice of two versions with infeed on the left or right is available. The infeed is connected using spring-type terminals. The spring-type terminals permit conductor cross-sections of up to 25 mm² with end sleeves. An end cover is supplied with each module

(2) Three-phase busbars for system expansion

The three-phase busbars for system expansion allow the system to be expanded. There is a choice of modules with 2 or 3 sockets. The system can be expanded as required up to a maximum current carrying capacity of 63 A. An expansion plug is supplied with each module.

(3)a Expansion plug

The expansion plug is used for electrical connection of adjacent three-phase busbars. The current carrying capacity of this plug equals 63 A. One expansion plug is supplied with each three-phase busbar for system expansion. Additional expansion plugs are therefore only required as spare parts.

(3)b Extra-wide expansion plug

The wide expansion plug makes the electrical connection between two three-phase busbars, thus performing the same function as the 3RV29 17-5BA00 expansion plug; the electrical characteristics (e.g. a current carrying capacity of 63 A) are identical.

The 3RV29 17-5E expansion plug is 10 mm wider than the 3RV29 17-5BA00 expansion plug, hence in the plugged state there is a distance of 10 mm between the connected three-phase busbars. This distance can be used to lay the auxiliary current and control current wiring ("wiring duct"). The motor starter protector and contactor can be wired from underneath, which means that the complete cable duct above the system can be omitted.

(4) End cover

The end cover is used to cover the three-phase busbar at the open end of the system. This cover is therefore only required once for each system. An end cover is supplied with each three-phase busbar system with infeed. Further end covers are therefore only required as spare parts.

(5) Plug-in connector

The plug-in connector is used for the electrical connection between the three-phase busbar and the 3RV2 motor starter protector. These plug-in connectors are available in versions for screw or spring-type terminals.

(6) Contactor base

Motor starters can be assembled in the system using the contactor base. The contactor bases are suitable for contactors sizes S00 and S0 with spring-type and screw terminals and are simply snapped onto the three-phase busbars. Direct-on-line starters and reversing starters are possible. One contactor base is required for direct-on-line starters and two are required for reversing starters.

3RV Motor Starter Protectors

To assemble motor starters for reversing starters, the contactor bases can be arranged alongside each other (90 mm overall width). In this case the mechanical interlocking of the contactors is possible. The contactor bases are also suitable for soft starters size S00 and S0 with screw connection.

The infeed system is designed for mounting on a 35 mm standard mounting rail with 7.5 mm overall depth. This standard mounting rail gives the contactor base a stable mounting surface to sit on. If standard mounting rails with a depth of 15 mm are used, the spacer connected to the bottom of the contactor base must be knocked out and plugged into the mating piece that is also on the underside. Then the contactor base also has a stable mounting surface. When standard mounting rails with a depth of 7.5 mm are used, the spacer has no function and can be removed.

The link modules are used for direct start motor starters, in which case the use of a contactor base is not absolutely necessary. Motor starter protector and contactor assemblies can then be directly snapped onto the sockets of the three-phase busbars. For starters of size S00 and S0, the corresponding 3RA19 21-1...., 3RA29 11-2...., 3RA29 21-1.... or 3RA29 21-2.... link modules should generally be used.

(7) Terminal block

The 3RV29 17-5D terminal block enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components. Using the terminal block the 3 phases can be fed out of the system; which means that single-phase loads can also be integrated in the system. The terminal block is plugged into the slot of the expansion plug and thus enables outfeeding from the middle or end of the infeed system. The terminal block can be rotated through 180° and be locked to the support modules of the infeed system. The 3RV19 17-7B 45 mm standard mounting rail for screwing onto the support plate is available in addition in order to be able to plug the single-phase, 2-phase and 3-phase components onto the infeed system.

3RV Motor Starter Protectors

Accessories

3RV29 infeed system



Selection and ordering data

	Туре	Version	For 3RV20, 3RV23, 3RV24 motor starter protectors	Order No.	Standard Pack Quantity	Weigh approx
			Size			kg
Three-phase busbars	s with infeed					
	3-phase busbars with infeed incl. end cover 3RV29 17-6A	For 2 motor starter protectors with screw connection or spring-type terminals				
T		 With infeed on the left 	S00, S0	3RV29 17-1A	1 unit	0.369
		With infeed on the right	S00, S0	3RV29 17-1E	1 unit	0.369
3RV29 17-1A						
Three-phase busbars					_	
	Three-phase busbars incl. 3RV29 17- 5BA00 expansion plug	For motor starter protectors with screw connection or spring-type terminals				
		For 2 motor starter protectors	S00, S0	3RV29 17-4A	1 unit	0.229
		For 3 motor starter protectors	S00, S0	3RV29 17-4B	1 unit	0.32
3RV29 17-4A						
Plug-in connectors					_	
The same of the sa	Plug-in connectors	 For spring-type terminals 		Spring-type terminals		
	to make contact with the motor	 Single-unit packaging 	S00 ¹⁾ S0 ²⁾	3RV29 17-5AA00 3RV29 27-5AA00	1 unit 1 unit	0.046 0.059
	starter protectors	- Multi-unit	S00 ¹⁾	3RV29 17-5A	10 units	0.03
3RV29 17-5AA00		packaging	S0 ²⁾	3RV29 27-5A	10 units	0.05
		• For screw		Screw terminals)	
		terminals - Single-unit	S00 ¹⁾	3RV29 17-5CA00	1 unit	0.029
		packaging	S0 ²⁾	3RV19 27-5AA00	1 unit	0.040
		 Multi-unit packaging 	S00 ¹⁾ S0 ²⁾	3RV29 17-5C 3RV19 27-5A	10 units 10 units	0.029
3RV29 17-5CA00		packaging	30 /	38V 19 21-3A	TO UNITS	0.00
	Туре	Version	For	Order No.	Standard	Weigh
			contactors		Pack Quantity	approx
			Size		,	kg
Contactor bases						
	Contactor bases for mounting	Single-unit packaging	S00	3RV29 17-7AA00	1 unit	0.042
	direct-on-line or reversing starters	packaging	S0	3RV29 27-7AA00	1 unit	0.050
3RV29 27-7AA00						

 $^{^{1)}\} I$ > 14 A, note derating; see the system manual "SIRIUS Innovations", Chapter "Motor Starter Protectors".

²⁾ I > 16 A, note derating; see the system manual "SIRIUS Innovations", Chapter "Motor Starter Protectors".



3RV29 infeed system

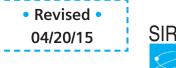
Tamalan I blank	Туре	Version	Order No.	Standard Pack Quantity	Weight approx.
Terminal blocks 3RV29 17-5D	Terminal blocks For integration of single-phase, two-phase and three-phase components	Single-unit packaging	3RV29 17-5D	1 unit	0.049
45 mm standard moเ	ınting rails				
3RV19 17-7B	45 mm standard mounting rails for mounting onto bus bar adapters	Single-unit packaging	3RV19 17-7B	1 unit	0.261
Extra-wide expansion	n plugs				
3RV29 17-5E	Extra-wide expansion plugs as accessory	Single-unit packaging	3RV29 17-5E	1 unit	0.037
Expansion plugs					
	Expansion plugs ¹⁾ as spare part	Single-unit packaging	3RV29 17-5BA00	1 unit	0.026
3RV29 17-5BA00					
End covers	0)				
3RV29 17-6A	end covers ²⁾ as spare part	Multi-unit packaging	3RV29 17-6A	10 units	0.005

¹⁾ The expansion plug is included in the scope of supply of the 3RV29 17-4 three-phase busbars for system expansion.

The end cover is included in the scope of supply of the 3RV29 17-1 three-phase busbars with infeed system.

General Data

3RV up to 100 A (Domestic applications)





Permissible rated data of devices approved for North America (UL/CSA)

Motor starter protectors of the 3RV2 series are approved for UL/CSA, and according to UL508/UL 60947-4-1 and CSA C22.2 No. 14/CSA C22.2 No. 60947-4-1 they can be used on their own or as load feeders in combination with a contactor.

These motor starter protectors can be used as "Manual Motor Controllers" for "Group Installations", as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" and as "Self-Protected Combination Motor Controllers" (Type E).

3RV motor starter protectors as "Manual Motor Controllers"

If used as a "Manual Motor Controller", the motor starter protector is always operated in combination with an upstream short-circuit protection device. Approved fuses or a circuit breaker according to UL 489/CSA C22.2 No. 5-02 can be used. These devices must be dimensioned according to the National Electrical Code (UL) or Canadian Electrical Code (CSA).

Approval of the 3RV as a Manual Motor Controller can be found under the following file numbers:

- UL File No. 47705, CCN: NLRV,
- CSA Master Contract 165071, Product Class: 3211 05.

Motor starter protectors		hp rating ¹ max.) for FLA ²⁾	Rated current $I_{\rm n}$	240 V UL/CS $I_{\rm bc}^{3)}$		480 V UL/CS $I_{\rm bc}{}^{3)}$		600 V / UL/CS/ $I_{\rm bc}^{3)}$	
Туре	V	1-phase	3-phase	А	kA		kA		kA	
Size S00										
3RV2011, 3RV2111	, 3RV2311, 3F	V2411		0.16 2 2.5	65 65		65 65		10 10	
FLA ²⁾ max. 16 A, 600 V	115 200	1 2	2 3	3.2 4 5	65 65 65		65 65 65		10 10 10	
NEMA size 0	230 460 575/600	2	5 10 10	8	65 65		65 65		10	
				10 12.5 16	65 65 65		65 65 65		10 10 —	
Size S0										
3RV2021, 3RV2121 FLA ²⁾ max. 40 A.				0.63 3.2 4 5	65 65 65		65 65 65		30 30 30	
NEMA size 1	115 200 230	3 5 7 1/2	5 10 10	6.3 8 10	65 65 65		65 65 65		30 30 30	
	460 575/600		30	12.5 16 20	65 65 65		65 65 65		30 10 10	
				22 25	65 65		65 65		10 10	
Size S2					3RV2031	3RV2032	3RV2031	3RV2032	3RV2031	3RV2032
3RV2031, 3RV2131	, 3RV2331, 3F	V2032, 3RV	2332	14 17	65 65	100 100	65 65	100 100	25 25	25 25
ELA 2) MANZ OF A	115/100	-	10	20	65	100	65	100	25	25
FLA ²⁾ MAX. 65A 600V	115/120 200/208	5 10	10 20	25 32	65 65	100	65 65	100	25 25	25 25
NEMA size 2	230/240	15	25	36	65	100	65	100	25	25
112111111111111111111111111111111111111	460/480	_	50	40	65	100	65	100	22	22
	575/600	_	60	45	65	100	65	100	22	22
				52	65	100	65	100	22	22
	,	ax 225A Class		59	65	100	65 ^{a)} 65 ^{b)}	100 ^{a)}	20 a)	20
Size S3	D) WITH MA	ax 250A Clas	s J IUSE	65	65	100	65 67	100 %	20 ^{a)}	20
3RV10 41/3RV10 42	3RV11 42 2	RV13 41/3 D\	/13 42	16	65		65		30	
FLA ²⁾ max. 99 A,	115	7 1/2		20 25	65 65		65 65		30 30	
600 V NEMA size 3	200 230 460	20 20 	30 40 75	32 40 50	65 65 65		65 65 65		30 30 30	
	575/600		100	63 75 90 100	65 65 65 65		65 65 65 65		30 30 10 10	

¹⁾ hp rating = Power rating in horse power (maximum motor rating).

²⁾ FLA = Full Load Amps/Motor full load current.

 $^{^{3)}}$ Complies with "short-circuit breaking capacity" according to UL/CSA.



General Data

3RV up to 100 A (Domestic applications)

3RV motor starter protectors as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations"

The application as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" is only available from UL.

CSA does not recognize this approval! When the motor starter protector is used as a "Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations", it must always be combined with upstream short-circuit protection. As short-circuit-protection device, approved fuses or a motor starter

protector according to UL 489 can be used. These devices must be dimensioned according to the National Electrical Code.

The 3RV motor starter protectors are approved as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" under the following file number:

• UL File No. 47705, CCN: NLRV.

Motor starter protectors		hp rating ¹ max.) for FLA ²⁾	Rated current I_n	240 V AC UL $I_{\rm bc}^{\ \ 3)}$		Up to 480° UL $I_{\rm bc}^{(3)}$	Y/277V AC	Up to 600Y UL $I_{\rm bc}^{-3)}$	//347V AC
Type	V	1-phase	3-phase	Α	kA		kA		kA	
Size S00	•	· pridoo	o pridoc	,,	10 (10 1		10.1	
3RV20 11 FLA ²⁾ max.16 A,	445/400		0	0.16 0.8	65 65 65		65 65 65		10 10	
480 Y / 277 V NEMA size 0	115/120 200/208 230/240 460/480	1 2 2	2 3 5 10	1.25 2 2.5 3.2	65 65 65		65 65 65		10 10 10 10	
	575/600		10	4 5 6.3 8 16	65 65 65 65 65		65 65 65 65 65		10 10 10 10	
Size S0										
3RV20 21 FLA ²⁾ max.	115/120	2	5	0.63 1.6 2 2.5	65 65 65		65 65 65		30 30 30	
25 A, 480 Y / 277 V 12.5 A, 600 V	200/208 230/240 460/480	3 3 3	7.5 10 20	3.2 4 5	65 65 65		65 65 65		30 30 30 30	
NEMA size 1	575/600	-	-	6.3 8 10 12.5 25 32	65 65 65 65 65 50		65 65 65 65 65 50		30 30 30 30 —	
Size S2					3RV2031	3RV2032	3RV2031	3RV2032	3RV2031	3RV2032
3RV2031, 3RV2032,	3RV2431			14 17 20	65 65 65	100 100 100	65 65 65	100 100 100	25 25 25	25 25 25
FLA ²⁾ MAX. 65A 600V NEMA size 2	115/120 200/208 230/240 460/480 575/600	5 10 15 —	10 20 25 50 60	25 32 36 40 45 52 59 65	65 65 65 65 65 65 65 65	100 100 100 100 100 100 100	65 65 65 65 65 65 65 30	100 100 100 100 100 100 100 42 42	25 25 25 25 22 22 22 22 20 20	25 25 25 25 22 22 22 22 25 25
Size S3						100	00	12	20	
3RV10 4.				16 20	65 65		65 65		30 30	
FLA ²⁾ max. 100 A, 480 V 75 A, 600 V NEMA size 3	115/120 200/208 230/240 460/480 575/600	7 1/2 20 20 	 30 40 75 75	25 32 40 50	65 65 65 65		65 65 65 65		30 30 30 30	
1 4 E 1 4 1 1 1 5 1 E 0 0	3/3/000		, 0	63 75 90 100	65 65 65 65		65 65 65 65		30 30 	

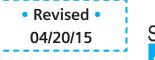
¹⁾ hp rating = Power rating in horse power (maximum motor rating).

²⁾ FLA = Full Load Amps/Motor full load current.

³⁾ Complies with "short-circuit breaking capacity" according to UL.

General Data

3RV up to 100 A (Domestic applications)





3RV motor starter protectors as "Self-Protected Combination Motor Controllers (Type E)"

UL 508/UL 60947-4-1 approval demands 1-inch clearance and 2-inch creepage distance at line side for "Self-Protected Combination Motor Controller Type E".

Therefore, 3RV20 motor starter protectors of sizes S00 to S2 are approved according to UL 508/UL 60947-4-1 in combination with the terminal blocks listed below.

CSA does not require these extended clearances and creepage distances. According to CSA, these terminal blocks can be omitted

when the device is used as a "Self-Protected Combination Motor Controller".

The 3RV20 motor starter protectors are approved as "Self-Protected Combination Motor Controllers" under the following file numbers:

- UL File No. E156943, CCN: NKJH
- CSA Master Contract 165071, Product Class: 3211 08

Motor starter protectors		hp rating ¹ max.) for FLA ²⁾	Rated current I _n	Up to 24		Up to 48	0 Y/277 V AC		Y/347 V AC $I_{\rm bc}{}^{3)}$
Туре	V	1-phase	3-phase	А	kA	DC	kA	-00	kA	*DC
Size S00										
3RV2011 + 3RV29 2	28-1H ⁴⁾			0.16 2	65		65		10	
FLA ²⁾ max. 16 A	115	1	2	2.5 3.2	65 65		65 65		10 10	
480 V	200	2	3	4	65		65		10	
NEMA size 0	230	2	5	5	65		65		10	
	230	_	10	6.3	65		65		10	
	575/600	_	10	8	65 65		65 65		10	
				12.5	65		65		10	
Size S0				16	65		65			
3RV2021 + 3RV29 2	8-1H ⁴⁾			0.63 1.6	65		65		30	
				2	65		65		30	
FLA ²⁾ max.	115	2	5	2.5	65		65		30	
25 A, 480 V 12.5 A, 600 V	200 230	3	7.5 10	3.2	65 65		65 65		30 30	
	460	_	20	5	65		65		30	
NEMA size 1	575/600			6.3	65 65		65 65		30 30	
				10	65		65		30	
				12.5	65		65		30	
				16 20	65 65		65 65		_	
				22	65		65		_	
				25 32	65 50		65 50		_	
Size S2				02	3RV2031	3RV2032	3RV2031	3RV2032	3RV2031	3RV2032
				14	65	100	65	100	25	25
3RV2031 + 3RV2938	3-1K ⁴⁾ , 3RV2	032 + 3RV2	938-1K ⁴⁾	17	65	100	65	100	25	25
FLA ²⁾ MAX. 65A	115/120	5	10	20 25	65 65	100 100	65 65	100 100	25 25	25 25
600V	200/208	10	20	32	65	100	65	100	25	25
NEMA size 2	230/240	15	25	36	65	100	65	100	25	25
	460/480	_	50 60	40	65 65	100	65	100	22 22	22
	575/600	_	00	45 52	65	100	65 65	100	22	22
				59	Inquire for		Inquire for o		Inquire for o	
				65	Inquire for (data	Inquire for o	data	Inquire for o	lata
Size S3										
3RV1041 + 3RT194	6-4GA07 ⁴⁾			16 20	65 65		65 65		30 30	
FLA ²⁾ max.	115	10		25	65		65		30	
100 A, 480 V	200	20	30	32	65		65		30	
75 A, 600 V	230 460	20	40 75	40 50	65 65		65 65		30 30	
NEMA size 3	575/600		75 75	63	65		65		30	
				75	65		65		30	
				90	65 65		65 65		_	
Ratings of the au	ıxiliar <u>y sw</u> i	tches		Lateral auxilia		vith		se auxiliary	Transvers	е .
and alarm switch				1 NO + 1 NC, 2 2 NO + 2 NC a	2 NO, 2 NC,		switch w			witch with
Max. rated voltage	• to NEN		AC V	600	a orginalli		· change	2.0.00111401	250	,
	• to NEN	ЛА ©	AC V	600					250	
11.1.1.1				40						
Uninterrupted currer Breaking capacity	nt		А	10 A600			5 B600		2.5 C300	

¹⁾ hp rating = Power rating in horse power (maximum motor rating).

²⁾ FLA = Full Load Amps/Motor full load current.

Complies with "short-circuit breaking capacity" according to UL/CSA.

⁴⁾ Not required for CSA.



3RV17/27 and 3RV18/28 circuit breakers

3RV17/27 and 3RV18/28 circuit breakers

These circuit breakers are approved according to UL 489 and CSA C22.2 No. 5-02 for 100 % rated current (100 % rated breaker). They can be used therefore as upstream short-circuit protective devices for "Manual Motor Controllers" and "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations".

The 3RV17/27 and 3RV18/28 circuit breakers are approved under the following file numbers:

- UL File No. E235044, CCN: DIVQ,
- CSA Master Contract 165071, Product Class: 1432 01.

Circuit breakers	Rated current I_n	240 V AC UL/CSA	480 Y/277 V AC UL/CSA	480 V AC UL/CSA	600 Y/347 V AC UL/CSA
Туре	А	$I_{\rm bc}^{-1)}$ kA	$I_{\rm bc}^{-1)}$ kA	$I_{\rm bc}^{-1)}$ kA	$I_{\rm bc}^{-1)}$ kA
Size S00/S0					
3RV27 11 / 3RV28 11 3RV27 21 / 3RV28 21	0.16 1.25 1.6 2 2.5 3.2 4 5 6.3 8 10 12.5 15 20	65 65 65 65 65 65 65 65 65 65 65 65	65 65 65 65 65 65 65 65 65 65 65 65		10 10 10 10 10 10 10 10 10 10 10 10 10
Size S3					
3RV17 42	10 15 20 25 30 35 40 45 50 60 70	65 65 65 65 65 65 65 65 65	65 65 65 65 65 65 65 65 65 65	65 65 65 65 	20 20 20 20 20 20 20 20 20 20 20

¹⁾ Complies with "short-circuit breaking capacity" according to UL.

General Data

3RV up to 100 A (Export applications)



Technical specifications

Short-circuit breaking capacity $I_{\rm cu}$, $I_{\rm cs}$ acc. to IEC 60947-2

This table shows the rated ultimate short-circuit breaking capacity $I_{\rm cu}$ and the rated service short-circuit breaking capacity $I_{\rm cs}$ of the 3RV motor starter protectors with different inception voltages dependent of the rated current $I_{\rm n}$ of the motor starter protectors.

Motor starter protector infeed is permissible at the upper or lower terminals without restricting the rated data. If the short-circuit current at the place of installation exceeds the rated short-circuit breaking capacity of the motor starter protector as specified in the table, a back-up fuse is required. Alternatively, a

motor starter protector with a limiter function can be connected upstream.

The maximum rated current for the back-up fuse is specified in the tables. The rated ultimate short-circuit breaking capacity then applies as specified on the fuse.

Fuseless construction

Motor starter protector contactor combinations for short-circuit currents up to 50 kA can be ordered in the form of fuseless load feeders according to Chapter 6.

Motor starter protectors/circuit	Rated current $I_{\rm n}$	Up to	240 \	/ AC ¹⁾	Up to 400		V AC ²⁾	Up to 440 \		V AC ²⁾	Up to 500 \		5 V AC ²⁾	Up to	690 \	V AC ¹⁾
breakers								(thes	e value	es do not ap	ply to	3RV1	7 42 circuit	breake	ers)	
		I_{CU}	$I_{\mathtt{CS}}$	Max. fuse (gL/gG)	$I_{ m CU}$	$I_{\mathtt{CS}}$	Max. fuse (gL/gG) ³⁾	I_{CU}	$I_{ t CS}$	Max. fuse (gL/gG) ³⁾	I_{CU}	$I_{\mathtt{CS}}$	Max. fuse (gL/gG) ³⁾	$I_{ m CU}$	$I_{ t CS}$	Max. fuse (gL/gG) ³⁾⁴
Туре	Α	kA	kA	А	kA	kA	А	kA	kA	А	kA	kA	А	kA	kA	A
Size S00																
3RV2.1	0.16 1 1.25; 1.6 2; 2.5	100 100 100	100 100 100	0	100 100 100	100 100 100	0	100 100 100	100 100 100	0	100 100 100	100 100 100	0	100 100 10	100 100 10	。 25
	3.2; 4 5; 6.3 8	100 100 100	100 100 100	0	100 100 50	100 100 12.5	0	50 50 50	10 10 50	。 63	100 100 42	100 100 42	。 63	10; 6 6 6	10; 4 4 4	32 32 50
	10 12 16	100 100 100	100 100 100	0	50 50 55	12.5 12.5 30	。 。 100	50 50 50	50 50 10	80 80 80	42 42 10	42 42 5	63 80 80	6 4 4	4 4 4	50 63 63
Size S0																
3RV2. 2, 3RV27 11, 3RV28 11	16 20	100	100	0	55 55	25 25	100 125	50 50	10	80 80	10 10	5	80 80	4	2	63 63
	22 25 28	100 100 100	100 100 100	0	55 55 55	25 25 25	125 125 125	50 50 30	10 10 10	100 100 125	10 10 10	5 5 5	80 80 100	4 4 4	2 2 2	63 63 100
	32 36 40	100 100 100	100 100 100	0	55 20 20	25 10 10	125 125 125	30 12 12	10 8 8	125 125 125	10 6 6	5 3 3	100 100 100	4 3 3	2 2 2	100 100 100
Size S2																
3RV1. 3	16 20 25 32 40; 45	100 100 100 100 100	100 100 100 100 100	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50 50 50 50 50	25 25 25 25 25 25	100 100 100 125 160 160	50 50 50 50 50	25 25 15 15 15	100 100 100 125 125 125	12 12 12 10 10	6 6 6 5 5 5	63 80 80 100 100	5 5 4 4	3 3 2 2 2	63 63 63 63 63
Size S3	30	100	100		50	20	100	30	10	120	10		100			
3RV1. 41	40 50 63 75 90; 100	100 100 100 100 100	100 100 100 100 100	0 0 0	50 50 50 50	25 25 25 25 25 25	125 125 160 160 160	50 50 50 50	20 20 20 20 20	125 125 160 160 160	12 12 12 8 8	6 6 6 4 4	100 100 100 125 125	6 6 6 5 5	3 3 3 3	63 80 80 100 125
Size S3, with inc																
3RV1. 42 / 3RV17 42 ⁵⁾	16/10 20/15 25/20 32/25	100 100 100 100	100 100 100 100	0 0 0	100 100 100 100	50 50 50 50	0	100 100 100 100	50 50 50 50	0 0 0	30 30 30 22	15 15 15 11	80 80 80 100	12 12 12 12	7 7 7 7	63 63 63
	40/30 50/35 40 63/45 50	100 100 100	100 100 100	0	100 100 100	50 50 50	0	100 100 70	50 50 50	。 200	18 15 15	9 7.5 7.5	160 160 160	12 10 7.5	6 5 4	80 100 100
	75/60 90/70 100/	100 100 100	100 100 100	0	100 100 100	50 50 50	0	70 70 70	50 50 50	200 200 200	10 10 10	5 5 5	160 160 160	6 6 6	3 3 3	125 160 160
	Short-circuit res	sistant	up to	at least 50 k	κA											

No back-up fuse required, since short-circuit resistant up to 100 kA

^{1) 10 %} overvoltage

^{2) 5 %} overvoltage.

 $^{^{\}rm 3)}$ Back-up fuse only required if the short-circuit current at the place of installation > $I_{\rm CU}.$

⁴⁾ Alternatively, fuseless limiter combinations for 690 V AC can also be used.

⁵⁾ The values for the 3RV17 42 circuit breakers have been tested only up to 400 V/415 V AC; values > 440 V AC on request.



3RV up to 100 A (Export applications)

Short-circuit breaking capacity $I_{\rm culT}$ in the IT system (IT network) according to IEC 60947-2

3RV motor starter protectors are suitable for operation in IT systems. Values valid for triple-pole short-circuit are $I_{\rm Cu}$ up to $I_{\rm Cs}.$ In case of double ground fault on different phases at the input and output side of a motor starter protector, the special short-circuit breaking capacity $I_{\rm culT}$ applies. The specifications in the table below apply to 3RV motor starter protectors.

In the colored areas, $I_{\rm culT}$ is 100 kA, or in some ranges it is 50 kA. Therefore the motor starter protectors are short-circuit resistant in these ranges.

If the short-circuit current at the place of installation exceeds the rated short-circuit breaking capacity of the motor starter protector as specified in the table, a back-up fuse is required. The maximum rated current for the back-up fuse is specified in the tables. The rated short-circuit breaking capacity then applies as specified on the fuse.

Motor starter	Rated current	Up to 240 V A	AC ¹⁾	Up to 400 V ¹)/415 V AC ²⁾	Up to 500 V ¹)/525 V AC ²⁾	Up to 690 V	AC ¹⁾
protectors	I_{n}	I_{CUIT}	Max. fuse (gL/gG) ³⁾	I_{CulT}	Max. fuse (gL/gG) ³⁾⁴⁾	I_{CUIT}	Max. fuse (gL/gG) ³⁾	$I_{ m CuIT}$	Max. fuse (gL/gG) ³⁾
Туре	Α	kA	A	kA	A	kA	A	kA	A
Size S00									
3RV20, 3RV26 11-0BD10	0.16 0.63 0.8; 1 1.25; 1.6	100 100 100	o o	100 100 100	0 0	On request	On request	On request	On reques
	2; 2.5 3.2; 4 5; 6.3	100 100 100	o o	8 8;4 4	25 32 32:50				
	8; 10 12.5 16	100 100 55	。 。 80	4 4 4	50 63 63				
Size S0									
3RV2. 2	16 20 22	55 55 55	80 80 80	4 4 4	63 63 63	On request	On request	On request	On request
	25 28 32	55 55 55	80 80 80	4 2 2	63 63 63				
	36 40	20 20	80 80	2 2	63 63				
Size S2									
3RV1. 3	16 20 25	50 50 50	100 125 125	8 8 8	100 100 100	6 6 6	80 80 80	5 5 5	63 63 63
	32 40 50	50 50	125 160	6 6	125 125	4 4	100 100	3 3	80 80
Size S3									
3RV1. 41	40 50 63	50 50 50	125 125 160	10 8 6	63 80 80	5 3 3	50 63 63	5 3 3	50 63 63
	75 90; 100	50 50	160 160	5 5	100 125	2 2	80 100	2 2	80 100
Size S3, with inc switching capac									
3RV1. 42	16 20 25 32	100 100 100 100	0 0	12 12 12 12	63 63 63 63	6 6 6	50 50 50 50	6 6 6	50 50 50 50
	40 50 63	100 100 100	o o	12 10 7.5	80 100 100	6 4 4	63 80 80	6 4 4	63 80 80
	75 90 100	100 100 100	0 0	6 6 6	125 160 160	3 3 3	100 125 125	3 3 3	100 125 125
	Short-circuit res	sistant up to at	least 50 kA						

Short-circuit resistant up to at least 50 KA

[°] No back-up fuse required, since short-circuit resistant up to 100 kA

^{1) 10 %} overvoltage.

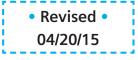
^{2) 5 %} overvoltage.

 $^{^{3)}}$ Back-up fuse only required, if short-circuit current at the place of installation $>I_{\rm culT}$

⁴⁾ Alternatively, fuseless limiter combinations for 690 V AC can also be used.

General Data

3RV up to 100 A



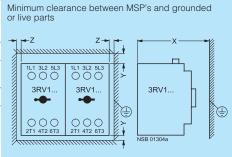


Technical data

Rules for mounting motor starter protectors/circuit breakers

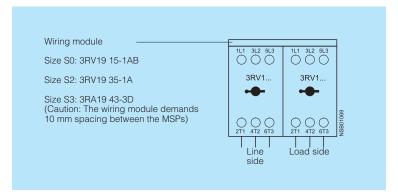
When mounting MSP's, the following clearance must be maintained to grounded or live parts.

SIRIUS MSP			Clearance	to grounded or live	parts
			Υ	X	at the side Z
Туре	size		mm	mm	mm
3RV2.1	S00	up to 690 V	30	70	9
3RV2. 2	S0	up to 500 V up to 690 V	30 50 ¹⁾	90 90	9 30
3RV2. 3	S2	up to 690 V	50	140	10
3RV1. 4	S3	up to 240 V	50	167	10
		up to 440 V	70	167	10
		up to 500 V	110	167	10
		up to 690 V	150	167	30
3RV17 42	S3	up to 240 V up to 400 V	90 90	167 167	10 10



1) Up to and including the setting range of 32 A. For the 36/40 A setting range the clearance is 70 mm.

Standard mounting for S0, S2 and S3





3RV up to 100 A

General technical specifications			3RV2. 1	3D\/2 0	3RV1. 3	3RV1. 4	3RV27	2DV47.40	2D\/20
Type			3HV2. 1	3HV2. 2	3HV1. 3	3HV1. 4	3HV2/	3RV17 42	3HV28
Standards • IEC 60947-1, EN 60947-1 (VDE 0660 Part	100)		Yes						
• IEC 60947-1, EN 60947-1 (VDE 0660 Part			Yes						
• IEC 60947-4-1, EN 60947-4-1 (VDE 0660 I			Yes				No		
• UL 489, CSA C22.2-No.5-02			No	_			Yes		
Size			S00	S0	S2	S3	S00 / S0	S3	S00 / S
Number of poles			3						
Max. rated current I _{n max}		Α	16	40	50	100	22	70	22
(= max. rated operational current I _e)									
Permissible ambient temperature				_					
Storage/transportOperation	<i>I</i> _n : 0.16 32 A	°C	-50 +8 -20 +7						
- Operation	I _n : 36 40 A	∘Č	-20 + <i>1</i>						
Permissible rated current at inside tempe	erature of control cabinet								
• +60 °C		%	100						
• +70 °C		%	87						
Motor starter protectors/circuit breakers Permissible rated current at ambient tem									
• +35 °C	perature or enclosure	%	100						
• +60 °C		%	87						
Rated operational voltage <i>U</i> _e									
Acc. to IEC		V AC	690 ⁴⁾						
• Acc. to UL/CSA		V AC	600						
Rated frequency		Hz	50/60						
Rated insulation voltage U _i		V	690						
Rated impulse withstand voltage <i>U</i> _{imp}		kV	6						
Utilization categories									
• IEC 60947-2 (motor starter protector/circu	iit breaker)		A						
• IEC 60947-4-1 (motor starter)			AC -3						
Trip classes CLASS	Acc. to IEC 60947-4-1		10		10/20				
DC short-circuit breaking capacity (time of	constant $t = 5 \text{ ms}$)	kA	10						
 1 conducting path 150 V DC 2 conducting paths in series 300 V DC 		kA kA	10						
3 conducting paths in series 450 V DC		kA	10						
Power loss P _v per motor starter	<i>I</i> _n : 1.25 A	W	5						
protector/circuit breaker	<i>I</i> _n : 1.6 6.3 A	W	6						
Dependent on rated current In (upper setting range)	<i>I</i> _n : 8 12 A	W	7						
	I _n : 16 A	W		7					
$R_{\text{per conducting path}} = P/I^2 \times 3$	<i>I</i> _n : 20 25 A <i>I</i> _n : 28 32 A	W		7 11					
	<i>I</i> _n : 36 40 A	W		14					
	<i>I</i> _n : 25 A	W			12				
	I _n : 32 A	W			15				
	In: 40 50 A	W			20				
	I _n : 63 A	W				20			
	I _n : 75 and 90 A I _n : 100 A	W				30 38			
	I _n : 10 A	W				00		8	
	<i>I</i> _n : 35 A	W						12	
	<i>I</i> n: 70 A	W						21	
Shock resistance	Acc. to IEC 60068-2-27	g/ms	25/11 (sq	uare and si	ne pulse)				
Degree of protection	Acc. to IEC 60529		IP20 ⁵⁾						
Touch protection	Acc. to EN 50274		Finger-sa						
Temperature compensation	Acc. to IEC 60947-4-1	°C	-20 +6	60					
Phase failure sensitivity	Acc. to IEC 60947-4-1		Yes				No		
Explosion protection – safe operation of	motors with		Yes, for 3	RV10/20			No		
"increased safety" type of protection EC type test certificate number acc. to			On	ot					
			On reque	ડા					
			Yes						
directive 94/9/EC (ATEX)	Acc. to IFC 60947-2								
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch	Acc. to IEC 60947-2 Acc. to IEC 60204-1		Yes						
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch			Yes						
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and	Acc. to IEC 60204-1		Yes						
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and auxiliary circuits, required for PELV	Acc. to IEC 60204-1 (VDE 0113)		Yes						
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and auxiliary circuits, required for PELV applications	Acc. to IEC 60204-1 (VDE 0113)								
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and auxiliary circuits, required for PELV applications • Up to 400 V + 10 %	Acc. to IEC 60204-1 (VDE 0113) Acc. to EN 60947-1		Yes Yes Yes						
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and auxiliary circuits, required for PELV applications • Up to 400 V + 10 % • Up to 415 V + 5 % (higher voltages on recommendation)	Acc. to IEC 60204-1 (VDE 0113) Acc. to EN 60947-1		Yes Yes	to IEC 604	47 start con	mmand "l" r	ight-hand s	side or top	
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and auxiliary circuits, required for PELV applications • Up to 400 V + 10 % • Up to 415 V + 5 % (higher voltages on reco	Acc. to IEC 60204-1 (VDE 0113) Acc. to EN 60947-1	ina cvcles	Yes Yes Any, acc.	to IEC 604		mmand "I" r		_	100.00
directive 94/9/EC (ATEX) Isolating function Main and EMERGENCY-STOP switch characteristics ⁵⁾ Protective separation between main and auxiliary circuits, required for PELV applications • Up to 400 V + 10 %	Acc. to IEC 60204-1 (VDE 0113) Acc. to EN 60947-1 quest)	ing cycles	Yes Yes Any, acc.	to IEC 604-	47 start cor 50 000 25 000	mmand "I" r	ight-hand s 100 000 100 000	side or top 50 000 25 000	100 000

For footnotes see page 1/26

For short-circuit breaking capacity $I_{\rm CU},\,I_{\rm CS}$ see table of same name.

General Data

3RV up to 100 A



Conductor cross-sections of main circuit						
Туре		3RV2.	3RV2. 2	3RV1. 3	3RV1. 4/ 3RV17 42	3RV27 11 3RV28 11
Connection type		Screw term	inals	Screw ter with box t		_
Terminal screw		M3, Pozidriv size 2	M4,Pozidriv size 2	Pozidriv size 2	4 mm Allen screw	M4,Pozidriv size 2
Operating devices	mm	5 6	5 6			5 6
Prescribed tightening torque	Nm	0.8 1.2	2 2.5	3 4.5	4 6	2.5 3
Conductor cross-sections (1 or 2 conductors connectable)						
• Solid	mm ²	2 x (0.75 2.5) ⁴ , 2 x 4	2 x (1 2.5) ⁴⁾ , 2 x (2.5 10) ⁴⁾	2 x (0.75 16)	2 x (2.5 16)	1 10 max. 2 x 10
Finely stranded with end sleeve	mm ²	2 x (0.5 1.5) ⁴⁾ 2 x (0.75 2.5) ⁴⁾	2 x (1 2.5) ⁴⁾ 2 x (2.5 6) ⁴⁾	2 x (0.75 16) 1 x (0.75 25)	2 x (2.5 35) 1 x (2.5 50)	1 16, max. 6 + 16
• Stranded	mm ²	2 x (0.75 2.5) ⁴⁾ 2 x 4	2 x (1 2.5) ⁴⁾ 2 x (2.5 10) ⁴⁾	2 x (0.75 25) 1 x (0.75 35)	2 x (10 50) 1 x (10 70)	1.5 25 max. 10 + 25
AWG cables, solid or stranded	AWG	2 x (18 14) 2 x 12 ⁴⁾	2 x (14 10) 2 x (14 8) ⁴⁾	2 x (18 2) 1 x (18 2)	2 x (10 1/0) 1 x (10 2/0)	2 x (14 10)
Ribbon cable conductors (number x width x thickness	ss) mm			2 x (6 x 9 x 0.8)		
Removable box terminals ¹⁾						
• With copper bars ²⁾					18 x 10	
With cable lugs ³⁾					Up to 2 x 70	
Connection type		Spring-typ	pe terminals 5)6)			
Conductor cross-sections (1 or 2 conductors connectable)						
• Solid	mm ²	2 x (0.5 4)	2 x (1 10)			
 Finely stranded with end sleeve 	mm^2	2 x (0.5 2.5)	2 x (1 6)			
 Finely stranded without end sleeve 	mm ²	2 x (0.5 2.5)	2 x (1 6)			
 AWG cables, solid or stranded 	AWG	2 x (20 12)	2 x (18 8)			
Max. external diameter of the conductor insulation	mm	3.6	3.6			
Connection type		Ring term	inal lug connectio	ns		
Terminal screw		M3, Pozidriv size 2	M4,Pozidriv size 2			
Operating devices	mm	5 6	5 6			
Prescribed tightening torque	Nm	0.8 1.2	2 2.5			
Usable ring terminal lugs DIN 46234 without insultaion sleeve DIN 46225 without insulation sleeve DIN 46237 with insulation sleeve JIS C2805 Type R without insulation sleeve JIS C2805 Type RAV with insulation sleeve JIS C2805 Type RAP with insulation sleeve	mm	$d_2 = min. 3.2$ $d_2 = min. 7.5$	$d_2 = min. 4.3$ $d_2 = min. 12.2$			

Footnotes for page 1/25:

- 1) Above +60 °C current reduction.
- 2) The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required)
- $^{3)}$ 500 V with molded-plastic enclosure.
- 4) Terminal compartment IP00 (exception: 3RV10 11-..2. motor starter protectors with Spring-type term inals degree of protection IP20).
- 5) With appropriate accessories

Footnotes for page 1/26:

- 1) Cable lug and busbar connection possible after removing the box
- If bars larger than 12 mm x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.
 If conductors larger than 25 mm² are connected, a 3RT19 46-4EA1
- terminal cover is needed to comply with the phase clearance.
- 4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

For corresponding 3RA29 08-1A opening tool see 1/12.

5) With conductor cross-sections of $\leq 1 \text{ mm}^2$ an "insulation stop" must be used (see Chapter 2 Contactors).



3RV up to 100 A

Technical specifications

Front transverse auxiliary switches		
	Switching ca	pacity for different voltages
	1 CO	1 NO + 1 NC, 2 NO
Rated operational current I _e		,
At AC-15, alternating voltage		
- 24 V	A 4	2 0.5
- 230 V	A 3	0.5
- 400 V	A 1.5	
- 690 V	A 0.5	
 At AC-12 = I_{th}, alternating voltage 		
- 24 V	A 10	2.5
- 230 V	A 10	2.5
- 400 V	A 10	
- 690 V	A 10	
At DC-13, direct voltage L/R 200 ms		
- 24 V	A 1	1
- 48 V	Α	0.3
- 60 V	Α	0.15
- 110 V	A 0.22	
- 220 V	A 0.1	
Minimum load capacity	V 17	
• •	mA 1	

Front transverse solid-state comp	atible auxiliary switches		
			Switching capacity for different voltages 1 CO
 Rated operational voltage U_e 	Alternating voltage	V	125
 Rated operational current I_e/AC-14 	at $U_{\rm e}$ = 125 V	Α	0.1
Rated operational voltage U _e	Direct voltage L/R 200 ms	V	60
 Rated operational current I_e/DC-13 	at $U_{e} = 60 \text{ V}$	Α	0.3
Minimum load capacity		V	5
		mΑ	1

Lateral auxiliary switches with signal switch		
		Switching capacity for different voltages: Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC; signal switch
Rated operational current I _e		
At AC-15, alternating voltage		
- 24 V	Α	6
- 230 V	Α	4
- 400 V	Α	3
- 690 V	Α	1
• At AC-12 = I _{th} , alternating voltage		
- 24 V	Α	10
- 230 V	Α	10
- 400 V	Α	10
- 690 V	А	10
At DC-13, direct voltage L/R 200 ms		
- 24 V	Α	2
- 110 V	Α	0.5
- 220 V	Α	0.25
- 440 V	А	0.1
Minimum load capacity	V	17
	mA	1

Auxiliary releases			
Power consumption		Undervoltage trip units	Shunt trip units
During pick-upAC voltagesDC voltages	VA/W W	20.2/13 20	20.2/13 13 80
During uninterrupted dutyAC voltagesDC voltages	VA/W W	7.2/2.4 2.1	
Response voltage			
Tripping	V	0.35 0.7 x U _s	0.7 1.1 x U _s
• Pickup	V	0.85 1.1 x U _s	
Maximum opening time	ms	20	

General Data

3RV up to 100 A



Technical data

Short-circuit protection for auxiliary and control circuits		
Melting fuses operational class gG	А	10
Miniature circuit breaker, C characteristic	Α	6 ¹⁾

Miniature circuit breaker, C characteristic	Α	6 ¹⁾
1) Prospective short-circuit current < 0.4 kA.		
Conductor cross-sections for auxiliary and control circuits		
Connection type		Screw terminals
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	56
Prescribed tightening torque	Nm	0.8 1.2
Conductor cross-sections		
(1 or 2 conductors can be connected)		4)
Solid or Stranded	mm ²	2 x (0.5 1.5) ¹⁾ ,2 x (0.75 2.5) ¹⁾
Finely stranded with end sleeve		2 x (0.5 1.5) ¹⁾ ,2 x (0.75 2.5) ¹⁾
AWG Cables, solid or stranded	AWG	2 x (18 14) ¹⁾ , 2 x (20 16) ¹⁾
Connection type		Spring-type terminals ²⁾³⁾
Conductor cross-sections (1 or 2 conductors connectable)		
• Solid	mm^2	2 x (0.5 2.5)
• Finely stranded with end sleeve	$\rm mm^2$	2 x (0.5 1.5)
	0	
 Finely stranded without end sleeve (DIN 46228 T1) 	mm ²	2 x (0.5 1.5)
 Finely stranded without end sleeve (DIN 46228 T1) AWG cables, solid or stranded 	mm² AWG	2 x (0.5 1.5) 2 x (20 14)

Connection type	Ring terminal lug connections
Terminal screw	M3, Pozidriv size 2
Operating devices mm	5 6
Prescribed tightening torque Nm	0.8 1.2
Usable ring terminal lugs mm	$d_2 = min. 3.2$ $d_3 = min. 7.5$
 DIN 46234 without insultaion sleeve DIN 46225 without insulation sleeve DIN 46237 with insulation sleeve JIS C2805 Type R without insulation sleeve JIS C2805 Type RAV with insulation sleeve 	

solid finely stranded with end sleeve mm² tranded with end sleeve mm² tranded mm² 2.5 25 AWG cables, solid and stranded wire Prescribed tightening torque Nm 2.5 3	Conductor cross sections 3RT29 28-1H			Front clamping point connected	Rear clamping point connected	Both clamping p Front clamping point	ooints connected Rear clamping point
leitillai sciew		finely stranded with end sleeve stranded AWG cables, solid and stranded wire	mm ² mm ² AW G	1 16 2.5 25 14 3	1 16 1.5 25	1 10 2.5 10	1 10 5 25

¹⁾ If two different conductor cross-sections are connected to one clamping point, both crosssections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

²⁾ With conductor cross-sections of ≤ 1 mm² an "insulation stop" must be used; see "Accessories", "Contactors and Contactor Assemblies".

³⁾ For corresponding 3RA29 08-1A opening tool see page 1/13.

⁴⁾ See MSP 3RV1.4 on page 1/24.

3RV up to 100 A

Overview

S00 MSP with laterally mounted undervoltage release with leading auxiliary switch



3RV Motor Starter Protectors (MSP's) are built for a world of applications while meeting the requirements of control users worldwide. Each MSP features a manual ON/OFF switch, a Class 10 adjustable bimetallic overload relay (Class 20 available in the two largest frame sizes), and magnetic trip elements for short circuit protection.

Construction

The motor starter protectors are available in four sizes:

- Size S00 3RV201
 Maximum rated current is 16
 Amps. Suitable for motors up to 10 hp at 600V. Available in both screw terminal and spring-type terminal versions.
- Size S0 3RV202
 Maximum rated current is 40
 Amps. Suitable for motors up to 20 hp at 600V. Available in both screw terminal and springtype terminal verisons.
- Size S2 3RV103
 Maximum rated current is 50
 Amps. Suitable for motors up to 50 hp at 600V.
- Size S3 3RV104
 Maximum rated current is 100 Amps. Suitable for motors up to 100 hp at 600V.

Functions

Releases

3RV motor starter protectors are equipped with bimetallicbased, inverse-time delayed overload releases - electromagnetic short-circuit releases.

The overload releases can be set in accordance with the load current. The overcurrent releases are permanently set to a value 13 times the rated current and thus enable trouble-free start-up of motors.

The scale cover can be sealed to prevent unauthorized adjustments to the set current.

Release classes

The release classes of thermally delayed releases are based on the tripping time (t_A) at 7.2 times the operational current in cold state (excerpt from IEC 60 947-4).

- \bullet CLASS 10 A 2 s < t_A < 10 s
- CLASS 10 4 s < t_A < 10 s • CLASS 20 6 s < t_A < 20 s
- CLASS 30 9 s < t_A < 30 s

The release must trip within this time!

Operating mechanisms

S00, S0, S2 and S3 MSP's are actuated via a rotary operating mechanism. If the MSP trips, the rotary operating mechanism switches to the tripped position to indicate this. Before the MSP is reclosed, the rotary operating mechanism must be reset manually to 0 position, in order to prevent the former from closing by mistake before the fault has been cleared.

In the case of MSP's with rotary operating mechanisms, an electrical signal can be output via a signalling switch to indicate that the MSP has tripped.

All operating mechanisms can be locked in 0 position with a padlock (shackle diameter 3.5 to 4.5 mm).

Application

Operating conditions

3RV MSP's are suitable for use in any climate. They are designed for operation in closed rooms under normal conditions (e.g. no dust, corrosive vapours or harmful gases). Suitable enclosures must be provided for installation in dusty or damp rooms.

Motor Protection

3RV MSP's use bimetallic heater elements to provide class 10 or 20 overcurrent protection for both AC and DC motors. The bimetallic heaters sense the motor current directly, so the overloads are insensitive to high frequencies, harmonic waves and sinusoidal currents and voltages.

Each MSP has a fourth bimetallic strip that reacts only to the ambient temperature inside the control panel. This ambient compensation prevents the MSP from nuisance tripping when the panel temperature is higher than the ambient temperature of the motor. A built-in differential trip bar causes the MSP to trip faster on a phase loss condition, to help reduce motor damage from phase loss.

Magnetic trip elements in each MSP take the device off line when it senses currents of 13 times the maximum FLA dial setting.

3RT1	0	1	1	-	0	Α	Α	1	0	
SIRIUS MSP or Circuit Breaker	Application	Frame Size	Standard		Amperage Range	Amperage Range		Terminal Type	Auxiliary	
Circuit Breaker	0 = Motor Protection	3 = S2			Possible choices		A = 10	1 = Screw	Switch	
	7 = UL 489	4 = S3			page 1/4-1/7 for a	_		2 = Spring Loaded		
					0, 1, 4	B through K		4 = Ring Lug		
3RV2	0	1	1	-	0	Α	Α	1	0	
SIRIUS	Application	Frame Size	Standard		Amperage Range	9	Class	Terminal Type	Auxiliary	
Innovations	0 = Motor Protection	1 = S00				Possible choices listed below see		1 = Screw	Switch	
MSP or	7 = UL 489	2 = S0			page 1/4-1/7 for a	page 1/4-1/7 for an entire listing		2 = Spring Loaded		
Circuit Breaker					0, 1, 4	B through K		4 = Ring Lug		
3RV1	0	1	1	-	0	Α	Α	1	0	
SIRIUS MSP or	Application	Frame Size	Standard		Amperage Range	9	Class	Terminal Type	Auxiliary	
Circuit Breaker	0 = Motor Protection	3 = S2			Possible choices listed below see		A = 10	1 = Screw	Switch	
	7 = UL 489	4 = S3			page 1/4-1/7 for an entire listing		B = 20	2 = Spring Loaded		
					0, 1, 4	B through K				

Note: MPS's and Contactors of the same frame size are made to easily fit together with the use of a link module.

General Data

Mounting accessories



Applications:

The 3RV MSP's can be used in a variety of applications:

As a manual starter

All 3RV MSP's are UL listed as Manual Motor Controllers per UL508. This makes them ideal for applications requiring simple manual starting and stopping of motors. A separate short circuit protective device, such as a circuit breaker or fuses, is still required ahead of the MSP. This up-stream protective device should be sized per NEC code, not to exceed 400% of the maximum FLA adjustment dial setting.

As a component in a group installation

A group motor installation indicates multiple motor controllers under one short circuit protective device, such as a circuit breaker. 3RV MSP's have a group installation short-circuit current rating of 65 kA at 480V and up to 30kA at 600V. By using a link module, a 3RT contactor can be directly mounted to the load side of the MSP.

3RV MSP's have been UL tested with and without 3RT contactors for group installation

As a Self-protected manual combination starter, Type E.

Most 3RV MSP's have also been UL listed as UL508 Type E, Self-protected Manual Combination Starters. This UL listing allows the MSP to be mounted in a manually operated machine without having to add separate short circuit protection upstream.

These devices have a short circuit current rating of 65 kA @ 240V, 480Y/277V and up to 30kA @ 600Y/347V.

As part of a Combination Motor Contoller, Type F

When a 3RT contactor is connected to the load side of a 3RV device that is rated as a "Manual Self-protected Combination Motor Controller, Type E", the assembly can be applied as a "Combination Motor Controller, Type F". This versions allows for remote starting and stopping of the motor load.

These assemblies have a short circuit current rating of 65 kA @ 240V, 480Y/277V and up to 30 kA @ 600Y/347V.

As a circuit breaker for export

When exporting to many countries outside of the U.S. and North America, the 3RV can be applied as a thermal magnetic circuit breaker for use in motor branch circuits.

3RV29 28-1K



Terminals for "Combination Motor Controller Type E" to UL 508

The 3RV MSP for motor protection is approved according to UL 508 as "Combination Motor Controller Type E".

As of July, 2001, UL 508 demands at line-side of the device used for this purpose an increased clearance and creepage distance (1" or 2").

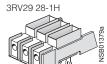
Here, the terminal block 3RV19 28-1H must be used for size S0. The block is simply screwed to the basic unit.

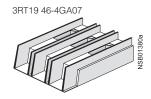
Basic units of size S2 are already compliant with new clearance and creepage distance requirements.

The terminal block 3RT19 46-4GA07 must be used for size S3. The standard box terminal is to be replaced by this terminal block

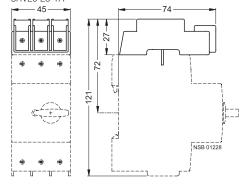
According to CSA, these terminal blocks can be omitted when the device is used as "Combination Motor Controller Type E".

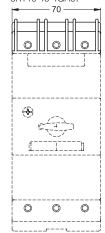
By using a link module, a 3RT contactor can be directly mounted to the load side of a 3RV MSP. This assembly of a 3RV and a 3RT provides a complete, remotely operated, combination starter, Type F.

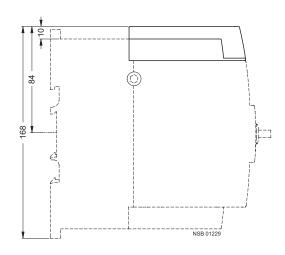




Terminals for "Combination Motor Controller Type E" to UL 5083RV29 28-1H 3RT19 46-4GA07







up to 100 A



Switching of direct current

3RV motor starter protectors fo r alternating currents are also suitable for DC switching.

The maximum permissible DC voltage per conducting path must, however, be adhered to. Higher voltages require a series connection with 2 or 3 conducting paths.

Example circuit for size S00 to S3 3RV motor starter protectors

The response values of the overload release remain unchanged; the response values of a short-circuit release increase by approximately 30 % for DC. The example circuits for DC switching can be seen in the table below.

Example circuit for size S00 to S3 3RV motor starter protectors	Maximum permitted DC voltage <i>U</i> _e	Notes
	150 V DC	Three-pole switching, non-grounded system ¹⁾ If there is no possibility of a ground fault, or if every ground fault is rectified immediately (ground-fault monitoring), then the maximum permitted DC voltage can be tripled.
-\L_+\	300 V DC	Two-pole switching, grounded system The grounded pole is always assigned to the individual conducting path, so that there are always 2 conducting paths in series in the event of a ground fault.
NSB0_00003a M	450 V DC	Single-pole switching, grounded system 3 conducting paths in series. The grounded pole is assigned to the unconnected conducting path.

¹⁾ It is assumed that this circuit always provides safe disconnection even in the event of a double ground fault that bridges two contacts.

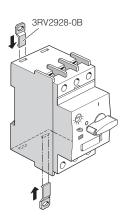
Design

Mounting

The motor starter protectors are secured in position by snapping them onto 35 mm standard mounting rails according to DIN EN 50 022. A mounting rail with a height of 15 mm is required for S3 MSP's. A 75-mm mounting rail can be used as an alternative here.

S2 and S3 MSP's can also be screwed directly onto a base-plate.

The push-in lugs 3RV29 28-0B are available for screw mounting of S00 and S0 MSP's.



Screw connection

3RV MSP's of sizes S00 and S0 are fitted with terminals with captive screws and clamping pieces, allowing the connection of 2 conductors with different cross-sections.

The box terminals of the S2 and S3 MSP's also enable 2 conductors with different cross-sections to be connected. With the exception of S3 MSP's which are equipped with 4 mm hexagon socket terminal screws, all terminal screws are tightened with a Pozidriv screwdriver size 2.

The box terminals of the S3 MSP's can be removed in order to connect conductors with cable lugs or connecting bars. A terminal cover is available to help prevent contact with shock protection and to ensure that the required clearances and creepage distances are maintained if the box terminals are removed.

Spring-type connection ²⁾

As an alternative to screw terminals, S00 and S0 devices are also available with Spring-type terminal connection.

This screwless Spring-type terminal technique, as known for modular terminal blocks, offers shock-proof and vibration proof connection of conductors.

Devices with Spring-type connection allow independent connection of two conductors per terminal.

MSP with Spring-type terminal connection



- It is assumed that this circuit always provides safe cut-out, even in the event of a double earth fault that bridges two contacts.
- 2) For notes on Spring-type terminal connection, see section 19.

General Data

3RV up to 100 A



Characteristics

The time/current characteristic, the current limiting characteristics and the Pt characteristics were determined in accordance with DIN VDE 0660 or IEC 60 947.

The tripping characteristic of the **inverse-time delayed overload releases** (thermal overload releases or 'a' releases) for DC and AC with a frequency of 0 to 400 Hz also apply to the time/current characteristic.

The characteristics apply to the cold state. At operating temperature, the tripping times of the thermal releases are reduced to approximately 25 %.

Under normal operating conditions, all three poles of the device must be loaded. The three main conducting paths must be connected in series in order to protect single-phase or DC loads.

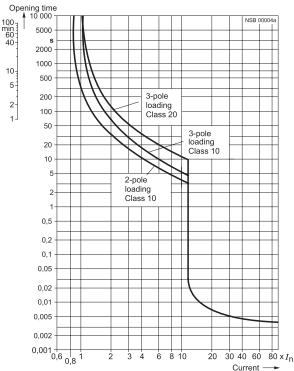
With 2-pole and 3-pole loading, the maximum deviation in the tripping time for 3 times the setting current and upwards is ± 20 % and thus in accordance with DIN VDE 0165.

The tripping characteristics for the instantaneous, electromagnetic overcurrent releases (short-circuit releases, 'n' releases) are based on the rated current $I_{\rm n}$ that represents the maximum value of the setting range for MSP's with adjustable overload releases. If the current is set to a lower value, the tripping current of the 'n' release is increased by a corresponding factor.

The characteristics of the electromagnetic overcurrent releases apply to frequencies of 50/60 Hz. Appropriate correction factors must be used for lower frequencies up to 16 ²/₃ Hz, for higher frequencies up to 400 Hz and for DC.

The printed characteristic curve determined for the MSP relates to a specific setting range. It is, however, also valid as a schematic representation of MSP's with other current ranges.

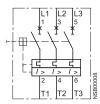
Typical time/current characteristic of 3RV



Circuit diagrams

Internal connections

Motor starter protectors 3RV.



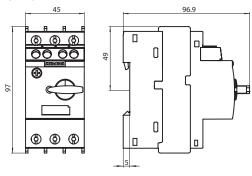
up to 100 A



Dimension drawings

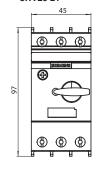
3RV2 MSP, size S00

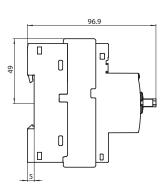
3RV20 11



3RV2 MSP, size S0

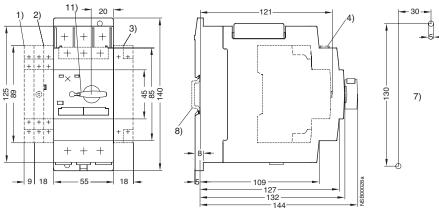
3RV20 21





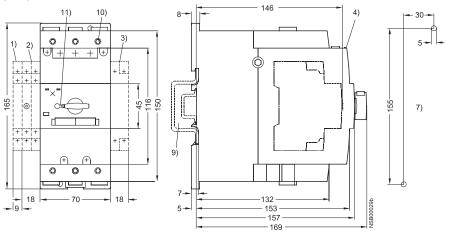
3RV1 MSP, size S2

3RV10 31



3RV1 MSP, size S3

3RV10 4



- 2)
- 2-pole lateral auxiliary switch Signalling switch (S0-S3) or lateral auxiliary switch, 4-pole (S00-S3)
- 3) 4) 5)
- Auxiliary releases Transverse auxiliary switch Push-in lugs for screw mounting
- Only for undervoltage release
- with leading auxiliary switch
- 7) 8)
- Drilling template 35 mm standard mounting rail acc. to EN 50 022
- Mounting on 35 mm standard mounting rail, 15 mm high, acc. to EN 50 022 or on 75 mm standard mounting rail acc. to EN 50 023 4 mm hexagon socket screw
- Lockable in 0 position
 - with shackle diameter 3.5 to 4.5 mm

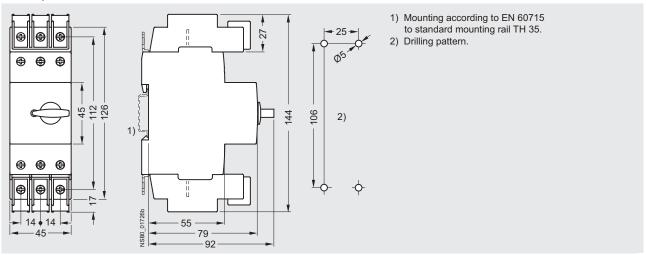
General Data

3RV up to 100 A



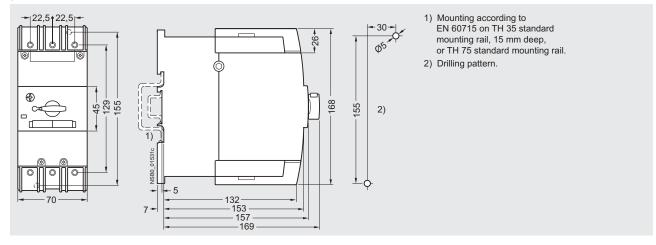
3RV27 and 3RV28 circuit breakers, size S00, S0 and S3

3RV27 21, 3RV28 21



3RV17 circuit breakers, size S3

3RV17 42





General Data

Mountable accessories

Overview

Mounting location and function

The 3RV MSP's have three main contact elements. In order to achieve maximum flexibility, auxiliary switches, signalling switches, auxiliary releases and isolator modules can be supplied separately. These components can be fitted as required on the switches without using tools.

Front

A maximum of 4 auxiliary contacts with auxiliary switches can be attached to each motor starter protector.

A maximum of 4 auxiliary contacts

Auxiliary switches (2 contacts) and

signaling switches can be mounted

with auxiliary switches can be

• The signaling switch cannot be used for the 3RV27 and 3RV28

attached to each MSP.

seperately or together.

Transverse auxiliary switches, solid-state compatible transverse auxiliary switches

1 NO + 1 NC 2 NO

1 CO

An auxiliary contact block can be inserted transversely on the front. The overall width of the MSP's remains unchanged.

3RV Motor Starter Protectors

Left-hand side

Notes:

Lateral auxiliary switch (2 contacts) 1 NO + 1 NC

2 NO 2 NC

One of the three auxiliary switches can be mounted laterally for each MSP. The contacts of the auxiliary switch close and open together with the main contacts of the MSP

Lateral auxiliary switch (4 contacts)

The overall width of the lateral auxiliary switch with 2 contacts is 9 mm.

One auxiliary switch can be mounted laterally for each MSP. The contacts of the auxiliary switch close and open together with the main contacts of the MSP.

2 NO + 2 NC

The overall width of the lateral auxiliary switch with 4 contacts is 18 mm.

Signaling switch Tripping Short-circuit

1 NO + 1 NC 1 NO + 1 NC One signalling switch can be mounted at the side of each MSP The signalling switch has two contact systems

One contact system always signals tripping, irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signalling as a result of switching off with the handle.

In order to be able to switch on the MSP again after a short-circuit, the signaling switch must be reset manually after the error cause has been eliminated

Right-hand side

circuit breakers.

Shunt release

or

For remote-controlled tripping of the MSP. The release coil should only be energized for short periods.1)

Undervoltage release

Isolator module

Trips the MSP when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored.

The overall width of the signaling switch is 18 mm.

Used for remote-controlled tripping of the MSP.

Particularly suitable for EMERGENCY-STOP disconnection via the appropriate EMERGENCY-STOP button in accordance with IEC 60204-1.

Undervoltage release with leading auxiliary contacts Function and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function:

The auxiliary contact will open in switch position OFF to deenergize the coil of the undervoltage release, thus interrupting power consumption. In the "tripped" position of the MSP, these auxiliary contacts are not guaranteed to open. The leading contacts permit the MSP to reclose.

 Accessories cannot be mounted at the right-hand side of the 3RV21 MSP's for motor protection with overload relay function.

One auxiliary release can be

mounted per MSP.

The overall width of the auxiliary releases is 18 mm.

Top

- The isolator module cannot be used for the 3RV27 and 3RV28 circuit breakers.
- The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator modules is used, we therefore recommend that either the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired.

Isolator modules can be mounted to the upper connection of the MSP's.

The supply cable is connected to the MSP via the isolator module.

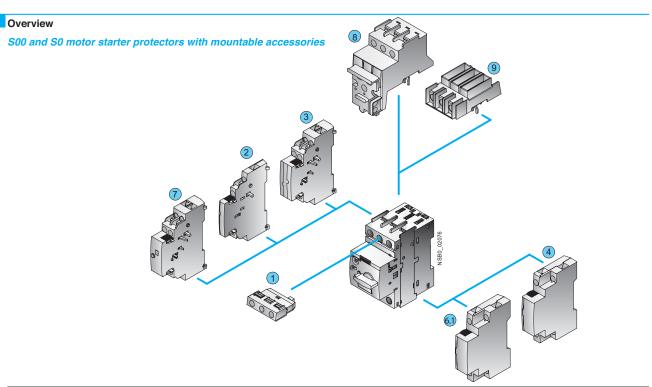
The plug can only be unplugged when the MSP is open and isolates all 3 poles of the MSP from the network. The shock-protected dividing point is clearly visible and secured with a padlock to prevent reinsertion of the plug.

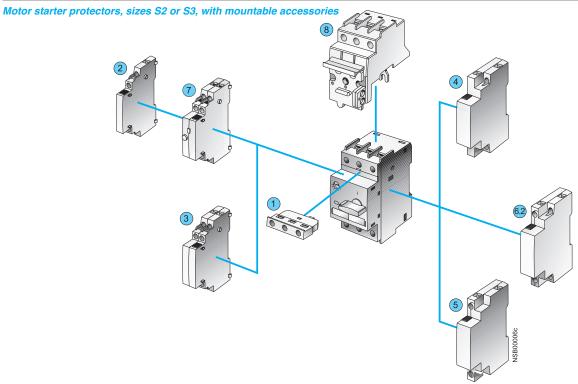
¹⁾ Note the wiring diagrams on Page 1/33

General Data

Mountable accessories







Mountable accessories for all sizes S00 ... S3

- 1 Transverse auxiliary switch
- 2 Lateral auxiliary switch with 2 contacts
- 3 Lateral auxiliary switch with 4 contacts
- 4 Shunt release
- 5 Undervoltage release

Mountable accessories

- (a) Undervoltage release with leading auxiliary contacts (can not be used with 3RV21 circuit breakers)
- 62 Undervoltage release with leading auxiliary contacts

for sizes Mountable accessories S00, S0 7 Signaling switch (ca

- Signaling switch (can not be used with 3RV27 and 3RV28 circuit breakers)
- 8 Isolator module (can not be used with 3RV27 and 3RV28 circuit breakers)
- 9 Terminal block E

for sizes

S00 ... S3

S0 and S2

S2, S3



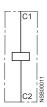
Mountable accessories

Circuit diagrams

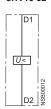
Internal connections

Shunt release

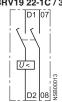
3RV19 02-1D / 3RV29 02-1D



Undervoltage release 3RV19 02-1A / 3RV29 02-1A



Undervoltage release with leading auxiliary contacts 3RV19 12-1C / 3RV29 12-1C 3RV19 22-1C / 3RV29 22-1C



Lateral auxiliary switch

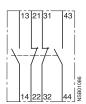
with 2 contacts

3RV19 01-1A

3RV29 01-1A

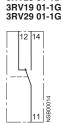
3RV19 01-2A

Lateral auxiliary switch with 4 contacts 3RV19 01-1J / 3RV29 01-1J



3RV19 01-1C 3RV29 01-1C

Transverse auxiliary switch

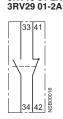


3RV19 01-1D 3RV29 01-1D

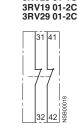
3RV19 01-1E 3RV29 01-1E 3RV19 01-2E 3RV29 01-2E



3RV19 01-1F 3RV29 01-1F

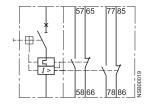


3RV19 01-1B 3RV29 01-1B 3RV19 01-2B 3RV29 01-2B



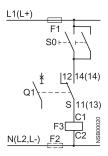
Signaling switch

3RV19 21-1M / 3RV29 21-1M

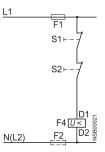


External connections

Shunt release



Undervoltage release





S F1; F2 F3 F4

OFF pushbuttons in system Motor starter protectors Auxiliary switch of MSP Q1 Fuses (gL/gG) max. 10 A Shunt release Undervoltage release

General Data

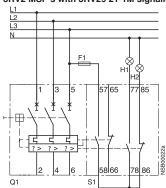
Mountable accessories



Circuit diagrams

Typical circuits

3RV2 MSP's with 3RV29 21-1M signalling switch



Separate "Tripped" and "Short circuit" signals

H1: "Short circuit" signal

H1; H2 Indicator lights

H2: "Overload" or "Tripped by auxiliary release" signal

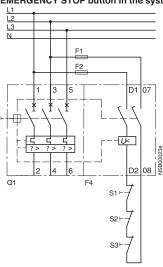
Fuses (gL/gG) max. 10 A

MSP

Q1 MS

S1 Signalling switch

Motor starter protectors tripped by means of pushbutton or EMERGENCY STOP button in the system



The leading auxiliary contacts open in "OFF" position of the MSP to switch off the coil voltage of the undervoltage release, thus avoiding power consumption in switched off state.

In the "tripped" position of the MSP, these contacts are not guaranteed to open.

F1; F2 Fuses (gL/gG) max. 10 A

Q1 MSP

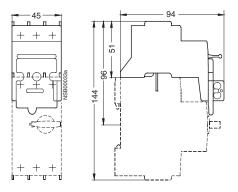
F4 Undervoltage release

S1; S2, S3 OFF pushbuttons in system

Dimension drawings

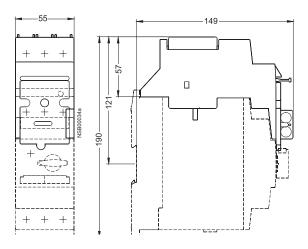
Isolator modules

3RV29 28-1A for MSP's size S00, S0



For dimension drawings of auxiliary switches, signalling switches and auxiliary releases, see page 1/33 and 1/34.

3RV19 38-1A for MSP's size S2





3RV Motor Starter Protectors 3RV Motor Starter Protectors up to 100 A

Accessories Busbar accessories

Overview

Busbar adapters

The MSP's are mounted directly with the aid of busbar adapters on fastbus-busbar systems with 40 mm and 60 mm centerline spacing, in order to save space and to reduce wiring times and costs.

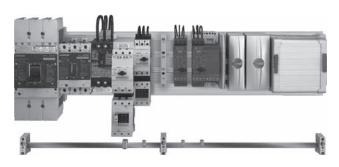
Fastbus-busbar adapters for busbar systems with 40 mm centerline spacing are suitable for copper busbars with a width of 12 mm to 15 mm, while those with 60 mm centerline spacing are suitable for widths of 12 mm to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The MSP's are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

Refer to page 1/10 for busbar adapters for specific MSP's and accessories.

Further busbar adapters for snap-mounting direct-on-line starters and reversing starters, as well as additional accessories such as line terminals and outgoing terminals, busbar copper, etc., can be found in Section 5.

SIRIUS MSP's and combination starters with fastbus-busbar adapters snapped onto busbars

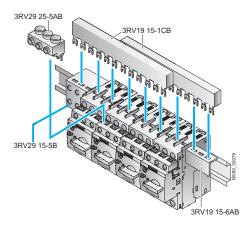


Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV2 motor starter protectors with screw terminals. They can be used for the different types of motor starter protector up to 32 A. The 3RV19 15 three-phase busbar systems are generally unsuitable for the 3RV21 motor starter protectors for motor protection with overload relay function and for the 3RV27 and 3RV28 circuit breakers according to UL 489 / CSA C22.2 No. 5-02.

The busbars are suitable for between 2 and 5 circuit breakers/motor starter protectors. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A combination of motor starter protectors of different sizes is possible. The motor starter protectors are supplied by appropriate feeder terminals.



SIRIUS three-phase busbar system size S00/S0

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

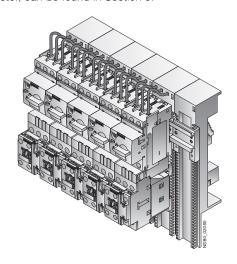
8US busbar adapters for 60 mm systems

The motor starter protectors are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

The busbar adapters for busbar systems with 60 mm center-tocenter clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 5 mm or 10 mm thick.

The motor starter protectors are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals and outgoing terminals, flat copper profile, etc., can be found in Section 5.



SIRIUS load feeders with busbar adapters snapped onto busbars

The three-phase busbar systems can also be used to construct "Type E Starters" according to UL/CSA. Special feeder terminals must be used for this purpose however (see "Selection and Ordering Data" on page 1/8).

General Data

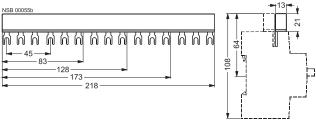
Busbar accessories



Dimension drawings

3RV19 15-1.. 3-phase busbar for S00 and S0 MSP's, modular spacing 45 mm for 2 MSP's 3RV19 15-1AB for 3 MSP's 3RV19 15-1BB for 4 MSP's 3RV19 15-1CB

for 5 MSP's 3RV19 15-1DB

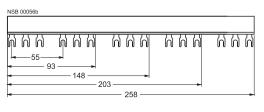


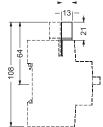
3RV19 15-2.. 3-phase busbar for S00 and S0 circuit-breakers, modular spacing 55 mm

for 2 MSP's with accessories 3RV19 15-2AB

for 3 MSP's with accessories 3RV19 15-2BB for 4 MSP's with accessories 3RV19 15-2CB

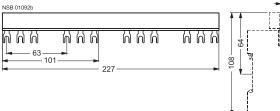
for 5 MSP's with accessories 3RV19 15-2DB





3RV19 15-3.. 3-phase busbar for S00 and S0 MSP's, modular spacing 63 mm for 2 MSP's with accessories 3RV19 15-3A for 3 MSP's with accessories 3RV19 15-3B

for 4 MSP's with accessories 3RV19 15-3C

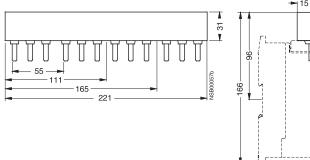


3RV19 35-1...3-phase busbar for S2 MSP, modular spacing 55 mm

for 2 MSP's 3RV19 35-1A

for 3 MSP's 3RV19 35-1B

for 4 MSP's 3RV19 35-1C

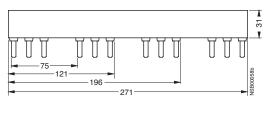


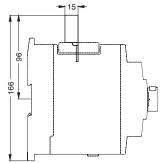


Busbar accessories

Dimension drawings

3RV19 35-3.. 3-phase busbar for S2 MSP, modular spacing 75 mm for 2 MSP's with accessories 3RV19 35-3A for 3 MSP's with accessories 3RV19 35-3B for 4 MSP's with accessories 3RV19 35-3C





3RV29 25-5AB. 3-phase line-side terminals

connection from above, size S00 and S0

14,14

3RV29 35-5B connection from above, size S00 and S0

30.8

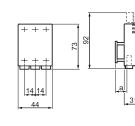
78.8

a) 3RV1. 1 19 mm 3RV1. 2 23 mm

55.3

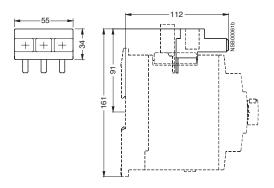
33.8

3RV29 25-5EB 3-phase line-side terminal connection from above, size S0



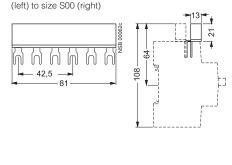
3RV19 35-5A 3-phase line-side terminal

for MSP size S2

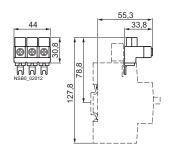


3RV19 15-5DB Connector

For connecting a 3-phase busbar for MSP's of the size S0

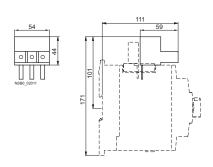


3RV19 25-5EB to construct "Type E Starters" Connected from top, for motor starter protector size S0



3RV19 35-5E

Connected from top, for motor starter protector size S2



General Data

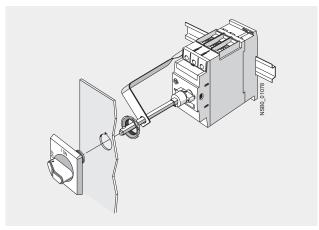
Busbar accessories



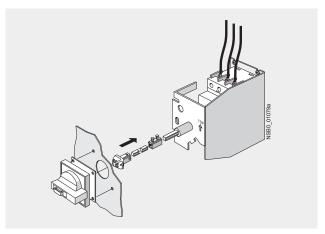
Overview

Door-coupling rotary operating mechanisms

Motor starter protectors with a rotary operating mechanism can be mounted in a control cabinet and operated externally by means of a door-coupling rotary operating mechanism. When the cabinet door with motor starter protector is closed, the operating mechanism is coupled. When the motor starter protector closes, the coupling is locked which prevents the door from being opened unintentionally. This interlock can be defeated by the maintenance personnel. In the OPEN position, the rotary operating mechanism can be secured against reclosing with up to 3 padlocks. Inadvertent opening of the door is not possible in this case either.



SIRIUS 3RV29 26-0K door-coupling rotary operating mechanism



SIRIUS 3RV29 26-2B door-coupling rotary operating mechanism for arduous conditions

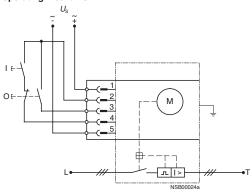


Rotary operating mechanisms

Circuit diagrams

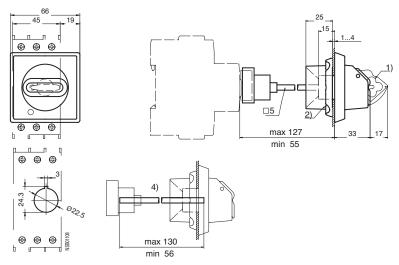
Typical circuits

3RV1 MSP with 3RV19 36/3RV19 46 remote-controlled motorized operating mechanism



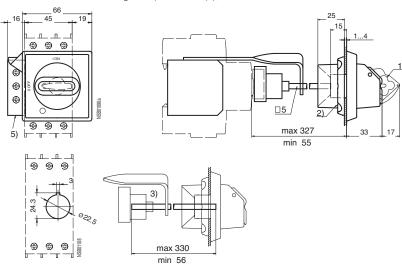
Dimensional drawings

Door coupling rotary mechanism 3RV29 26-0B/3RV29 26-0C short shaft⁴), for MSP sizes S00, S0, S2 and S3



- 1) Lockable in 0 position, with shackle diameter max. 8 mm
- 2) Mounting with screw cap
- 3) Supplied with a shaft length of 330 mm; adaptable by shortening of the shaft.
- 4) Supplied with a shaft length of 130 mm; adaptable by shortening of the shaft.
- 5) Grounding terminal 35 mm² and bracket for 330 mm shaft.

3RV29 26-0K/3RV29 26-0L long shaft (with bracket)3), for MSP sizes S00, S0, S2 and S3



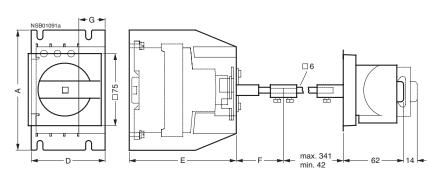
General Data

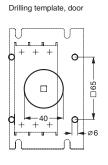
Rotary operating mechanisms

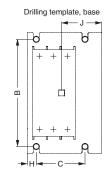


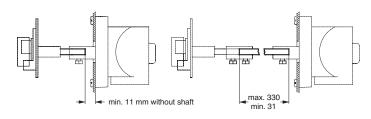
Dimension drawings

3RV29 .**6-2.** *Door coupling rotary mechanism for heavy duty* 3RV29 26-2., 3RV29 36-2., 3R29 46-2. for sizes S00, S0, S2 and S3









Туре	Size	Dimensions								
		Α	В	С	D	Е	F	G	Н	1
3RV29 26-2.	S00, S0	125	111	50	77	112	50	27	9	42
3RV29 36-2.	S2	170	144	60	87	162	50	27	10	47
3RV29 46-2.	S3	194	180	60	100	187	48	25	10	53

Product Category: IEC



Accessories Enclosures and front plates

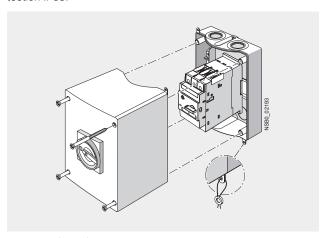
Overview

Enclosure

For stand-alone installation of motor starter protector size S2 ($I_{\text{n max}}$ = 50 A), molded-plastic enclosures for surface mounting are available.

When installed in a molded-plastic enclosures the motor starter protectors have a rated operational voltage $U_{\rm e}$ of 500 V.

The molded-plastic enclosures are designed to degree of protection IP55.



Enclosures for surface mounting

All enclosures are equipped with N and PE terminals. There are two knock-out cable entries for cable glands at the top and two at the bottom; also on the rear corresponding cable entries are scored. There is a knockout on the top of the enclosure for indicator lights that are available as accessories.

In the enclosure for motor starter protector size S2 there is also room for the laterally mounted auxiliary release. There is no provision for installing a motor starter protector with a signaling switch.

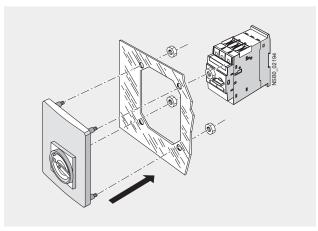
The molded-plastic enclosures of the size S2 motor starter protectors are fitted with a rotary operating mechanism.

The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

The rotary operating mechanisms can be locked in the Open position with up to 3 padlocks.

Front plates

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for motor starter protector sizes S2 and S3 are available for this purpose.



Front plate for size S2

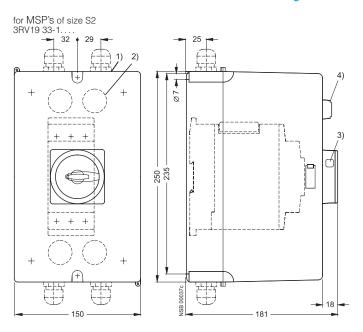
General Data

Mounting accessories



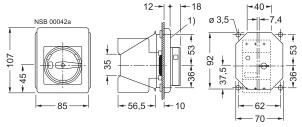
Dimension drawings

3RV19.3-1.... Cast aluminum enclosure for wall mounting



- Knock-outs for M32 (left) and M40 (right).
 M32 knock-outs for rear-side cable entry.
 Opening for padlock with shackle diameter max. 8 mm.
 Indicator light 3RV19 03-5.

Molded-plastic front plate 3RV19 23-4. for MSP sizes S0, S2, S3 3RV19 23-4B 3RV19 23-4E 3RV19 23-4G (only for size S0)







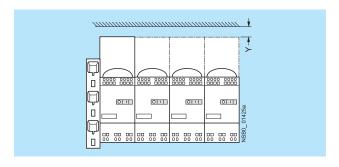
3RV Spring-type terminal infeed system

Design

Installation guidelines

Distance in Y direction from live, earthed or insulated parts according to IEC 60947-4: 10 mm.

In addition, the installation guidelines for motor starter protectors or fuseless load feeders including the clearances must be complied with.



Technical specifications

Туре		3RV29 .7
Rated operational voltage $U_{\scriptscriptstyle \ominus}$		
• IEC		
- 10 % overvoltage	V	500
- 5 % overvoltage	V	525
• UL/CSA	V	600
Rated frequency	Hz	50/60
Rated current I _n	А	63
Permissible ambient temperature		
During storage/transport	°C	-50 +80
During operation	°C	-20 +60
Permissible rated current of the 3RV10 11 motor starter protectors		
(size S00) at control cabinet internal temperature •+60 °C	%	100
Permissible rated current of the 3RV10 21 motor starter protectors	70	100
(size S0) up to 16 A at control cabinet internal temperature		
• +60 °C	%	100
Permissible rated current for 3RV1. 21 motor starter protectors (size S0 from 16 A at control cabinet internal temperature)	
• +40 °C	%	100
• +60 °C	%	87
Degree of protection acc. to IEC 60529		IP20 ¹⁾
Touch protection acc. to IEC 61140		Finger-safe
Conductor cross-sections for main circuit infeed		
Solid, stranded:	mm^2	4 25
Finely stranded with end sleeve	mm ²	4 25
Finely stranded without end sleeve	mm ²	6 25
AWG cables, solid or stranded	AWG	10 3
Conductor cross-sections of terminal block		
• Solid	mm ²	1.5 6
 Finely stranded with end sleeve Finely stranded without end sleeve 	mm ² mm ²	1.5 4 1.5 6
AWG cables, solid or stranded	AWG	15 10
1)		

¹⁾ In infeed terminal compartment without a conductor connected: IP00.

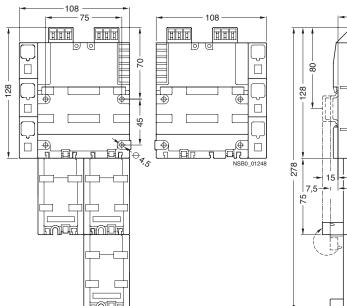
General Data

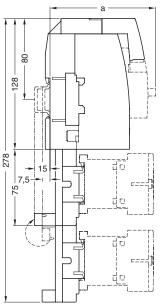
3RV Cage clamp infeed system



Cage Clamp infeed system

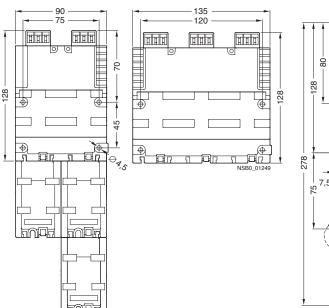
3-phase busbars with line-side terminals for 2 circuit-breakers of sizes S00 and S0 3RV29 17-1.

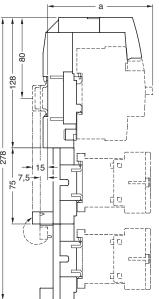




	S00	S0
а	104	125

3-phase busbars for system expansion for 2 and 3 circuit-breakers of sizes S00 and S0 3RV29 17-4.





SIRIUS

• Revised • 04/20/15

IEC Power Control Contactors and Contactor Assemblies

Contents	Pages	Contents	Pages
Section Overview	2/2 - 2/5	Design / Function Overview	
Product Overview	2/6 - 2/7	3RT10 / 3RT20 Contactors, S00 to S3 .	
SIRIUS Contactors 3RT10 / 3RT20, 3-pole to 95A	2/8 2/9 2/10	3RT10 Contactors, S6 to S12	2/110 - 2/115
3RT13 / 3RT23, 4-pole with 4 NO		Technical Data 3RT10 / 3RT20 Contactors 3RT12 Vacuum Contactors 3RT14 Resistive Load Contactors 3RT13 / 23 4-pole Contactors 4 NO 3RT15 / 25 4-pole Contactors 2 NO & 2 3RT26 Capacitor Switching Contactors 3RT20 Interface Relays 3TF6 Vacuum Contactors up to 820A 3TC DC Switching Contactors Accessories 3RH2 Control and Latching Relays 3RH21 Coupling Relays	2/127, 2/152 - 2/157 2/158 - 2/165 2/166 - 2/167 NC2/168 - 2/169 2/170 2/171 2/172 - 2/177 2/178 - 2/181 2/185 - 2/188
SIRIUS Control Relays & Coupling Relay		Circuit Diagrams	
3RH2 Control Relays	2/51 2/51	3RT Contactors & Accessories 3RA13 / 23 Reversing Contactors WYE-Delta Starters	
Special Application Contactors (3TF6 / 3	3TB5 / 3TC)	3RH2 Control & Latching Relays	
3TF6 Vacuum Contactors up to 820A 3TC DC Switching Contactors	2/55 - 2/56	3RH21 Coupling Relays Position of Terminals	2/202
SIRIUS Contactor & Relay Accessories	,	3RT Contactors and Accessories 3RT Capacitor Contactors	
Overview	2/66 - 2/69	3TF6 Vacuum Contactors up to 820A	2/208
AuxiliaryTime Delay and Latching Blocks Surge and EMC Suppressors Contactor Accessories Reversing Accessories Wye-delta Accessories NEMA 1 Enclosures	2/73 - 2/74 2/76 - 2/79 2/80 - 2/82 2/83	Dimensions 3RT, 3-pole Contactors S00 to S3 3RT10, 3-pole Contactors S6 to S12 3RT14, 3-pole Contactors for Resistive Lo 3RT12, 3-pole Vacuum Contactors 3RT13 / 23, 3RT15 / 25 4-pole Contacto	2/213 - 2/214 pads2/213 - 2/214 2/215
Special Application Contactor Accessori	ies	3RT26, Contactors for Capacitor Switch	
Auxiliary Contacts		3RA13 / 23 Reversing Contactors 3TF6 Vacuum Contactors up to 820A	
Surge Suppressors for 3TB, 3TC, 3TF		Contactor Accessories	
SIRIUS Contactor Spare Parts		3RH2 Control and Coupling Relays	2/224
Coils			
Arc Chutes	2/99		

Obsolete Contactor / Relay Spare Parts...2/102 - 2/103

IEC Power Control

Contactors and Contactor Assemblies

Contactors for switching three-phase motors



Contactors for switching three-phase motors



3RT10 / 3RT20 Contactors, 3-pole 3 to 75 HP Sizes S00 to S3

with screw, spring or ring lug connections Page

Selection and ordering data

AC/DC operationAccessoriesSpare parts	2/8 2/66 2/94
Description	2/104

a la an a la an ta	_, .
Description Technical data Internal circuit diagrams Position of terminals Dimension drawings	2/104 2/121 2/190 2/203 2/209



3RT10 contactors, 3-pole, 100 to 400 HP, sizes S6, S10 and S12

	Page
Selection and ordering data	
 AC/DC operation 	2/9
Accessories	2/66
Spare parts	2/98
Description Technical data Internal circuit diagrams Position of terminals Dimension drawings	2/106 2/123 2/196 2/204 2/213



3RT10 / 3RT20 NEMA Labeled Contactors, NEMA size 0 to 6

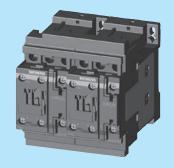
Selection and ordering data	Page
AC/DC operationAccessoriesSpare parts	2/8, 2/9 2/66 2/94
Description Technical data Internal circuit diagrams Position of terminals Dimension drawings	2/104 2/121 2/190 2/203 2/209

Contactor assemblies for switching three-phase motors



3RT12 vacuum contactors, 3-pole, 150 to 400 HP, sizes S10 and S12

01200 010 and 012	Page
Selection and ordering data	2/10 2/66 2/98
Description Technical data Internal circuit diagrams Position of terminals Dimension drawings	2/106 2/152 2/196 2/204 2/215



3RA13 / 23 contactor assemblies for reversing, 3 to 75 HP, sizes S00 to S3

with screw or spring loaded connections Page

Selection and ordering data

• AC and DC operation 2/40

• Accessories 2/80

• Spare parts 2/94

Overview	2/38
Description	2/37
Circuit diagram	2/199
Position of terminals	2/204
Dimension drawings	2/218



Wye Delta for customer assembly of sizes S00 to S12

	Page
Selection and ordering data	0/47
 for wye-delta starting 	2/47
Accessories	2/83
Spare parts	2/94
Overview Description Circuit diagrams	2/108 2/110 2/200

IEC Power Control Contactors and Contactor Assemblies

Contactors for special applications

Contactors for special applications



3RT14 contactors, I_a/AC-1: 140 to 690 A, 3-pole, sizes S3 to S12,

with screw connections	Page
Selection and ordering dataAC and DC operationAccessoriesSpare parts	2/12 2/66 2/97
Descriptions Technical Data Internal circuit diagrams Position of terminals Dimension drawings	2/12 2/158 2/196 2/204 2/211



3RT13 / 23 contactors, AC-1: 18 to 140 A with 4 NO main contacts, sizes S00 to S3

with screw or spring connections

Page

Selection and ordering data	
 AC and DC operation 	2/11
 Accessories 	2/66
Spare parts	2/94

Description	2/11
Technical Data	2/166
Internal circuit diagrams	2/191
Position of terminals	2/207
Dimension drawings	2/216



3RT15 / 25 contactors, AC-3: 7.5-25 HP with 2 NO + 2 NC main contacts, sizes S00 to S2

with screw or spring connections

Selection and ordering data	Page
 AC and DC operation 	2/13
 Accessories 	2/66
Spare parts	2/94

Description	2/13
Technical Data	2/168
Internal circuit diagrams	2/190
Position of terminals	2/203
Dimension drawings	2/216



3RT16 / 3RT26 capacitor contactors

up to 75 kvar sizes S00 to S2 with screw connections

	Page
Selection and ordering data	

• AC and DC operation 2/19 Accessories 2/66 Spare parts 2/96

Descriptions	2/12
	0//=0
Technical Data	2/170
Internal circuit diagrams	2/190
	0/000
Position of terminals	2/206
Dimension drawings	2/217
Dirrioriolori aravvirigo	2/21/



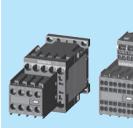
3RT20 coupling relays up to 20 HP (interface,) 3-pole, for switching motors, sizes S00 and S0

with screw or spring connections

Page Selection and ordering data

 DC operation 	2/20
 Accessories 	2/66
Spare parts	2/94

Description	2/20
Technical Data	2/171
Internal circuit diagrams	2/190
Position of terminals	2/203
Dimension drawings	2/209
Diricision diawings	2/20





Selection and ordering data	Page
Safety with standard devices	2/22
Safety with permanently	2/23
mounted auxiliaries	
 Accessories 	2/73
Description Technical Data	2/22 2/121

IEC Power Control

Contactors and Contactor Assemblies

Revised • 04/20/15



Page

Contactors for special application



3TF68 and 3TF69 vacuum contactors, 500 to 700 HP; contactor assemblies

Page

Selection and ordering data

AC and DC operation 2/53Accessories 2/53Spare parts 2/53

Descriptions 2/117
Technical Data 2/172
Internal circuit diagrams 2/201
Position of terminals 2/208
Dimension drawings 2/221



3TB50 to 3TB56 contactors with DC solenoid system, 100 to 300 Hp

Page

Selection and ordering data

• Spare parts 2/101



3TC Contactors

Selection and ordering data

DC operation 2/55Spare parts 2/55

Technical Data 2/178

3RT1 SIRIUS Nomenclature

3RT1	0	3	5	1	Α	B0	1
SIRIUS	Application	Frame	Current	Terminal	Coil Type	Coil Voltage	Aux Contacts A)
Contactor	0 = 3 pole Standard		Designation	1 = Screw	A = AC (S3)		0 = None
	2 = 3 pole Vacuum	4 = S3		2 = Spring Loaded	A = AC/DC (S6-S12)	Selection Chart page 2/49	1 = 1 NO (S3)
	3 = 4 pole NO	5 = S6	Choices =	3 = Spring Loaded	B = DC (S3)	page 2/49	2 = 1 NC (S3)
	4 = 3 pole resistive load	6 = S10	3,4,5,6	Coil only	N = UC Solid state		4 = 2NO + 2NC (S3-S12)
	5 = 4 pole 2 NO + 2 NC	7 = S12		6 = Busbar Terminal	(S6-S12)		5 = 1NO + 1 NC (S3-S12)
	6 = 3 pole Capacitive				P = UC Solid state		6 = 2 NO + 2 NC (S3-S12)
					with RLT (S6-S12)		A) per EN50012

3RT2 SIRIUS Innovations Nomenclature

3	RT2	0	1	5	1	Α	В0	1
S	SIRIUS	Application	Frame	Current	Terminal	Coil Type	Coil Voltage	Aux Contacts A)
h	nnovations	0 = 3 pole Standard	1 = S00	3,4,5,6,7,8	1 = Screw	A = AC (S00-S0)		0 = 1NO + 1NC (S0-S2)
C	Contactor	3 = 4 pole NO	2 = S0		2 = Spring Loaded	B = DC	Selection Chart	1 = 1 NO (S00)
		5 = 4 pole 2 NO + 2 NC	3 = S2		4 = Ring Lug	N = UC Electronic	page 2/49	2 = 1 NC (S00)
		6 = 3-pole Capacitive						4 = 2NO + 2NC (S00-S2)
								A) per EN50012

Note: MSPs and Contactors of the same frame size are made to easily fit together with the use of a link module or can be purchased pre-assembled as 3RA starter assemblies. See section 4.

Note: Contactors and Overloads of the frame size S00 - S3 are made to easily fit together without the use of accessories.

Note: This is only a guide to decode the model number. All possible combinations of these are not available.

Page

SIRIUS control relays

Contactors and Contactor Assemblies

SIRIUS contactor relays





3RH21, 3RH22 control relays 4- and 8-pole, size S00, AC and DC operation

Selection and ordering data

With screw connections	2/50
With spring connections	2/50
Accessories for 3RH2	2/51
Overview	2/14

 Overview
 2/14

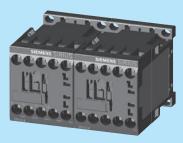
 Technical data
 2/185

 Terminal diagrams
 2/202

 Position of terminals
 2/203

 Dimension drawings
 2/224





3RH24 latched control relays, 4-pole, size S00, AC and DC operation

Selection and ordering data

Vith screw connections	2/51
ccessories for 3RH2	2/51
	Vith screw connections ccessories for 3RH2

Application	2/116
Technical data	2/185
Terminal diagrams	2/202
Position of terminals	2/203
Dimension drawings	2/224

SIRIUS coupling relays (interface)





3RH21 coupling relays for switching auxiliary circuits, 4-pole, size S00, DC operation

Selection and ordering data

With screw connections 2/52with Cage Clamp connections 2/52

Application Technical data Terminal diagrams Position of terminals	2/52 2/189 2/202 2/203
Position of terminals Dimension drawings	2/203 2/224
5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -	



Page

Page

IEC Power Control

Contactors and Contactor Assemblies

Revised04/20/15

Overview







		****				0 0 0									
Туре		S00 3RT2	20 1			SO 3RT2	0 2					S2 3RT2	20 3		
3RT10 / 3RT20 conta	ctors														
AC/DC operation		3RT2015	3RT2016	3RT2017	3RT2018	3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028	3RT2035	3RT2036	3RT2037	3RT2038
Туре			page	2/8				page	e 2/8			l	pag	e 2/8	
Maximum 3-phase h	orsepo	wer ra	tings a	t 460V	(UL and	d CSA I	isted v	alues)							
200 V	HP	1.5	2	3	3	2	3	5	7.5	10	10	10	15	20	20
230 V	HP	2	3	3	5	3	3	5	7.5	10	10	15	15	20	25
460 V	HP	3	5	7.5	10	5	7.5	10	15	20	25	30	40	50	50
575 V	HP	5	7.5	10	10	7.5	10	15	20	25	25	40	50	50	60
AC-3															
I _e /AC-3/400V	Α	7	9	12	16	9	12	17	25	32	38	40	50	65	80
230 V	kW	1.5	2.2	3	4	2.2	3	4	5.5	7.5	11	11	15	18.5	22
400 V	kW	3	4	5.5	7.5	4	5.5	7.5	11	15	18.5	18.5	22	30	37
500 V	kW	3.5	4.5	5.5	7.5	4.5	7.5	10	11	18.5	18.5	22	30	37	37
690 V	kW	4	5.5	5.5	7.5	5.5	7.5	11	11	18.5	18.5	22	22	37	45
1000 V	kW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AC-4 (at $I_a = 6 \times I_e$)															
400 V	kW	3	4	4	5.5	4	5.5	7.5	7.5	11	11	18.5	22	30	37
400 V (200,000 operating cycles)	kW	1.15	2	2	2.5	2	2.6	3.5	4.4	6	6	11.6	12.6	14.7	15.8
AC-1 (40°C, ≤ 690V)															
I_{e}	Α	18	22	22	22	40	40	40	40	50	50	60	70	80	90
Accessories for cont Auxiliary switch blocks	front	3RH29 11 3RH29 11		(p. 2/66) (p. 2/68)		3RH29 21 3RH29 21		(p. 2/66) (p. 2/68)							
Terminal covers		_		4 /		_						3RT29 36-4EA2		(p. 2/79)	
Box terminals		-				_						-			
Surge suppressor		3RT29 16		(p. 2/73)		3RT29 26		(p. 2/73)				3RT29 26/36		(p. 2/73)	
3RU11/21 and 3RB2	/ 3RB3	overlo	ad rela	ys (Se	ction 3)										
3RU21, thermal, CLASS 10)	3RU21 16	0.1-16A	(p. 3/10)		3RU21 26	0.18- 40A	(p. 3/10)				3RU21 36	11-80A	(p. 3/10)	
3RB30/31, solid-state, CLASS 5, 10, 20 and 30		3RB30 16 3RB31 16	0.1-16A	(p. 3/22) (p. 3/23)		3RB30 26 3RB31 26	0.1-40A	(p. 3/22) (p. 3/23)				3RB30 36 3RB31 36	12-80A	(p. 3/22) (p. 3/23)	
3RB22/23, solid-state, CLASS 5, 10, 20 and 30		3RB2.83+ 3RB29 06	0.3-25A	(p. 3/34)								3RB2.83+ 3RB29 06		(p. 3/34)	
3RV10 / 3RV20 circui	it-brea	kers (S	ection	1)											
Type		3RV20 11	0.18-16A	(p. 1/4)		3RV20 21	11-40A	(p. 1/4)				3RV20 31 3RV20 32	9.5-80A	(p. 1/5)	
Link modules		3RA29 11		(p. 1/10)		3RA29 21		(p. 1/10)				3RA29 31		(p. 1/10)	
3RA13 / 3RA23 Reve	rsing o	contrac	tor ass	emblie	s										
Complete units	Type	3RA2315	3RA2316	3RA231	7 3RA231	8 3RA23	24 3RA2	325 3RA2	2326 3R/	A2327 3R	A2328 3	RA2335	3RA2336	3RA2337	3RA2338
				e 2/40)				(page					(page		
460 V	HP	3	5	7.5	10	7.5	10) 1	5	20	25	30	40	50	50
Installation kits / wiring connectors			3RA29 13-2	2AA1 (p. 2/	81)		3	RA29 23-2/	AA1 (p. 2/8	1)		3F	RA2933-2A	A1 (p. 2/81)	

3RA29 22-2H (p. 2/82)

Mechanical interlocks

3RA29 12-2H (p. 2/82)

3RA2934-2B (p. 2/80)

IEC Power Control Contactors and Contactor Assemblies

Overview









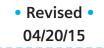


										_		
S3 3RT1. 4			S6 3RT1. 5			S10 3RT1. 6			S12 3RT1. 7		14 3TF6	
3RT10 4 (p. 2/8)	4 3RT10 45	3RT10 46	3RT10 54 (p. 2/9)	3RT10 55	3RT10 56	3RT10 64 (p. 2/9)	3RT10 65	3RT10 66	3RT10 75 (p. 2/9)	3RT10 76	-	
-			-			3RT12 64 (p. 2/10)	3RT12 65	3RT12 66	3RT12 75 (p. 2/10)	3RT12 76	3TF68 (p. 2/53)	3TF69
20 25 50	25 30 60	30 30 75	40 50 100	50 60 125	60 75 150	60 75 150	75 100 200	100 125 250	125 150 300	150 200 400	200 250 500	290 350 700
60	75	100	125	150	200	200	250	300	400	500	650	860
65	80	95	115	150	185	225	265	300	400	500	630	820
30	37	45	55	75	90	110	132	160	200	250	335	450
18.5 37	22	22	37	45	55	55	75 160	90	132	160	200	260
45	45 55	55 55	75 110	90 132	110 160	160 200	250	200 250	250 400	355 400/500	434 600	600 800
30	37	37	75	90	90	90/315	132/355	132/400	250/560	250/710	600	800
30 15.1	37	45 22	55 29	75	90 45	110	132	160	200 84/140	250	355 168	400
15.1	17.9	22	29	38	45	54/78	66/93	71/112	84/140	98/161	108	191
100	120	120	160	185	215	275/330	330	330	430/610	610	700	910
											_ 3TY7 561	(p. 2/53)
3RT19 4	6-4EA1/2	(p. 2/79)	3RT19 56-4	EA1/2/3	(p. 2/79)	3RT19 66-4	4EA1/2/3	(p. 2/79)			3TX7 686/696	(p. 2/54)
_			3RT19 55/5	6-4G	(p. 2/79)	3RT19 66-4	4G	(p. 2/79)			_	
			3RT19 56-1	C (RC elemen	t) (p. 2/73)						3TX7 572	(p. 2/54)
									ı		1	
3RU11 4	16 18 – 100 A	(p. 3/10)	-			-			_		-	
3RB20 4 3RB21 4	16 12.5 – 100 A 16	(p. 3/22) (p. 3/23)	3RB20 56 3RB21 56	50 – 200 A	(p. 3/22) (p. 3/23)	3RB20 66 3RB21 66	55 – 630 A (p. 3/23)	A (p. 3/22)	3RB20 66 3RB21 66	160 – 630 A (p. 3/22)	3RB20 66 3RB21 66	160 – 630 A (p. 3/22)
			3RB2.83 + 3RB29 56	20 – 200 A	(p. 3/34)	3RB2.83 + 3RB29 66	63 – 630 A	A (p. 3/34)				
											ı	
3RV10 4	11 45 – 100 A	(p. 1/5)	_						-		-	
3RA19 4	11	(p. 1/10)	-			-			-		-	
3RA13 4 (p. 2/44)	14 3RA13 45	3RA13 46	-			-			-		_	
50	60	75	100	125	150	150	200	250	300	400	500	700
3RA19 4	13-2A	(p. 2/81)	3RA19 53-2	2A	(p. 2/81)	3RA19 63-	2A	(p. 2/81)	3RA19 73-2A	(p. 2/81)	3TX7 680-1A	
3RA19 4	13-2A	(p. 2/81)	3RA19 53-2 3RA19 54-2		(p. 2/81) (p. 2/80)	3RA19 63-	2A	(p. 2/81)	3RA19 73-2A	(p. 2/81)	3TX7 680-1A 3TX7 686-1A	

IEC Power Control

Contactors for Switching Motors

3RT contactors, 3-pole Size S00 to S3





Selection and ordering data













3RT201.-1A

3RT201. -2A. . .

3RT2028-1N...

3RT2025-2B...

3RT2035-1A...

3RT1044-1A...

Frame						Three-	-phase tings			Auxilia	. ,	Screw Terminals	Spring-Loaded Terminals ¹⁾	Weight approx.
Size	AC3	AC1	115V	208V	230V	208V	230V	460V	575V	NO	NC	Order No.	Order No.	kg
3RT 3-p	ole coi	ntacto	ors											
	7	18	0.25	0.5	0.75	1.5	2	3	5	1	0	3RT2015-1□●●1	3RT2015-2□●●1	
										0	1	3RT2015-1□●●2	3RT2015-2□●●2	
	9	22	0.33	1	1	2	3	5	7.5	1	0	3RT2016-1□●●1	3RT2016-2□●●1	
000										0	1	3RT2016-1□●●2	3RT2016-2□●●2	- 0.24/0.29
S00	12	22	0.5	1.5	2	3	3	7.5	10	1	0	3RT2017-1□●●1	3RT2017-2□●●1	0.24/0.29
										0	1	3RT2017-1□●●2	3RT2017-2□●●2	
	16	22	1	2	2	3	5	10	10	1	0	3RT2018-1□●●1	3RT2018-2□●●1	
										0	1	3RT2018-1□●●2	3RT2018-2□●●2	
	9	40	1	1	1	2	3	5	7.5	1	1	3RT2023-1□●●0	3RT2023-2□●●0	
	12	40	1	2	2	3	3	7.5	10	1	1	3RT2024-1□●●0	3RT2024-2□●●0	
S0	16	40	1	2	3	5	5	10	15	1	1	3RT2025-1□●●0	3RT2025-2□●●0	0.42/0.60
30	25	40	2	3	3	7.5	7.5	15	20	1	1	3RT2026-1□●●0	3RT2026-2□●●0	0.42/0.00
	32	50	2	5	5	10	10	20	25	1	1	3RT2027-1□●●0	3RT2027-2□●●0	
	38	50	3	5	5	10	10	25	25	1	1	3RT2028-1□●●0	3RT2028-2□●●0	
	40	60	3	5	7.5	10	15	30	40	1	1	3RT2035-1□●●0	3RT2035-3 □●●0	
S2	50	70	3	7.5	10	15	15	40	50	1	1	3RT2036-1□●●0	3RT2036-3 □●●0	0.99/1.121
32	65	80	5	10	10	20	20	50	50	1	1	3RT2037-1□●●0	3RT2037-3□●●0	0.99/1.121
	80 ²⁾	90	5	10	15	20	25	50	60	1	1	3RT2038-1□●●0	3RT2038-3 □●●0	
	65	100	5	10	15	20	25	50	60	0	0	3RT1044-1□●●0	3RT1044-3□●●0	
S3	80	120	7.5	15	15	25	30	60	75	0	0	3RT1045-1□●●0	3RT1045-3□●●0	1.8/2.8
	95	120	10	15	20	30	30	75	100	0	0	3RT1046-1□●●0	3RT1046-3□●●0	

AC Coil = A A
DC Coil = B B
Size S0 and S2 only: UC Electronic with integrated varistor UC Coil = N

NEMA	Amp	Single HP rat			Three- HP rat	-phase tings			Auxilia conta	,	Screw Terminals with AC coil	Screw Terminals with 24 VDC coil	Weight approx.
Slze	Ratings	115V	208V	230V	208V	230V	460V	575V	NO	NC	Order No.	Order No.	kg
NEMA La	abeled Cont	actor	s										
0	16	1	2	2	3	5	10	10	1	0	3RT2018-1A●●1-0UA0	3RT2018-1BB41-0UA0	0.28
1	25	2	3	3	7.5	7.5	15	20	1	1	3RT2027-1A●●0-0UA0	3RT2027-1BB40-0UA0	0.42
2	45	3	7.5	7.5	10	15	25	25	0	0	3RT2036-1A●●0-0UA0	3RT2036-1NB30-0UA0	0.986/1.121
3	90	10	15	20	25	30	50	50	0	0	3RT1046-1A●●0-0UA0	3RT1046-1BB40-0UA0	1.8 / 2.8

All terminals are spring loaded on frame sizes S00 & S0.
 Only the coil terminals are spring loaded on frame sizes S2 & S3.

Note: Ring lug terminals are also available in size S00 & S0 contactors, except contactors with communication interface or UC coil. Change the 8th digit of the order number to a "4", e. g. 3RT2015-4AK61.

For further coil voltages, see page 2/49. For auxiliaries and accessories, see page 2/66-2/83. For spare parts, see page 2/94-2/99. For technical data, see page 2/121-2/142. For description, see page 2/104-2/105. For int. circuit diagrams, see page 2/190-2/197.

AC Coil Selection for 3RT201 through 3RT104												
●●Coil Code	C2 ²⁾	H2 ³⁾	K6	P6	U6	V 6	T6					
60 Hz	24 V	48 V	120 V	240 V	277 V	480 V	600 V					
50 Hz	24 V	48 V	110 V	220 V	_	_	_					

²⁾ Use Code **B0** for 3RT201, S00

 $^{^{3)}\,\}mbox{Use}$ Code $\mbox{H0}$ for 3RT201, S00

DC Coil Select	ion for 3	BRT201, 3	3RT202, 3	RT104 (fc	r 3RT203	see UC	
●●Coil Code	A4 ⁴⁾	B4	W4	E4	F4	G4	M4
DC	12 V	24 V	48 V	60 V	110 V	125 V	220 V

^{4) 3}RT201 and 3RT202 only

UC Coil Selecti	on for 3F	RT202	UC C	oil Select	ion for 3F	RT203	
●●Coil Code	●●Coil Code B3 F3			••	В3	F3	P3 ⁴⁾
UC	21-28V	95-130V	200-280V		20-33V	83-155V	175-280V

⁴⁾ at upper limit = 1.1 x U_S

²⁾ Max UL FLA = 65A at 460V



Revised 09/30/14

IEC Power Control

Contactors for Switching Motors

3RT contactors, 3-pole Size S6-S12 and NEMA size 4-6

Selection and ordering data

- * AC/DC Coils with built in surge suppressor
- * Coil Types (40Hz to 60Hz, DC):
- * Conventional Coil
- * Solid-state operated coil with wider range and 24 V DC PLC input
- * Solid-state operated coil with Remaining Lifetime Indication (RLT)
- * Box terminals ordered separately





3RT1054-6A. . 6

3RT1065-6P. . 5

Frame	Ratings HP ratings HF				Three- HP rat	-phase :ings			Auxilia	,	Screw Terminals on coil and aux.	Spring-type terminals on coil and aux. contacts	Weight approx.
Size	AC3	AC1	115V	230V	200V	230V	460V	575V	NO	NC	Order No.	Order No.	kg
3RT 3-p	ole Co	ntacto	rs										
	115	160	 	25	40	50	100	125	2	2	3RT1054-6□●●6	3RT1054-2□●●6	
S6	150	185	I—	30	50	60	125	150	2	2	3RT1055-6□●●6	3RT1055-2□●●6	3.5
	185	215	1—	30	60	75	150	200	2	2	3RT1056-6□●●6	3RT1056-2□●●6	
	225	275	1—	_	60	75	150	200	2	2	3RT1064-6□●●6	3RT1064-2□●●6	
S10	265	330	1—	_	75	100	200	250	2	2	3RT1065-6□●●6	3RT1065-2□●●6	6.7
	300	330	<u> </u>	_	100	125	250	300	2	2	3RT1066-6□●●6	3RT1066-2□●●6	
	400	430	I—	_	125	150	300	400	2	2	3RT1075-6□●●6	3RT1075-2□●●6	10.5
S12	500	610	I—	_	150	200	400	500	2	2	3RT1076-6□●●6	3RT1076-2□●●6	- 10.5
	Solid	onvention State O State O	perated		th RLT	=	□ A N P●●5	П А N					

NEMA	Amp	HP ratings		Three- HP rat	-phase :ings			Auxilia conta	,	Screw Terminals on coil and aux.	Spring-type terminals on coil and aux. contacts	Weight approx.
Slze	Ratings	115V	230V	208V	230V	460V	575V	NO	NC	Order No.	Order No.	kg
NEMA L	abeled Conta	ctors										
4	135	_	30	40	50	100	100	2	2	3RT1056-6A●●6-0UA0	_	3.5
5	300	_	_	100	125	250	300	2	2	3RT1066-6A●●6-0UA0	_	6.7
6	300			150	200	400	500	2	2	3RT1076-64-01140		10.5

All coil voltages are in the adjacent table. For auxiliaries and accessories, see page 2/66-2/83. For spare parts, see page 2/94-2/99. For technical data, see page 2/143-2/151. For description, see page 2/106-2/107. For int. circuit diagrams, see page 2/196-2/198. For dimension drawings, see page 2/213-2/214.

Sizes S6 to S12 Coil Codes - UC operation (AC 50 to 60 Hz and DC)												
UC Conventi	onal Coil		Sol	id-State Coil								
Rated control	3RT1. 5A		Rated control	3RT1. 5N	3RT1. 5P							
supply voltage Us Us min Us max ¹⁾	3RT1. 6A		3RT1. 6N	3RT1. 6P								
	3RT1. 7A			3RT1. 7N	3RT1. 7P							
Coil Codes	••		Coil Codes	••	••							
23 26 V AC/DC	B3		21 27.3 V AC/DC	В3	_							
42 48 V AC/DC	D3		96 127 V AC/DC	F3	F3							
110 127 V AC/DC	F3		200 277 V AC/DC	P3	P3							
200 220 V AC/DC	M3											
220 240 V AC/DC	P3											
240 277 V AC/DC	U3											
380 420 V AC/DC	V3			perating range: min to 1.1 × Us	max							
440 480 V AC/DC	R3		0.0 X 03 I		ind.							
500 550 V AC/DC	S3											
575 600 V AC/DC	ТЗ											

Contactors for Switching Motors

3RT12 vacuum contactors, 3-pole



Selection and ordering data

- AC/DC operation (40 Hz ... 60 Hz, DC) Withdrawable coils
- Integrated coil circuit (varistor)
- Auxiliary and control conductors: screw connections
- · Main conductor: bar connections

	Size	Horsepowe and utilizat	er rating ion cate	gs egories				Auxil conta latera	acts,	Rated control supply voltage U_s	Order No.	Weight approx.
		AC-3 Maximum inductive	motors	s of thre			AC-1 Maximum resistive					
		current	HP	HP	НР	HP	current	NO	NC	AC/DC V		kg
	Conve	entional op	eratin	a meci	nanisn	n						
3RT12 6.	S10	225	60	75	150	200	330	2	2	110 127 220 240	3RT12 64-6AF36 3RT12 64-6AP36	6.4
Manage of the state of the stat		265	75	100	200	250	330	2	2	110 127 220 240	3RT12 65-6AF36 3RT12 65-6AP36	
		300	100	125	250	300	330	2	2	110 127 220 240	3RT12 66-6AF36 3RT12 66-6AP36	
	S12	400	125	150	300	400	610	2	2	110 127 220 240	3RT12 75-6AF36 3RT12 75-6AP36	9.6
		500	150	200	400	500	610	2	2	110 127 220 240	3RT12 76-6AF36 3RT12 76-6AP36	
	Solid-	state opera	ating r	nechar	nism ·	for DC	24 V PLC	out	out			
3RT12 7.	S10	225	60	75	150	200	330	2	2	96 127 200 277	3RT12 64-6NF36 3RT12 64-6NP36	6.4
000		265	75	100	200	250	330	2	2	96 127 200 277	3RT12 65-6NF36 3RT12 65-6NP36	
12 O 12 O 10 D 10		300	100	125	250	300	330	2	2	96 127 200 277	3RT12 66-6NF36 3RT12 66-6NP36	
S1	S12	400	125	150	300	400	610	2	2	96 127 200 277	3RT12 75-6NF36 3RT12 75-6NP36	9.6
		500	150	200	400	500	610	2	2	96 127 200 277	3RT12 76-6NF36 3RT12 76-6NP36	

Universal Coil Selection for 3RT126 through 3RT127: Conventional Operation												
Coil Code	B3	D3	F3	M3	P3	U3	V3	R3	S3	T3		
Volts AC/DC 40 - 60 Hz, DC		42 48 V	110 127 V	200 220 V	220 240 V	240 277 V	380 420 V	440 480 V	500 550 V	575 600 V		

Solid State Selection for 3RT126 through 3RT127: Solid-State											
Coil Code	B3	F3	P3								
Volts AC/DC 40 - 60 Hz, DC	21 27.3 V	96 127 V	200 277 V								

For further vacuum contactors, 500Hp and 700Hp (3TF68/69), see page 2/53. For auxiliaries and accessories, see page 2/68. For spare parts, see page 2/98-2/99. For technical data, see page 2/152-2/157. For int. circuit diagrams, see page 2/196 For dimension drawings, see page 2/215.

Contactors for Special Applications

3RT13 & 3RT23 contactors, 4-pole (4 NO contacts) for switching resistive loads (AC-1)

Size S0: In order to make 4-pole contactor assemblies using two **Standards** 3RT232. contactors, the fourth pole of the left-hand contactor must IEC 60947-1. EN 60947-1 always be moved to the left-hand side. The contactor assembly IEC 60947-4-1, EN 60947-4-1 can then be made easily with the aid of the 3RA2922-2H mechani-IEC 60947-5-1, EN 60947-5-1 (auxiliary switches) cal interlock and connecting clip set fitted between the two contactors.

> Sizes S2 and S3: Contactor assemblies can be made using two 3RT23 3 or 3RT13 4. contactors in conjunction with the laterally mountable mechanical interlock and the mechanical connectors. The mechanical interlock for fitting onto the front cannot be used for size S2 and S3 contactors.

The contactors are suitable for use in any climate. They are safe from touch to DIN VDE 0106, Part 100. The accessories for the 3-pole SIRIUS contactors can also be used for the 4-pole de-

Mountable auxiliary contacts

Size S00: 4 auxiliary contacts of which up to 3 can be NC. Size S0 & S2: 4 additional auxiliary contacts up to 3 can be NC. Sizes S2 and S3: Up to 4 auxiliary contacts (either laterally mounted or snappped onto the top).

Contactor assemblies with mechanical interlock

The 4-pole 3RT13 / 3RT23 contactors with 4 NO contacts as the main contacts are suitable for making contactor assemblies with a mechanical interlock, e.g. for system transfers.

Size S00: Contactor assemblies can be made using two 3RT231. contactors in conjunction with the mechanical interlock and two connecting clips (Order No. 3RA2912-2H, pack comprising 10 interlocking elements and 20 clips for 10 contactor assemblies, see accessories on page 2/72).

Application

- · Switching resistive loads
- Isolating systems with unearthed or poorly earthed neutral conductors
- System transfers when alternative AC power supplies are used
- As contactors which only carry current and do not have to switch in case of inductive loads - e.g. variable-speed operating mechanisms
- Switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1

Selection and ordering data

Rating	Rating data Aux		Auxiliary	Auxiliary contacts			40.0	Rated	DO 0
AC-1		UL ratings				Rated	AC Operation	control	DC Operation
Max r		AC loads	Ident-			supply	Screw	supply	Screw
curre	nt /e	at 600 V ,	ification			voltage Us	Terminals 1)	voltage	Terminals 1)
40°C	60°C	60 Hz	No.	Versio	n	50/60 Hz	Order No.	Us	Order No.
Amps	3	Amps		NO	NC	V AC		V DC	

For screwing and stapping onto 35 mm mounting rail

 40^{2}

Size S3

120

140

35²⁾

35

110

11E



3RT23 27-1AP60



3RT2	36-1	AP60	
		B	9/1
120		79	2
41	4	G G	
	-		3,
	L		
4	4	# #	

Size	ize S00 - Auxiliary switches can be retrofitted												
18	16	18	_	_	_	24	3RT23 16-1AB00	24	3RT23 16-1BB40				
						110/120	3RT23 16-1AK60	125	3RT23 16-1BG40				
						220/240	3RT23 16-1AP60	220	3RT23 16-1BM40				
22	20	20	_	_	_	24	3RT23 17-1AB00	24	3RT23 17-1BB40				
						110/120	3RT23 17-1AK60	125	3RT23 17-1BG40				
						220/240	3RT23 17-1AP60	220	3RT23 17-1BM40				
Size	SO – Te	erminal desig	nations acc	cording t	:o EN 5	0012 —1 NO	+ 1 NC, identification nu	mber 11E					
35 ²⁾	30 ²⁾	30	11E	1	1	24	3RT23 25-1AC20	24	3RT23 25-1BB40				
						110/120	3RT23 25-1AK60	125	3RT23 25-1BG40				

3RT23 25-1AP60

3RT23 26-1AC20

3RT23 26-1AK60

3RT13 46-1AC20

3RT13 46-1AK60

3RT13 46-1AP60

220

V DC

24

125

220

220/240

24

						220/240	3RT23 26-1AP60	220	3RT23 26-1BM40		
50 ²⁾	42 ²⁾	38	11E	1	1	24	3RT23 27-1AC20	24	3RT23 27-1BB40		
						110/120	3RT23 27-1AK60	125	3RT23 27-1BG40		
						220/240	3RT23 27-1AP60	220	3RT23 27-1BM40		
Size S2											
60 5	55	60	11E	1	1	24	3RT23 36-1AC20	20-33	3RT23 36-1NB30		
						110/120	3RT23 36-1AK60	83-155	3RT23 36-1NF30		
						220/240	3RT23 36-1AP60	175-280	3RT23 36-1NP30		
110 9	95	105	11E	1	1	24	3RT23 37-1AC20	20-33	3RT23 37-1NB30		
						110/120	3RT23 37-1AK60	83-155	3RT23 37-1NF30		
						220/240	3RT23 37-1AP60	175-280	3RT23 37-1NP30		

1) Size S00 and S0 contactors are also available with spring-type terminals. Replace the 8th digit of the order no. with a "2" e.g. "3RT23 16-2AK60"

2) Minimum conductor cross-section 8 AWG.

For further voltages, see page 2/49. For coil voltage tolerance, p. 2/49 For auxiliaries and accessories, see page 2/66-2/83.

For spare parts, see page 2/94-2/99.

For technical data, see page 2/166-2/167. For in. circuit diagrams, see page 2/191-2/196. For dimension drawings, see page 2/216.

3RT23 25-1BM40

3RT23 26-1BB40

3RT23 26-1BG40

3RT13 46-1BB40

3RT13 46-1BG40

3RT13 46-1BM40

24 110/120

220/240

Contactors for Special Applications

3RT14, 3-pole

for switching resistive loads (AC-1)



Application

AC and DC operation (size S3) UC operation (AC/DC) (sizes S6 to S12)

IEC 60 947, EN 60 947 (VDE 0660)

The contactors are suitable for use in any climate. They are safe from touch to DIN VDE 0106 Part 100.

3RT14 contactors are used for switching resistive loads.

(AC-1) or as contactors, for example in variable-speed drives which normally only have to carry the current.

The accessories for the SIRIUS 3RT10 contactors can also be used here.

Selection and ordering data

3RT14 46-1A..0



Ratings AC-1 utilization category,				UL Ratir	ngs			Rated control supply voltage $U_{\rm s}$	Order No.	Weight approx.	
	IEC Ratings										
Maximum current	Rated power of three phase loads cos Ø = 0.95 (@ 60°C)			Max Current	230/ 240V	460/ 480V	575/ 600V				
Amps	230V kW	400V kW	500V kW	690V kW	Amps	Нр	Нр	Нр			kg

With screw connections · for screwing and snapping onto 35 mm and 75 mm standard mounting rails

Size S3 · (without auxiliary contacts)

• AC ope	AC operation												
140	50	86	107	148	140	15	30	40	24 V, 50/60 Hz 120 V, 60 Hz 240 V, 60 Hz	3RT14 46-1AC2 0 3RT14 46-1AK6 0 3RT14 46-1AP6 0	1.8		
DC operation · DC solenoid system													
140	50	86	107	148	131	15	30	40	DC 24 V DC 48 V	3RT14 46-1BB4 0 3RT14 46-1BW40	2.7		

contacts, supply voltage $U_{\rm s}$

• AC/DC operation (40 Hz ... 60 Hz, DC) • Integrated coil circuit (varistor)

AC-1 utilization category,

IEC Pating

• Main conductor: bar connections

Weight

approx.

Order No.

Withdrawable coils

 Auxiliary and control conductors: screw connections Rating

3RT14 6

		Auxiliai y a	na control c	Jonauc	tors. scre	w connections	,
Size	Ratings			LII	Auxiliary	Rated control	

		I IEC Ra	aungs								
	AC-1 Maximum resistive		power o			Max Current					
	current	230V	400V	500V	690V						
	Amps	kW	kW	kW	kW	Amps	NO	NC	AC/DC V		kg
Con	ventional	operat	ing me	chani	sm						
S6	275	95	165	205	285	210	2	2	110 127 220 240	3RT14 56-6AF36 3RT14 56-6AP36	3.1
S10	400	145	250	315	430	360	2	2	110 127 220 240	3RT14 66-6AF36 3RT14 66-6AP36	5.7
S12	690	245	430	535	740	580	2	2	110 127 220 240	3RT14 76-6AF36 3RT14 76-6AP36	9.1
Soli	d-state op	erating	g mech	ıanism	· for E	C 24 V	PLC	outpi	ut		
S6	275	95	165	205	285	210	2	2	96 127 200 277	3RT14 56-6NF36 3RT14 56-6NP36	3.1
S10	400	145	250	315	430	360	2	2	96 127	3RT14 66-6NF36	5.7

3RT147



30	2/3	95	100	205	200	210	4	4	90 127	30114 30-0NF30	J. I
									200 277	3RT14 56-6NP36	
S10	400	145	250	315	430	360	2	2	96 127 200 277	3RT14 66-6NF36 3RT14 66-6NP36	5.7
S12	690	245	430	535	740	580	2	2	96 127 200 277	3RT14 76-6NF36 3RT14 76-6NP36	9.1
	d-state op										

	id-state op h remainin										
S6	275	95	165	205	285	210	1	1	96 127 200 277	3RT14 56-6PF35 3RT14 56-6PP35	3.1
S10	400	145	250	315	430	360	1	1	200 277	3RT14 66-6PP35	5.7
S12	690	245	430	535	740	580	1	1	200 277	3RT14 76-6PP35	9.1

Universal Co	Jniversal Coil Selection for 3RT145 through 3RT147: Conventional Operation												
Coil Code	B3	D3	F3	M3	P3	U3	V3	R3	S3	T3			
Volts AC/DC 40 - 60 Hz, DC		42 48 V	110 127 V	200 220 V	220 240 V	240 277 V	380 420 V	440 480 V	500 550 V	575 600 V			

Universal Coil Selection for 3RT145 through 3RT147: Solid-State									
Coil Code	B3	F3	P3						
Volts AC/DC 40 - 60 Hz, DC	21 27.3 V	96 127 V	200 277 V						

Note: B3 code not available for Remaining Lifetime Contactors. For further coil voltages, see page 2/49. For auxiliaries and accessories, see page 2/66-2/83. For spare parts, see page 2/94-2/99. For technical data, see page 2/158-2/165. For int. circuit diagrams, see page 2/196. For dimension drawings, see page 2/211, 2/213-2/214.

Contactors for Special Applications

3RT15 / 3RT25 contactors, 4-pole (2 NO + 2 NC contacts for switching motors

AC and DC operation

IEC 60 947-4-1/EN 60 947-4-1 (VDE 0660, Part 102)

Selection and ordering data

Design

The contactors are suitable for use in any climate. They are safe to touch according to EN 50274. The accessories for the 3-pole SIRIUS contactors can also be used for the 4-pole designs.

Mountable auxiliary contacts

Size S00 and S0:

4 auxiliary contacts, of which up to 4 can be NC contacts.

Size S2

Up to 4 auxiliary contacts (either laterally mounted or snapped onto the top; auxiliary switch blocks to EN 50 012 and EN 50 005)

Application

- Changing the polarity of hoisting gear motors
- Switching two separate loads from the same source

Rated control supply voltage AC-2/AC-3 T _o : up to 60°C AC-1 Max resistive current Auxiliary voltage AC-2/AC-3 T _o : up to 60°C AC-1 Max resistive current Auxiliary voltage AC-2/AC-3 T _o : up to 60°C AC-1 Max resistive current Auxiliary voltage AC-2/AC-3 T _o : up to 60°C AC-1 Max resistive current Auxiliary voltage AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-2/AC-3 T _o : up to 60°C AC-1 Max AC-	Selection and	ordering d	aıa									
AC-2/AC-3 T _i up to 60°C Current Auxiliary control supply voltage Current Auxiliary contacts Auxiliary contacts Current Current Auxiliary contacts Current Current Auxiliary contacts Current Current Current Auxiliary contacts Current Cu		Rating data	a									
Current to at 400 V 460 V 60 Hz 40° C 60° C 60° C 60° C 40° C 60° C 40° C 60° C 40° C 60° C 40° C		AC-2/AC-3	<i>T_u</i> : up t	o 60°C						AC Operation 2)		DC Operation 2)
Amps No No No No No No No N			Max m	otor	curren	t	Auxilia	ıry	supply	Screw terminals	supply	Screw terminals
Amps NO NC Amps NO NC VAC, 50/60 Hz VDC												
Size S0 3 - Auxiliary switches can be retrofitted Size S0 3 - Auxiliary switches can be retrofitted Size S0 3 - Auxiliary switches can be retrofitted Size S0 3 - Auxiliary switches can be retrofitted Size S0 3 - Auxiliary switches can be retrofitted Size S0 3 - Auxiliary switches can be retrofitted Size S0 3 - Auxiliary switches can be retrofitted Size S1 5 18 16 -		at 400 V	460 V,		40°C	60°C			-	Order No.		Order No.
Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S00 9 - Auxiliary switches can be retrofitted Size S10 16 16 Size S10 18 18 16 Size S10 18 16 Si		Amps	NO	NC	Amps		NO	NC	V AC, 50/60 Hz		V DC	
Size S0 - Terminal designations according to EN 50012, 1 NO + 1 NC, identification number 11E Size S2 Size S5-1AC20 24 Size S1-1AC20 25 Size S1-1AC20 25 Size S2 Size S3-1AC20 24 Size S3-1AC20 25 Size S3-1AC20 26 Size S3-1AC20 27 Size S3-1AC20 27 Size S3-1AC20 27 Size S3-1AC20 28 Size S3-1AC20 29 Size S3-1AC20 29 Size S3-1AC20 29 Size S3-1AC20 20 Size S3-1AC30 20 Size S3-	For screwing	and stappi	ng onte	o 35 m	m star	ndard	mount	ing rai				
9	3RT25 16-1AB00	Size S00	3) - Auxil	iary swit	ches ca	n be ret	rofitted					
9	cecco)—A1(+)	1 R1 F	3 3								
110/120 3RT25 16-1AK60 125 3RT25 16-1BG40 220/240 3RT25 16-1AP60 220 3RT25 16-1BM40 12 7.5 4 22 20 -	LIEN E	P ()	2 R2 F		10	10			J 04	OPTO5 40 44 P00	0.4	0DT05 40 4DD40
220/240 3RT25 16-1AP60 220 3RT25 16-1BM40 12	agga! L	9		5	10	10	_	_	1			
12												
110/120 3RT25 17-1AK60 125 3RT25 17-1BG40 220/240 3RT25 17-1AF60 220 3RT25 17-1BM40 220/240 3RT25 18-1AB00 24 3RT25 18-1BB40 110/120 3RT25 18-1AK60 125 3RT25 18-1BB40 110/120 3RT25 18-1AK60 125 3RT25 18-1BG40 220/240 3RT25 18-1AF60 220 3RT25 18-1BM40 220/240 3RT25 18-1AF60 220 3RT25 18-1BM40 3RT25 18-1AF60 220 3RT25 18-1BM40 3RT25 18-1AF60 220 3RT25 18-1BM40 3RT25 26-1AF60 220 3RT25 26-1BG40 220/240 3RT25 26-1AF60 3RT25 26-1BM40 3RT25 35-1AC20 3RT25 26-1BM40 3RT25 35-1AC20 3				4)								
3RT25 26-1AC20 16 10 4) 22 20 — 24 3RT25 18-1AB00 110/120 3RT25 18-1AK60 125 3RT25 18-1BM40 220/240 3RT25 18-1AK60 220 3RT25 18-1BM40 220/240 3RT25 18-1AK60 220 3RT25 18-1BM40 220/240 3RT25 18-1AK60 220 3RT25 18-1BM40 220/240 3RT25 26-1AC20 24 3RT25 26-1AC20 24 3RT25 26-1BB40 110/120 3RT25 38-1AC20 3RT25 26-1AK60 125 3RT25 26-1BM40 220/240 3RT25 26-1AP60 20 3RT25 26-1BM40 20 3RT25 38-1AC20		12		7.5	22	20	_	_				
3RT25 26-1AC20 16 10 10 22 20												
110/120 3RT25 18-1AK60 125 3RT25 18-1BG40 220/240 3RT25 18-1AP60 220 3RT25 18-1BM40				40.4)								
220/240 3RT25 18-1AP60 220 3RT25 18-1BM40	3R125 26-1AC20	16		10 7	22	20	_	_				
Size S0 - Terminal designations according to EN 50012, 1 NO + 1 NC, identification number 11E A1(+)	4 4											
3RT25 35-1AC20 Size S2 A1	Sept. 15	0: 00		L							220	3K125 16-1DW40
3RT25 35-1AC20 Size S2 A1	occe !	Size SU -	Ierminal	designa	itions ac	cording	to EN 5	tification number 11E				
3RT25 26-1AK60 125 3RT25 26-1BG40 220/240 3RT25 26-1AP60 220 3RT25 26-1BM40 3RT25 35-1AC20 Size S2 A1	The le	A1(+) d										
3RT25 35-1AC20 Size S2 A1		25	15	15	40	35	1	1	24	3RT25 26-1AC20	24	3RT25 26-1BB40
3RT25 35-1AC20 Size S2 A1									110/120	3RT25 26-1AK60	125	3RT25 26-1BG40
3126 32 A1									220/240	3RT25 26-1AP60	220	3RT25 26-1BM40
A1	3RT25 35-1AC20	Size S2										
	B B B B		1 R1	R3	3	NO NC					V UC	
110/120 3RT25 35-1AK60 83-155 3RT25 35-1NF30	950	35	30	20	60	55	1	1	24	3RT25 35-1AC20	20-33	3RT25 35-1NB30
									110/120	3RT25 35-1AK60	83-155	3RT25 35-1NF30

For further voltages, see page 2/49. For auxiliaries and accessories, see page 2/66-2/83. For spare parts, see page 2/94-2/99. For technical data, see page 2/168-2/169. For int. circuit diagrams, see page 2/191-2/196. For dimension drawings, see page 2/216.

30

25

70

60

220/240

110/120

220/240

24

3RT25 35-1AP60

3RT25 36-1AC20

3RT25 36-1AK60

3RT25 36-1AP60

20-33

83-155

175-280 **3RT25 35-1NP30**

175-280 **3RT25 36-1NP30**

3RT25 36-1NB30

3RT25 36-1NF30

¹⁾ For changing polarity; not suitable for reversing.

Size S00 and S0 contactors are also available with spring-type terminals. Replace the 8th digit of the order no. with a "2" e.g. "3RT25 16-2AK60"

³⁾ Size S00: Coil voltage tolerance at 50 Hz: $0.8 \dots 1.1 \times U_S$ at 60 Hz: $0.85 \dots 1.1 \times U_S$

⁴⁾ The NC contact can switch up to 5 HP.

3RT, 3RH Contactors for Special Applications

3RH21 contactor relays



Overview

DC operation

IEC 60947-4-1, EN 60947-4-1, for requirements according to IEC 60077-1 and IEC 60077-2.

The contactor relays are finger-safe according to EN 50274. The size S00 contactor relays have spring-type connections for all terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactor relays (across the full coil operating range) is -40 to $+70~^{\circ}\text{C}$.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 x $U_{\rm S}$ and are fitted as standard with suppressor diodes to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e. g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffer for longer operating times should the battery charging fail.

Contactor relays without series resistor

Control and auxiliary circuits

These contactor relays have an extended operating range from 0.7 to 1.25 x $U_{\rm g}$; the solenoid coils are fitted with a suppressor diode. An additional series resistor is not required.

Note:

An additional auxiliary switch block cannot be mounted.

Side-by-side mounting

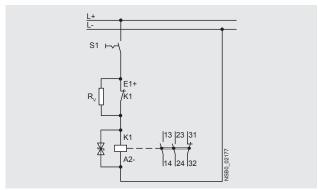
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C \le 70 °C.

Contactor relays with series resistor

Control and auxiliary circuits

The DC solenoid systems of the contactor relays are modified (to hold-in coil) by means of a series resistor.

The size S00 contactor relays are supplied prewired with a plugon module containing the series resistor. The suppressor diode is integrated.



A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

Side-by-side mounting

Side-by-side mounting is permitted at ambient temperatures up to 70 $^{\circ}\text{C}.$

3RH21 contactor relays



Selection and ordering data

DC operation · DC solenoid system Spring-type terminals For screw and snap-on mounting onto standard mounting rail Solenoid coil fitted with suppressor diode





3RH21	22-2K.40
-------	----------

H21 22-2K.40	3RH21 22-2K.40-0I

	operationa 15/AC-14 °C at	al current		Conta	acts	Rated control supply voltage $U_{\rm S}$	Spring-type terminals	<u> </u>	Weight approx.
230 V	400 V	500 V	690 V	Versio	on				
				\I	7		Order No.		
Α	Α	Α	Α	NO	NC	V DC			kg
3RH2	1 contac	ctor rela	ys						
Size S	500								
Withou	ıt series r	esistor							
Termin	al designa	ations acc	ording to	EN 5001	11				
2 NO +	- 2 NC, ide	entificatio	n number	22E					
) * C	A1(+) 13 A2(-) 14	21 31 4							
10	3	2	1	2	2 ¹⁾	24 110	3RH21 22-2KB40 3RH21 22-2KF40		0.300 0.300
With se	eries resi	stor							
Termin	al designa	ations acc	ording to	EN 5000	05				
2 NO +	- 1 NC, ide	entificatio	n number	21E					
₩ 🕁	2(-) 13 23	3 31 = # 4 32							
10	3	2	1	2	1 ²⁾	24 110	3RH21 22-2KB40-0LA0 3RH21 22-2KF40-0LA0		0.300 0.300
1) It io r	ot possib	la ta mau	nt on ouvi	liory owi	بلمملط طمة				

¹⁾ It is not possible to mount an auxiliary switch block.

More information

Contactors	Type		3RH21		
Upright mounting position					
Contactors with series resistor			Special version (on request)		
Contactors without series resistor			Special version (on request)		
Ambient temperature					
During operation		°C	-40 +70		
During storage		°C	-55 +80		
Solenoid coil operating range	DC		0.7 1.25 x U _s		
Power consumption of the solenoid	coils		For cold coil and 1.0 x $U_{\rm S}$		
Contactors with series resistor	ClosingClosed	W W	13 4		
Contactors without series resistor	ClosingClosed	W	2.8 2.8		

All specifications and technical specifications not mentioned here are identical to those of the standard contactor relays.

 $^{^{2)}\,}$ 4-pole auxiliary switch block according to EN 50005 can be mounted.

3RT, 3RH Contactors for Special Applications

3RT20 motor contactors, 7.5 ... 25 HP



Overview

DC operation

IEC 60947-4-1, EN 60947-4-1, for requirements according to IEC 60077-1 and IEC 60077-2.

The contactors are finger-safe according to EN 50274. The contactors have spring-type connections as well as screw connections. The size S00 and S0 contactors have spring-type connections for all terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 or 1.3 x $U_{\rm S}$ and are fitted as standard with suppressor diodes. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e. g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffer for longer operating times should the battery charging fail.

Contactors without series resistor

Control and auxiliary circuits

These contactors have an extended operating range from 0.7 to 1.25 x $U_{\rm S}$; on size S00 the coils are fitted with suppressor diodes, on size S0 with varistors. An additional series resistor is not required.

Note.

An additional auxiliary switch block cannot be mounted.

Side-by-side mounting

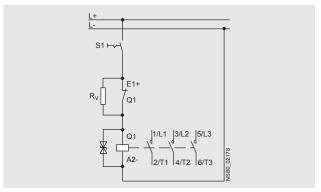
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C \leq 70 °C.

3RT20 1. contactors with series resistor

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x $U_{\rm S}$ and are fitted as standard with suppressor diodes to provide protection against overvoltage.

The DC solenoid systems of the contactors are modified (to holding excitation) by means of a series resistor.



The size S00 contactors are supplied prewired with a plug-on module containing the series resistor. The suppressor diode is integrated. A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

A circuit diagram showing the terminals is labeled on each contactor. One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts. With size S00 it is possible to extend the number of auxiliary contacts.

Side-by-side mounting

At ambient temperatures up to 70 °C, the size S00 contactors and contactor relays are allowed to be mounted side by side.

3RT20 2. contactors with solid-state operating mechanism, extended operating range

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.3 x $U_{\rm S}$ and are fitted as standard with varistors to provide protection against overvoltage.

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.3 x $U_{\rm s}$ at an ambient temperature of 70 °C. They are supplied as complete units with integrated coil electronics. A varistor is integrated for damping opening surges in the coil.

The mounting possibilities for auxiliary switches correspond to those of the standard contactors for switching motors in the matching size (see page 2/58).

Side-by-side mounting

Side-by-side mounting is permitted at ambient temperatures up to 70 °C for these contactor versions in size S0.

2/16

kg

0.300 0.300 0.300

3RT20 motor contactors, 7.5 ... 25 HP

Selection and ordering data

DC operation · DC solenoid system Spring-type terminals For screw and snap-on mounting onto standard mounting rail Solenoid coil fitted with suppressor diode (S00)

Auxiliary contacts

Version

NO NC





3F	RT20	1.	2K	. 4

Spi

Ord

ring-type terminals	8	Weight approx.
der No.		

3RT20 contactors for switching motors

200 V 230 V **460 V** 575 V ΗP

HP

HP

induction motors

Size S00

Rated data

current I_e

AC-3

400 V

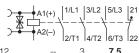
Without series resistor4)

Operational Ratings of

Terminal designations according to EN 50012 or EN 50005

• 1 NO, identification number 10E

• 1 NC, identification number 01



12	 3	7.5	10	10E ¹⁾	1		24 125	3RT20 17-2KB41 3RT20 17-2KG41	
12	 3	7.5	10	01 ¹⁾		1	24 125	3RT20 17-2KB42 3RT20 17-2KG42	

Rated control

V DC

supply voltage

With series resistor

3RT20 17-2KB42-0LA0	0.300
3RT20 17-2KG42-0LA0	0.300
3RT20 18-2KB42-0LA0	0.300
3RT20 18-2KG42-0LA0	0.300

For accessories and spare parts, see page 2/66-2/69.

- $^{1)}$ It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 $^{\circ}\mathrm{C}$.
- $^{2)}$ One 4-pole auxiliary switch block according to EN 50005 can be mounted; no distance required up to 70 °C.
- $^{\rm 3)}$ NC contact cannot be used because it is required for switching the series
- 4) Versions available with screw terminals.

3RT, 3RH Contactors for Special Applications

3RT20 motor contactors, 7.5 ... 25 HP



DC operation · DC solenoid system Spring-type terminals For screw and snap-on mounting onto standard mounting rail Solenoid coil fitted with varistor (S0)





3RT20 2.-2K.40

3R120 22X.40-0LA	2
------------------	---

Rated data AC-3					Auxiliary contacts			Rated control supply voltage	Spring-type terminals	8	Weight approx.
	· ·			ldent. No.	Versi	rsion U _s					
at	at			\I	4		Order No.				
400 V	200 V	230 V	460 V	575 V							
А	HP	HP	HP	HP		NO	NC	V DC			kg

3RT20 contactors for switching motors

Size S0

Terminal designations according to EN 50012

1 NO + 1 NC, identification number 11E

Without	series r	esistor	1)						
16		5	10	15	11E	1	1	24 125	3RT20 25-2KB40 3RT20 25-2KG40
25		7.5	15	20	11E	1	1	24 125	3RT20 26-2KB40 3RT20 26-2KG40
32		10	20	25	11E	1	1	24 125	3RT20 27-2KB40 3RT20 27-2KG40
With so	lid-state	operati	ing med	chanisr	n				
16		5	10	15	11E	1	1	24 125	3RT20 25-2XB40-0LA2 3RT20 25-2XG40-0LA2
25		7.5	15	20	11E	1	1	24 125	3RT20 26-2XB40-0LA2 3RT20 26-2XG40-0LA2
32		10	20	25	11E	1	1	24 125	3RT20 27-2XB40-0LA2 3RT20 27-2XG40-0LA2
38		10	25	25	11E	1	1	24 125	3RT20 28-2XB40-0LA2 3RT20 28-2XG40-0LA2

For accessories and spare parts, see page 2/66-2/69.

More information

Contactors	Туре		3RT20 17	3RT20 2.	3RT20 22XB40- 0LA2	3RT20 22XF40- 0LA2
Ambient temperature						
During operation		°C	-40 +70			
During storage		°C	-55 +80			
Solenoid coil operating range	DC		0.7 1.25 x U _s	3	0.7 1.3 x U _s	
Power consumption of the solenoid coil	ls		For cold coil an	id 1.0 x <i>U</i> s		
Contactors with series resistor	ClosingClosed	W	13 4		 	
Contactors without series resistor	ClosingClosed	W	2.8 2.8	4.5 4.5		
Contactors with solid-state operating mechanism	- Closing	W			6.7	13.2
	- Closed	W			0.8	1.56

All specs and technical specs not mentioned here are identical to those of the standard contactors for switching motors.

 $^{^{1)}}$ It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 $^{\circ}\text{C}.$

Contactors for Special Applications

3RT26 capacitor contactors

AC operation

IEC 60947-5, DIN EN 60947-5-1, (VDE 0660 Part 200)

The contactors are suitable for use in any climate and are finger safe per DIN EN 50274.

The 3RT26 capacitor contactors are application specific variants of the size S00 to S2 SIRIUS Innovations contactors. The capacitors are precharged by means of the mounted leading NO contacts and resistors; only then do the main contacts close. This prevents disturbances in the power system and welding of the contactors.

Only discharged capacitors are permitted to be switched on with capacitor contactors. Recommendation: use discharge chokes for parallel connection with the capacitors.

The capacitor contactors of size S00 contain either 1NO or 1NC in the basic unit and another unassigned NC contact in the auxiliary switch block fitted to the basic unit.

The auxiliary switch block which is snapped onto the capacitor contactor of sizes S0 contains the three leading NO contacts and one standard NO contact, which is unassigned.

The capacitor contactors of size S2 can be fitted additionally with a 2-pole auxiliary switch on the right side (2 NO, 2 NC or 1 NO + 1 NC), type 3RH19 21-1EA.. for lateral mounting.

For the capacitor making and breaking capacity of the basic 3RT20 contactor variant, see the technical data.

Selection and ordering data

	For swi	tching thre	category ee-phase c ture of 60 °	apacitors	at an	Current	Auxiliary contacts, unassigned	Rated control supply voltage U_s^{-1})	Screw connection	Weigh appro
	UL cap	acitor ratir	ng at opera	ational volt	tage			-	Order No.	
		200/208	230/240	460/480	575/600					
	Phase	kvar	kvar	kvar	kvar			AC		kg
or screwing and sn	apping o	nto 35 m	m standa	ard mou	nting rail					
BRT26 17-1AK63	 Size 	S00								
000	1Ø	3.6	4	8.3	10	18		24 V, 50/60 Hz	3RT26 17-1AB03	0.24
/ // // // // // // // // // // // // /	3Ø	6.2	6.9	14	17			120 V, 60 Hz	3RT26 17-1AK63	
MISSENS SIRIUS								240 V, 60 Hz	3RT26 17-1AP63	
MARKET 1	• Size	S0								
. II (1Ø	4.8	5.3	11	13	24		24 V, 50/60 Hz	3RT26 25-1AC20	0.49
6 70	3Ø	8.3	9.1	18	23			120 V, 60 Hz	3RT26 25-1AK60	
								240 V, 60 Hz	3RT26 25-1AP60	
	1Ø	5.8	6.4	13	16	29		24 V, 50/60 Hz	3RT26 26-1AC20	0.49
	3Ø	10	11	22	28			120 V, 60 Hz	3RT26 26-1AK60	
								240 V, 60 Hz	3RT26 26-1AP60	
BRT2637-1NF35	1Ø	6.6	7.3	15	18	33		24 V, 50/60 Hz	3RT26 27-1AC20	0.49
	3Ø	11	13	25	31			120 V, 60 Hz	3RT26 27-1AK60	
								240 V, 60 Hz	3RT26 27-1AP60	
7-10-1	1Ø	8.6	9.5	20	24	43		24 V, 50/60 Hz	3RT26 28-1AC20	0.59
6 6 6	3Ø	15	16	33	41			120 V, 60 Hz	3RT26 28-1AK60	
unning 1								240 V, 60 Hz	3RT26 28-1AP60	
	• Size	S2								
100	1Ø	14	16	33	40	72A	2 NC	23-33 VUC	3RT26 36-1NB35	1.11
1 6	3Ø	25	27	55	69			83-155 VUC	3RT26 36-1NF35	
* 4								175-280 VUC	3RT26 36-1NP35	
100	1Ø	20	22	45	54	98A	2 NC	20-33 VUC	3RT26 37-1NB35	1.11
	3Ø	34	38	75	94	1		83-155 VUC	3RT26 37-1NF35	

2) A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C

For further voltages, see page 2/49. For auxiliaries and accessories, see page 2/66-2/83. For technical data, see page 2/170.

For wiring diagram, see page 2/198.

For dimension drawings, see page 2/217.

DC Coil Selection for 3RT261 only											
◆ Coil Code	A4 ⁴⁾	B4	W4	E4	F4	G4	M4				
DC	12 V	24 V	48 V	60 V	110 V	125 V	220 V				
4) 3RT201 and 3RT202 only											

UC Coil Selec	ction for	3RT262		UC Coil Selection for 3RT263					
● Coil Code	NB3	NF3	NP3	• • Coil Code	В3	F3	P3		
UC	21-28V	95-130V	200-280V		20-33V	83-155V	175-280V		

4) at upper limit = 1.1 x U_S

Contactors for Special Applications

3RT20 coupling contactors (interface) for switching motors, 3-pole



AC and DC operation

IEC 60947, EN 60947.

The 3RT20 coupling contactors for switching motors are tailored to the special requirements of working with electronic controls.

The 3RT20 1 coupling contactors cannot be expanded with auxiliary switch blocks.

Coupling contactors have a low power consumption and an extended solenoid coil operating range.

Depending on the version, the solenoid coils are supplied either without overvoltage damping or with a diode, suppressor diode or varistor connected as standard.

Selection and ordering data DC operation





3RT2015-1HB41

3RT2015-2HB41

Surge suppressor	Ratings Utilization cated	gory	Auxiliary	/ contacts	Screw connection	Spring-type connection	Weight approx.
	inductive hors current ratio	ximum ¹) sepower ngs 160 V	Ident. no.	Design	Order No.	Order No.	(screw/ spring)
	Amps HP			NO NC			kg

For screwing and snapping onto 35 mm standard mounting rail

• Size S00

Terminal designations according to EN 50 012

Rated control supply voltage $U_{\rm s}$ = DC 24 V, coil voltage tolerance **0.7 to 1.25** × $\textit{U}_{\rm s}$ Power consumption of the coils **2.8 W** at 24 V (no auxiliary switch blocks can be mounted)

			,	,		<i>'</i>		
Diode, varistor or RC element can be mounted	7	3	10E 01	1 -	_ 1	3RT20 15-1HB41 3RT20 15-1HB42	3RT20 15-2HB41 3RT20 15-2HB42	0.28/0.30
Diode integrated	7	3	10E 01	1 –	_ 1	3RT20 15-1J B41 3RT20 15-1J B42	3RT20 15-2J B41 3RT20 15-2J B42	0.28/0.30
Suppressor diode integrated	7	3	10E 01	1 –	- 1	3RT20 15-1KB41 3RT20 15-1KB42	3RT20 15-2KB41 3RT20 15-2KB42	0.28/0.30
Diode, varistor or RC element can be mounted	9	5	10E 01	1 –	- 1	3RT20 16-1HB41 3RT20 16-1HB42	3RT20 16-2HB41 3RT20 16-2HB42	0.28/0.30
Diode integrated	9	5	10E 01	1 –	_ 1	3RT20 16-1J B41 3RT20 16-1J B42	3RT20 16-2J B41 3RT20 16-2J B42	0.28/0.30
Suppressor diode integrated	9	5	10E 01	1 –	_ 1	3RT20 16-1KB41 3RT20 16-1KB42	3RT20 16-2KB41 3RT20 16-2KB42	0.28/0.30
Diode, varistor or RC element can be mounted	12	7.5	10E 01	1 -	_ 1	3RT20 17-1HB41 3RT20 17-1HB42	3RT20 17-2HB41 3RT20 17-2HB42	0.28/0.30
Diode integrated	12	7.5	10E 01	1 –	_ 1	3RT20 17-1J B41 3RT20 17-1J B42	3RT20 17-2J B41 3RT20 17-2J B42	0.28/0.30
Suppressor diode integrated	12	7.5	10E 01	1 –	_ 1	3RT20 17-1KB41 3RT20 17-1KB42	3RT20 17-2KB41 3RT20 17-2KB42	0.28/0.30

For technical data, see page 2/171. For int. circuit diagrams, see page 2/190-2/195. For dimension drawings, see page 2/209.

1) Complete HP ratings on page 2/124

Contactors for Special Applications

3RT20 coupling contactors (interface) for switching motors

Selection and ordering data DC operation







3RT2015-1VB41

3RT2015-2VB41

3RT2024-1KB40

Surge	Ratings Utilization	category	Auxiliary	contacts	Screw connection	Spring-type connection	Weight approx.
	AC-3		Ident. no.	Design	Order No.	Order No.	(screw/ spring)
	Maximum inductive current	Maximum horsepower ratings at 460 V					
	Amps	HP		NO NC			kg

For screwing and snapping onto 35 mm standard mounting rail

•Size S00

Terminal designations according to EN 50 012

Rated control supply voltage U_s =DC 24 V, coil voltage tolerance **0.85 to 1.85** × $\textbf{\textit{U}}_{s}$ Power consumption of the coils **1.6 W** at 24 V (no auxiliary switch blocks can be mounted)

Diode, varistor or RC element can be mounted	7	3	10E 01	1 –	<u>_</u>	3RT20 15-1MB41-0KT0 3RT20 15-1MB42-0KT0	3RT20 15-2M B41-0KT0 3RT20 15-2M B42-0KT0	0.28/0.30
Diode integrated	7	3	10E 01	1 –	_ 1	3RT20 15-1VB41 3RT20 15-1VB42	3RT20 15-2VB41 3RT20 15-2VB42	0.28/0.30
Suppressor diode integrated	7	3	10E 01	1 –	_ 1	3RT20 15-1SB41 3RT20 15-1SB42	3RT20 15-2SB41 3RT20 15-2SB42	0.28/0.30
Diode, varistor or RC element can be mounted	9	5	10E 01	1 –	_ 1	3RT20 16-1MB41-0KT0 3RT20 16-1MB42-0KT0	3RT20 16-2M B41-0KT0 3RT20 16-2M B42-0KT0	0.28/0.30
Diode integrated	9	5	10E 01	1 –	_ 1	3RT20 16-1VB41 3RT20 16-1VB42	3RT20 16-2VB41 3RT20 16-2VB42	0.28/0.30
Suppressor diode integrated	9	5	10E 01	1 –	_ 1	3RT20 16-1SB41 3RT20 16-1SB42	3RT20 16-2SB41 3RT20 16-2SB42	0.28/0.30
Diode, varistor or RC element can be mounted	12	7.5	10E 01	1 –	- 1	3RT20 17-1MB41-0KT0 3RT20 17-1MB42-0KT0	3RT20 17-2M B41-0KT0 3RT20 17-2M B42-0KT0	0.28/0.30
Diode integrated	12	7.5	10E 01	1 –	_ 1	3RT20 17-1VB41 3RT20 17-1VB42	3RT20 17-2VB41 3RT20 17-2VB42	0.28/0.30
Suppressor diode integrated	12	7.5	10E 01	1 –	_ 1	3RT20 17-1SB41 3RT20 17-1SB42	3RT20 17-2SB41 3RT20 17-2SB42	0.28/0.30

• Size S0

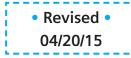
Rated control supply voltage $U_{\rm s}$ = DC 24 V, coil voltage tolerance **0.7 to 1.25** × $U_{\rm s}$ Power consumption of the coils **4.5 W** at 24 V no auxiliary switch blocks can be mounted.

Varistor	12	7.5	11E	1	1	3RT20 24-1KB40	3RT20 24-2KB40	0.58/0.60
integrated	16	10	11E	1	1	3RT20 25-1KB40	3RT20 25-2KB40	0.58/0.60
	25	15	11E	1	1	3RT20 26-1KB40	3RT20 26-2KB40	0.58/0.60
	32	20	11E	1	1	3RT20 27-1KB40	3RT20 27-2KB40	0.58/0.60

For technical data, see page 2/171. For int. circuit diagrams, see page 2/190-2/195. For dimension drawings, see page 2/209.

Contactors & Relays for Safety Applications

3RT, 3TF safety contactors and 3RH2, 3TH2 safety control relays





Applications

"Safety" Contactors

Safety rated contactors are required to have positively driven (mirror) contact construction according to IEC 60947-4 Annex F. A mirror contact is a Normally Closed (NC) auxiliary contact which can not be closed simultaneously with a Normally Open (NO) main contact.

In some industries, such as automotive, requirements have been established that a safety rated contactor must also have permanently mounted auxiliary contact blocks. See page 2/18 for Contactors with permanently mounted auxiliary contacts.

Siemens Contactors for "Safety" applications:

All Siemens standard 3RT, 3TF6. 40HN & 40PH Contactors are provided with positively driven (mirror) contacts which meet or exceed the criteria for "Safety Contactors" according to IEC 60947-4 Annex F which describes the requirements for mirror contact performance. When applying Safety Contactors in safety circuits, the NC auxiliary contacts must be wired in series or parallel and must be used as monitoring contacts with feedback to the safety evaluation device (i.e. safety relay or failsafe logic controller).

"Safety" Control Relays

Safety rated control relays are required to have positively driven contact elements according to IEC 60947-5-1 Annex L. Positively driven contact elements are a combination of NO auxiliary contacts and NC auxiliary contacts whose construction prevents them from being closed simultaneously.

In some industries, such as automotive, requirements have been established that a safety rated control relays must also have permanently mounted auxiliary contact blocks. See page 2/18 for Control Relays with permanently mounted auxiliary contacts.

Siemens Control Relays for "Safety" applications:

All SIRIUS 3RH control relays (with at least 1 NC contact) meet or exceed the criteria for "Safety Control Relays" according to IEC 60947-5-1 Annex L. This is true for the basic 3RH relay with or without an additional auxiliary contact block.







3RT10 7.-6A..6



3RH29 21.-1F



3RH19 21.-1DA 11



3RH21



3RH24



3RH2911-2HA.

Frame size	Contactors	Auxiliary contact block				
	3RT201					
S00	3RT231	3RH2911				
300	3RT251					
	3RT261	3RH1911				
	3RT202					
S0	3RT232	3RH2921				
50	3RT252					
	3RT262	3RH2921				
	3RT203					
S2	3RT233	3RH2921				
52	3RT253	3RH2921				
	3RT263					
	3RT104					
S3	3RT134	0DI H 004				
53	3RT144	3RH1921				
	3RT164					
S6	3RT105	0DI 11 001				
56	3RT145	3RH1921				
	3RT106					
S10	3RT126	3RH1921				
	3RT146					
	3RT107					
S12	3RT127	3RH1921				
	3RT147					
	3TF6	3TY7561-1UA00				

Frame size	Contactors	Auxiliary contact block		
	3RH21	3BH2911		
S00	3RH24	3RH2911		
	3TH20	3TX44		
		•		

For contactors, see pages 2/8-2/9. For auxiliaries contact blocks, see pages 2/66-2/68. For control relays, see pages 2/50-2/52. For auxiliaries contact blocks, see page 2/66-2/68.



• Revised • 04/20/15

Contactors and Contactor Assemblies

Contactors & Relays for Safety Applications

3RT safety contactors, 3RH2 safety control relays with permanently mounted auxiliary contact blocks

Application

"Safety" Contactors

Safety rated contactors are required to have mirrored contact construction according to IEC 60947-4 Annex F. A mirror contact is a Normally Closed (NC) auxiliary contact which can not be closed simultaneously with a Normally Open (NO) main contact. In some industries, such as Automotive, the auxiliary contact blocks are required to be permanently attached to meet the requirements of "unitentional misuse" as specified in IEC 60292, paragraph 3.12. Tested by SUVA.



3RT202* -1AK64-3MA0

"Safety" Control Relays

Safety rated control relays are required to have positively driven contact elements according to IEC 60947-5-1 Annex L. Positively driven contact elements are a combination of NO auxiliary contacts and NC auxiliary contacts whose construction prevents them from being closed simultaneously. In some industries, such as automotive, the auxiliary contact blocks are required to be permanently attached to meet the requirements of "unitentional misuse" as specified in IEC 60292, paragraph 3.12. Tested by SUVA.



3RH22**-2BB40

Application

Frame	Max. curre	nt		le-phase atings	Three- HP rat				Auxiliary co	Auxiliary contacts		Screw		Spring-Type	
Size	AC3	AC1		220/240\		230V	460V	575V				Termin	nals	Terminals 1)	
	Α	Α	HP	HP	HP	HP	HP	HP	ldent. No.	NC) NC	Order N	0.	Order No.	
Contac	tors wi	th per	mane	ntly mou	inted a	uxiliary	conta	act blo	ocks						
S00	7	18	1/4	3/4	1 ½	2	3	5	22E	2	2	3RT201	5-1004-3MA0	3RT2015-20004	-3MA0
	9	22	1/3	1	2	3	5	7 ½	22E	2	2	3RT201	6-1 • • 4-3 MA0	3RT2016-20004	-3MA0
	12	22	1/2	2	3	3	7 ½	10	22E	2	2	3RT201	7-1004-3MA0	3RT2017-20004	-3MA0
	16	22	1	2	3	5	10	10	22E	2	2	3RT201	8-1 • • 4-3 MA0	3RT2018-20004	-3MA0
S0	9	40	1	1	2	3	5	7 ½	22E	2	2	3RT202	3-1●●4-3MA0	3RT2023-20004	-3MA0
	12	40	1	2	3	3	7 ½	10	22E	2	2	3RT202	4-1●●4-3MA0	3RT2024-20004	-3MA0
	16	40	1	3	5	5	10	15	22E	2	2	3RT202	5-1●●4-3MA0	3RT2025-20004	-3MA0
	25	40	2	3	7 ½	7 ½	15	20	22E	2	2	3RT202	6-1004-3MA0	3RT2026-20004	-3MA0
	32	50	2	5	10	10	20	25	22E	2	2	3RT202	7-1004-3MA0	3RT2027-20004	-3MA0
	38	50	3	5	10	10	25	25	22E	2	2	3RT202	8-1004-3MA0	3RT2028-20004	-3MA0
S2	40	60	3	7 ½	10	15	30	40	22E	2	2	3RT203	5-1●●4-3MA0	3RT2035-3	-3MA0
	50	70	3	10	15	15	40	50	22E	2	2	3RT203	6-1●●4-3MA0	3RT2036-30004	-3MA0
	65	80	5	10	20	20	50	50	22E	2	2	3RT203	7-1004-3MA0	3RT2037-3	-3MA0
	80 ⁴⁾	90	5	15	20	25	50	60	22E	2	2	3RT203	8-1004-3MA0	3RT2038-3	-3MA0
S3	80	120	7 ½	15	25	30	60	75	22E	2	2	3RT104	5-1004-3MA0	3RT1045-3	-3MA0
	95	120	10	20	30	30	75	100	22E	2	2	3RT104	6-1004-3MA0	3RT1046-3	-3MA0
S6	150	185		30	50	60	125	150	22E	2	2	3RT105	5-6006-3PA0	_	
	185	215		30	60	75	150	200	22E	2	2	3RT105	6-6-6-6-3PA0	_	
S10	225	275			60	75	150	200	22E	2	2	3RT106	4-6●●6-3PA0	_	
	265	330			75	100	200	250	22E	2	2	3RT106	5-6006-3PA0	_	
	300	330			100	125	250	300	22E	2	2		6-6-6-6-3PA0	_	
Contro	l circui	t coil c	ption	s: Repla	ce •••	with th	ne de	sired o	code						
Frame Siz	ze S00 -	S0		•••	Frame S	ize S2	(•••	Frame Size S3	3		•••	Frame Size S6 - 3	S10	•••
120 V AC 120 V AC 230 V AC 24 V DC	c, integra	ited varis	stor	СК6	120 V A0 120 V A0 20-33 V	C w/ Varis	stor (AK6 CK6 NB3	120 V AC ** 24 V DC 20-33 V UC*			AK6 CK6 NB3	21-27 V UC*, sol w/ PLC interface		AB3 NB3 AF3

Frame Size	Max. current at 240 V 2)	Rated control supply voltage $U_{\rm S}$	Aux	iliary co		Screw Terminals ³⁾	Spring Terminals 3) Order No.	
	Α		Indent. No.	NO	NC	Order No.	Order No.	
Control	relays with	permanently mounted auxiliary contact blocks						
Control S00-S00	relays with 10	permanently mounted auxiliary contact blocks 110 V AC, 50 Hz / 120 V AC, 60 Hz	44E	4	4	3RH2244-1AK60	3RH2244-2AK60	
				4 4	4 4	3RH2244-1AK60 3RH2244-1BB40	3RH2244-2AK60 3RH2244-2BB40	
	10	110 V AC, 50 Hz / 120 V AC, 60 Hz	44E	•	4 4 2			

**Available in 3RT1046 only

For other voltages see page 2/49. For accessories, see pages 2/73-2/78. For spare parts, see pages 2/94-2/97. For technical data, see pages 2/121-2/142. For description, see pages 2/104-2/105.

24 V DC, integrated varistor

24 V DC, integrated diode assy. FB4

DB4

*50/60Hz w/ varistor

For int. circuit diagrams, see page 2/190-2/196. For dimension drawings, see pages 2/209-2/215.

All terminals are spring loaded on frame size S00 and S0.
 Only the coil and auxiliary contact terminals are spring loaded on frame sizes S2 & S3.

2) For AC-15/AC-14, max current for front mounted auxiliary contacts = 6 A.

*UC coil: accepts DC voltage or

AC voltage, 40 to 60 Hz.

³⁾ The 3RH22 control relays are also available with ring lug terminals. Replace the 8th digit of the order number with a "4", e. g. 3RH2244-4AK60

⁴⁾ Max UL FLA = 65A at 460V

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

• Revised • 04/20/15



Introduction

Overview

The function modules for mounting onto contactors enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking, and can be connected to the control system by either parallel wiring or through IO-Link or AS-Interface.

Version	SIRIUS function modules for parallel wiring	SIRIUS function modules for IO-Link ¹⁾	SIRIUS function modules for AS-Interface ¹⁾
For direct-on-line starting	Timing relays: ON or OFF-delay with semiconductor output With screw or spring-type terminals	With screw or spring-type terminals	With screw or spring-type terminals
	106	NAVANA	- 1 c -
For reversing starting	Wiring modules for sizes S00, S0 & S2 With screw or spring-type terminals (with screw terminals for main and control circuit)	1 function module for size S00, S0 & S2, screw and spring-type connection, plus the respective wiring modules 1)	1 function module for size S00, S0 & S2, screw and spring-type connection, plus the respective wiring modules 1)
	THE T	THE STATE OF THE S	- Je - I - I - I - I - I - I - I - I - I -
For wye-delta starting	1 function module for size S00, S0 & S2, screw and spring-type connection of the contactors, plus the respective wiring modules ²⁾	For wye-delta starting: 1 function module for size S00, S0 & S2, plus screw and spring-type connection, plus the respective wiring modules ²⁾	For wye-delta starting: 1 function module for size S00, S0 & S2, plus screw and spring-type connection, plus the respective wiring modules ²⁾
	100	5	210 1 1
Accessories	Sealable covers	Operator panel for autonomous controlling of up to 4 starters Module connector for the grouping of starters Connection cable between the operator panel and the starter group	AS-Interface addressing units Sealable covers
		Sealable covers	
	Epa		

Use of the communication-capable function modules for IO-Link or AS-Interface requires contactors with communication interface (see pages 2/26).

Note

When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

²⁾ The modules for the control current wiring, which are included in the wiring kit, are not required.

Contactors and Contactor Assemblies Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules

Overview

Simply by being plugged in place, the SIRIUS function modules enable different functionalities required for the assembly of starters to be realized in the starter. The function modules and wiring kits help to reduce the wiring work within the starter practically to zero.

SIRIUS function modules for direct-on-line starting

All solid-state timing relays which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two contact limbs to actuate the contactor underneath by means of a semiconductor after the set time *t* has elapsed.

The switching state feedback is performed by a mechanical switching state indicator (plunger). In addition, the auxiliary switches in the contactors are freely accessible and can be used for feedbacks to the control system or for signal lamps.

A sealable cover is available to protect against careless adjustment of the set times.

SIRIUS function modules for reversing starting

The wiring kits for reversing starters enable the cost-effective assembly of contactor assemblies. They can be used for all applications with reversing duty up to 50 HP.

For a detailed description see page 2/37.

SIRIUS function modules for wye-delta starting

Both interlocking and timing functions are required for the assembly of wye-delta starters. With the function modules for wye-delta starting and the matching link modules for the main circuit, these starters can be assembled easily and with absolutely no errors.

The entire sequence in the control circuit is integrated in the snap-on modules. This covers:

- An adjustable wye time t from 0.5 to 60 s
- A non-adjustable dead interval of 50 ms
- Electrical contacting to the contactors by means of coil pick-off (contact legs)
- Feedback of the switching state at the contactor using a mechanical switch position indicator (plunger)
- Electrical interlocking between the contactors

These modules do not require their own terminals and can therefore be used for contactors with both screw and spring-type terminals in the S00, S0 and S2. To start the wye-delta starter, only the first of the three contactors (line contactor) is actuated. All other functions then take place inside the individual modules.

This also offers advantages if the timing function was previously implemented in a controller, as it again results in a significant reduction in the number of PLC outputs, the programming work and the wiring outlay.

The kits for the main circuit include the mechanical interlock, the star jumper, the wiring modules at the top and at the bottom, and the required connecting clips.

A protection circuit (varistor) is integrated in the basic module.

Application

The snap-on function modules for direct-on-line starting are used above all for realizing timing functions independently of the control system.

With the OFF-delay variant of the timing relay it is possible for example for the fan motor for cooling a main drive to be switched off with a delay so that sufficient cooling after operation is guaranteed even if the plant and its control system have already been switched off.

The ON-delay timing relays enable for example the time-delayed starting of several drives so that the summation starting current does not rise too high, which could result in voltage failure.

The <u>function modules for wye-delta starting</u> are mostly used where current-limiting measures for starting a drive are required, e.g. for large fans and ventilators, and a high level of availability is essential at the same time. This technology has been used with success for several decades and has the additional advantage of requiring relatively little know-how. Through the use of function modules, the assembly work with simple standard components is even easier and error-free.

Benefits

The use of snap-on function modules for direct-on-line starting (timing relays) results in the following advantages:

- · Reduction of control current wiring
- Prevention of wiring errors
- · Reduction of testing costs
- Implementation of timing functions independently of the control system
- Less space required in the control cabinet compared to a separate timing relay
- No additive protection circuit required (varistor integrated)

The use of <u>function modules for wye-delta starting</u> results in the following advantages:

- Operation solely through the line contactor A1/A2 no further wiring needed
- Reduction of the control current wiring inside the contactor assembly and to the higher-level control system where applicable
- Prevention of wiring errors
- Reduction of testing costs
- Integrated electrical interlocking saves costs and prevents errors
- Less space needed in the control cabinet compared to using a separate timing relay
- Adjustable starting in star mode from 0.5 to 60 s
- Independent of the contactor's control supply voltage (24 to 240 V AC/DC)
- Varistor integrated no additive protection circuit required
- No control current wiring thanks to plug-in technology and connecting cables
- Mechanically coded assembly enables easy configuration and reliable wiring
- Fewer versions one module kit for screw and spring-type connection and for the two sizes S00 and S0
- Mechanical interlocking (with wiring kit for the main circuit)

Contactors for Switching Motors

3RT2 contactors, 3-pole Communication Contactors

Revised04/20/15



Selection and ordering data

- Ideal for diagnostics to the automation controller
- · Quickly locate and rectify faults
- · Configuration available in Step 7 and TIA Portal
- Easy engineering of parameters
- For DOL, reversing and wye delta starters up to 50 HP
- Manual starter operation with optional operator panel
- Reduces control wiring in the panel
- Available for 24VDC control systems
- Easily snap on IO-Link or AS-Interface modules onto contactors



	Frame	Ar Rat	np ings		-phase atings			-phase atings		Auxiliary contacts		contacts		contacts		Screw Terminals 24 V DC coil	Spring-type Terminals ¹⁾ 24 V DC coil	Weight approx.
	Size	AC3	AC1	115V	230V	208V	230V	460V	575V	NO	NC	Order No.	Order No.	kg				
3RT 3-pole Cor	3RT 3-pole Contactors																	
		7	18	0.25	0.75	1.5	2	3	5	1	0	3RT2015-1BB41-0CC0	3RT2015-2BB41-0CC0					
1000			10	0.23	0.75	1.5				0	1		3RT2015-2BB42-0CC0					
		9	22	0.33	1	2	3	5	7.5	1	0		3RT2016-2BB41-0CC0					
and the	S00			0.00					7.0	0	1		3RT2016-2BB42-0CC0	0.28				
3RT2018-1BB41-0CC0		12	22	0.5	2	3	3	7.5	10	1	0		3RT2017-2BB41-0CC0	- 0.20				
3K12U18-1BB41-UUU				0.0						0	1	3RT2017-1BB42-0CC0						
		16	22	1	2	3	5	10	10	1	0		3RT2018-2BB41-0CC0	_				
222		9	40		1			5	7.5	0	1		3RT2018-2BB42-0CC0 3RT2024-2BB40-0CC0					
3 0 0		12	40	1	2	3	3	7.5	7.5	1	1	3RT2023-1BB40-0CC0	3RT2024-2BB40-0CC0					
Jul , Real	S0	16	40	1	3	5		10	15	1	1	3RT2024-1BB40-0CC0	3RT2024-2BB40-0CC0					
CHECK!		25	40	2	3	7.5	7.5	15	20	1	1	01112020 122 10 0000	3RT2025-2BB40-0CC0	0.58				
3RT2028-1BB40-0CC0		32	50	2	5	10	10	20	25	1	1		3RT2027-2BB40-0CC0	-				
		38	50	3	5	10	10	25	25	1	1		3RT2028-2BB40-0CC0	-				
The same		30	- 50	0		10	10			'		31112020-1DD -1 0-0000	31112020-20040-0000					
BBB		40	60	3	7.5	10	15	30	40	1	1	3RT2035-1NB30-0CC0	3RT2035-3NB30-0CC0					
	S2	50	70	3	10	15	15	40	50	1	1	3RT2036-1NB30-0CC0	3RT2036-3NB30-0CC0	- 1.122				
3RT2038-1NB30-0CC0	32	65	80	5	10	20	20	50	50	1	1	3RT2037-1NB30-0CC0	3RT2037-3NB30-0CC0	1.122				
		80	90	5	15	20	25	50	60	1	1	3RT2038-1NB30-0CC0	3RT2038-3NB30-0CC0					

¹⁾ All terminals are spring loaded in sizes S00 and S0. For size S2, only the coil and aux contacts are spring loaded.

Communication capable contactors are ideal for starter feedback to the automation level. IO-Link starters in the cabinet save considerable wiring effort. AS-Interface is best suited for distributed systems.

For reversing contactors with communication capability, see pages 2/39-2/43

For accessories, see page 2/27, 2/30, 2/34.

For technical data, see page 2/31, 2/35, 2/36

For description, see page 2/24.

For further information on IO-Link and AS-Interface, see page 2/28-2/29 and 2/32-2/33.

Contactors and Contactor Assemblies Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for reversing starting / wye-delta starting

Selection and ordering data







3RA29 13-2BB2

3NAZ0 10-0	EVV2U		3NA29 13-2AA 1			3NA29 13-2DD2		
For contactors	Rated control supply voltage $U_s^{1)}$	Time setting range t	Screw terminals		Weight approx.	Spring-type ²⁾ terminals	8	Weight approx.
Type	V	S	Order No.		kg	Order No.		kg
	kits for reversing st				9			9
		king 3-pole contactor ains: 2 contactors,						
3RT20 1.	• For size S00		3RA29 13-2AA1		0.046	3RA29 13-2AA2		0.070
3RT20 2.	• For size S0		3RA29 23-2AA1		0.089	3RA29 23-2AA2		0.112
3RT20 3.	 For size S2 		3RA29 33-2AA1		0.159	3RA29 33-2AA2		0.156
Assembly	kits for wye-delta st	arting						
	Assembly kits for ma assemblies The assembly kit conta Mechanical interlock, 4 connecting clips for star jumper, wiring modules on the	3 contactors;						
3RT20 1.	• For size S00		3RA29 13-2BB1		0.051	3RA29 13-2BB2		0.080
3RT20 2.	For size S0 (only mail spring-type terminals)	n circuit for version with	3RA29 23-2BB1		0.099	3RA29 23-2BB2		0.133
3RT20 3.	For size S2 (only mais spring-type terminals)	n circuit for version with	3RA29 33-2BB1		0.242	3RA29 33-2BB2		0.182
Function	modules for wye-deli	ta starting						
	module and the contact lished automatically by ging in the connecting					_		
2DT20 1	Wye-delta function (V	0 ,	2D 4 20 4 C 0EW22		0.170	2D 4 20 4 C 0EW/20		0.170
3RT20 1. 3RT20 2. 3RT20 3.	24 240 AC/DC	0.5 60 (10, 30, 60 selectable)	3RA28 16-0EW20		0.170	3RA28 16-0EW20		0.170

Sealable covers 1) AC voltage values apply for 50 Hz and 60 Hz.

for 3RA27, 3RA28, 3RA29

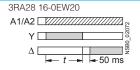
Function	Function charts
	Timing relay energized
	Contact closed
	Contact open

2 NO contacts (internally connected)

Wye-delta function (varistor integrated) • 1 NO contact, delayed

Accessories

• 1 NO contact, instantaneous



3RA29 10-0

When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

3RA29 10-0

0.002

0.002

²⁾ Assembly kits in sizes S0 and S2 are supplied with wiring modules for the main circuit only.

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link



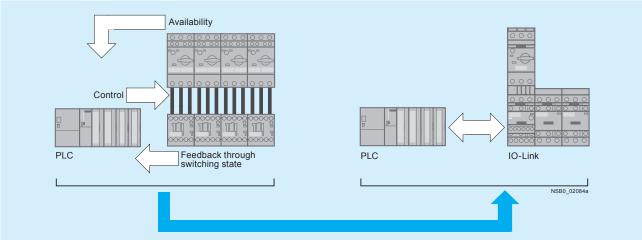
Overview

The SIRIUS function modules for IO-Link enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking. The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely, and feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions. The starters are connected to the higher-level

control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master.

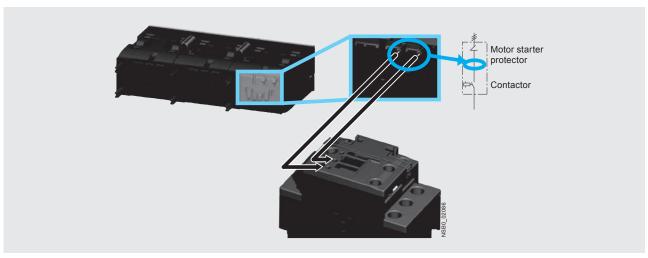
Through this type of connection to the control system, a maximum of wiring is saved. The following essential signals are transmitted:

- Availability of the starter in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through IO-Link

The inquiry from the motor starter protector does not take place through additional wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input. This requires the use of communication versions of the contactors with communication interface (see page 2/26).



Availability signal through voltage pick-off

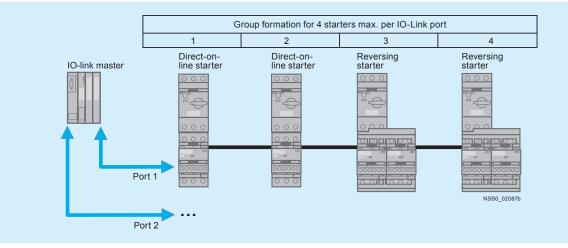


Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET200S. All the signals of the individual controls are made available through only 3 individual wires per starter group directly in the process image. If the

potential at the master of the ET200S is the same as that of the controls, a further reduction in wiring is possible by providing the control supply voltage to the contactors by jumpering the corresponding communication wires.



Group formation with IO-Link

In case of a malfunction, the corresponding error signals are also sent directly to the PLC in acyclic mode. This is in addition to transmission of the switching signals and status signals.

Possible error signals:

- Device defect
- No main voltage (motor starter protector tripped)
- No control supply voltage
- Limit position on the right / on the left
- · Manual mode
- Process image fault

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i. e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Local manual operation of the complete starter group is also straight-forward using a operator panel. The latter is easily connected to the last starter and can be built into the front panel of the control cabinet if required. This offers significant advantages particularly for commissioning.

Application

The use of SIRIUS function modules with IO-Link is recommended above all in machines and plants in which there are several motor starters in one control cabinet. Using IO-Link, the connection of these starters to the automation level is easy, quick and error-free. And with IO modules no longer needed, the width of the ET200S becomes far smaller.

Benefits

- Reduction of the control current wiring to no more than one cable having three conductors for four starters
- · Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA for clear diagnostics if a fault occurs
- Fewer IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- · No additional control circuit required

Further information on the application and benefits of the SIRIUS function modules for connection to the control system through IOLink can be found in Chapter 14 "Industrial Communication".

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

• Revised • 04/20/15



SIRIUS function modules for IO-Link

Selection and ordering data

	Version	Screw terminals	Spring-type
Function modules for	or direct-on-line starting	Order No.	Order No. kg
3RA2711-1AA00	IO-Link connection Includes one module connector for assembling an IO-Link group	3RA2711-1AA00	3RA2711-2AA00
3RA2711-2AA00			
Function modules for	or reversing starting ¹⁾		
3RA2711-1BA00 3RA2711-2BA00	IO-Link connection, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	3RA2711-1BA00	3RA2711-2BA00
11411	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: mechanical interlock, 2 connecting clips for two contactors, wiring modules on the top and bottom		
	wiring modules on the top and bottom For size S00	3RA2913-2AA1	3RA2913-2AA2
3RA2923-2AA1	• For size S00	JUW7419-TWAI	SUMES 19-ZAME
fffff f	 For main, auxiliary and control circuits Only for main circuit²⁾ 	3RA2923-2AA1 	 3RA2923-2AA2
3RA2923-2AA2	 For size S2 For main, auxiliary and control circuits Only for main circuit²) 	3RA2933-2AA1 	 3RA2933-2AA2

For prewired contactor assemblies for reversing starting with voltage tap-off, see pages 2/40 and 2/43. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

Matching contactors with communications interface required; see pages 2/26.

Version in sizes S0 and S2 with spring-type terminals:
 Only the wiring modules for the main circuit are included.
 No connectors are included for the auxiliary and control circuit.

Contactors and Contactor Assemblies Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link

	Version	Screw terminals	⊕	Spring-type terminals	8	Weight
		Order No.		Order No.		kg
Function modules for	or wye-delta starting ¹⁾					
in in its second and	IO-Link connection, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group	3RA2711-1CA00		3RA2711-2CA00		
3RA2711-1CA00						
111111 TITLE TO THE TOTAL TO TH	Assembly kits for making 3-pole contactor assemblies ²⁾ The assembly kit contains: mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom					
3RA2923-2BB1	For size S00	3RA2913-2BB1		3RA2913-2BB2		
FFFFF FOR	For size S0 For main, auxiliary and control circuits Only for main circuit ³⁾	3RA2923-2BB1 		 3RA2923-2BB2		
3RA2923-2BB2	For size S2 For main, auxiliary and control circuits Only for main circuit ³⁾	3RA2933-2BB1 		 3RA2933-2BB2		
1) For complete contactor	r assemblies for wye-delta starting including	Matching contactors w	ith co	mmunications interface	requir	ed;

function modules, see pages 2/47 and 2/48.

- 2) When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.
- 3) Version in sizes S0 and S2 with spring-type terminals: Only the wiring modules for the main circuit are included. No connectors are included for the auxiliary and control circuit.

see pages 2/26.

	Version	Order No.	Weight
			kg
Accessories			
	Module connector set, comprising:2 module connectors, 14-pole, short2 interface covers	3RA2711-0EE10	
	Module connectors		
3RA2711-0EE10	• 14-pole, 9 cm For size jump + 1 space	3RA2711-0EE06	
	14-pole, 26 cm For various space combinations	3RA2711-0EE07	
3RA2711-0EE06	14-pole, 33.5 cm For various space combinations	3RA2711-0EE08	
	10-pole, 9 cm For separate control signal infeed within an IO-Link group	3RA2711-0EE16	
3RA2711-0EE15	Interface covers (Set of 5)	3RA2711-0EE15	
=0-1	Sealable covers For 3RA27, 3RA28, 3RA29	3RA2910-0	
3RA2910-0			
Operator panels ¹⁾			
	Operator panel (set), comprising: 1 x operator panel 1 x enabling module 1 x interface cover 1 x fixing terminal	3RA6935-0A	
3RA6935-0A			
	Connection cable, length 2 m, 10- to 14-pole	3RA2711-0EE11	
3RA2711-0EE11	For connecting the operator panel to the communication module		
	Enabling modules (replacement)	3RA6936-0A	
	Interface covers (replacement)	3RA6936-0B	
43			

¹⁾ Suitable only for communication through IO-Link.

For manuals, see

http://support.automation.siemens.com/WW/view/en/39319600.

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for AS-Interface



Overview

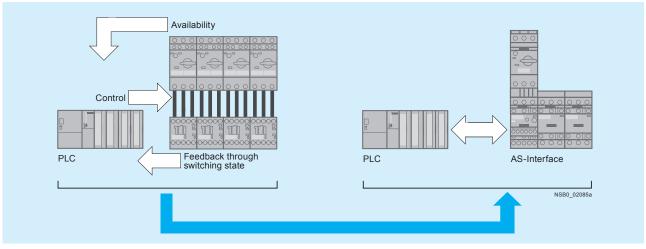
The SIRIUS function modules for AS-Interface enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking. The electrical and mechanical connection to the contactor is established by snapping on and locking. An additional control circuit for the individual contactors can be eliminated with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions. Connection of the starters to the higher-level control system takes place through AS-Interface with the Specification V2.1 in A/B technology. As the result, up to 62 starters can be con-

nected to one master and the address is entered in normal manner with an addressing unit.

Through the AS-Interface connection to the control system, a maximum of wiring is saved. The wiring outlay is reduced to the control supply voltage and the two individual wires for AS-Interface.

The following essential signals are transmitted:

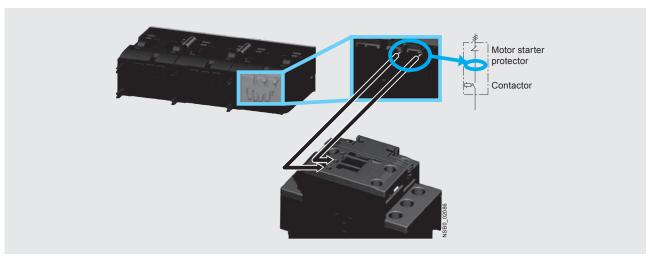
- Availability of the starter in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through AS-Interface

The inquiry from the motor starter protector does not take place through additional wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires use of communication versions of the contactors with communication interface (see page 2/26).

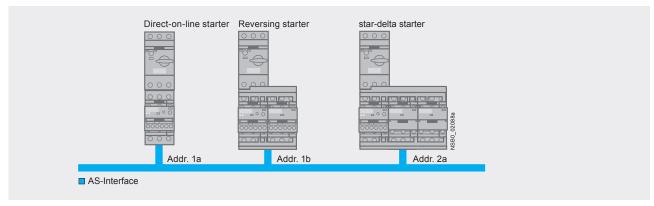


Availability signal through voltage pick-off

Function Modules for Mounting onto SIRIUS 3RT2 Contactors



SIRIUS function modules for AS-Interface



Topology with AS-Interface

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example, to a position switch. The input interrupts the voltage supply to the contactor coil directly, i. e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Application

The use of SIRIUS function modules with AS-Interface is recommended above all in machines and plants requiring easy connection of several different sensors and actuators both inside and outside the control cabinet to the higher-level control system. And with IO modules no longer needed, the width of the ET200S is far smaller.

Benefits

- · Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Elimination of IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additional control circuit required

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

• Revised • 04/20/15



SIRIUS function modules for AS-Interface

Selection and ordering data

Version Screw terminals Order No. Function modules for direct-on-line starting AS-Interface connection 3RA2712-1AA00 3RA2712-1AA00 Function modules for reversing starting The starting of the starting	Weight kg
AS-Interface connection 3RA2712-1AA00 3RA2712-1AA00 3RA2712-2AA00 3RA2712-2AA00 Function modules for reversing starting ¹⁾	kg
AS-Interface connection 3RA2712-1AA00 3RA2712-1AA00 3RA2712-2AA00 Function modules for reversing starting ¹⁾	
3RA2712-1AA00 3RA2712-2AA00 Function modules for reversing starting ¹⁾	
3RA2712-2AA00 Function modules for reversing starting ¹⁾	
AS-Interface connection, comprising one basic and one coupling module 3RA2712-1BA00 3RA2712-1BA00 3RA2712-1BA00	
3RA2712-2BA00	
Assembly kits for making 3-pole contactor assemblies The assembly kit contains: mechanical interlock,	
2 connecting clips for two contactors, wiring modules on the top and bottom	
3RA2923-2AA1 • For size S00 3RA2913-2AA1 3RA2913-2AA2	
• For size S0 - For main, auxiliary and control current - Only for main current - SRA2923-2AA1 - 3RA2923-2AA2	
• For size S2 - For main, auxiliary and control current - Only for main current - Only for main current - SRA2933-2AA1 - SRA2933-2AA2	

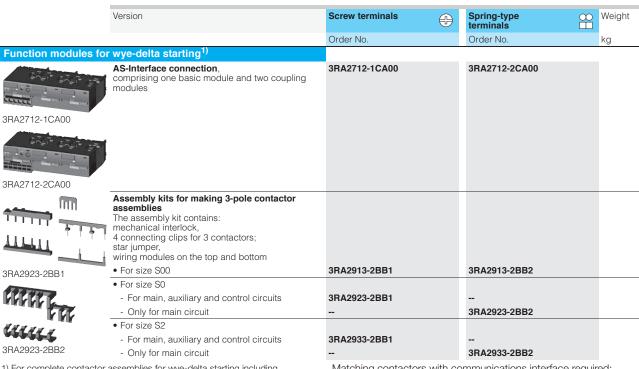
Matching contactors with communications interface required; see page 2/26.

For matching AS-Interface masters, routers and power supply units, see Chapter 14 "Industrial Communication".

For prewired contactor assemblies for reversing starting with communication interface, see pages 2/40 and 2/43. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

Contactors and Contactor Assemblies Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for AS-Interface



1) For complete contactor assemblies for wye-delta starting including function modules, see pages 2/47 and 2/48.

Matching contactors with communications interface required; see page 2/26.

For matching AS-Interface masters, routers and power supply units, see Chapter 14 "Industrial Communication".

	Version	Order No.	Weight kg
Accessories			-
	Module connector set, comprising: • 2 module connectors, 14-pole, short • 2 interface covers	3RA2711-0EE10	
3RA2711-0EE10			
	Module connectors		
	14-pole, 9 cm For size jump + 1 space	3RA2711-0EE06	
3RA2711-0EE06			
	Interface covers (Set of 5)	3RA2711-0EE15	
3RA2711-0EE15			
3RA2910-0	Sealable covers For 3RA27, 3RA28, 3RA29	3RA2910-0	

For manuals, see

http://support.automation.siemens.com/WW/view/en/39318922.

Function Modules for Mounting onto SIRIUS 3RT2 Contactors



SIRIUS function modules

More information					
	Туре		3RA28 11 With ON-delay	3RA28 12 OFF-delay with auxiliary voltage	3RA28 16 Wye-delta function
General data				with auxiliary voltage	
Rated insulation voltage <i>U</i> _i Pollution degree 3 Overvoltage category III		V AC	300		
Operating range of excitation			0.85 1.1 x <i>U</i> _s , 0.95 1.05 times the	rated frequency	
Overvoltage protection			Varistor integrated	- acou noquency	
Rated power		W	1		1
Power consumption at 230 V AC	, 50 Hz	VA	1		2
Rated operational currents I _e					
• AC-140	At 24 240 V, 50 Hz	Α	0.4		
• DC-13	At 24 240 V	Α	0.4		
• AC-15	At 24 240 V, 50 Hz	Α			3
• DC-13	- At 24 V	Α			1
	- At 125 V	Α			0.2
	- At 250 V	Α			0.1
DIAZED fuse	Operational class gG	Α			4
Switching frequency for load					
• With I _e at 230 V AC		h ⁻¹	2500		
With 3RT2 contactor at 230 V AC		h ⁻¹	2500		
Recovery time		ms	50		150
Minimum ON period		ms		35	
Residual current	Max.	mA	5		
Voltage drop	Max.	VA	3.5		
With conducting output	Wax.	*/ (0.0		
Short-time loading capacity	Up to 10 ms	Α	10		
Setting accuracy With reference to upper limit of scale	Тур.		±15 %		
Repeat accuracy	Max.		±1 %		
Mechanical endurance	····	Operat- ing cy- cles	100 x 10 ⁶		10 x 10 ⁶
Permissible ambient temperatur	e				
During operation		°C	-25 +60		
During storage		°C	-40 +80		
Degree of protection acc. to EN	60947-1. Appendix C		IP20		
Shock resistance Half-sine acc. to IEC 60068-2-27) leles	g/ms	15/11		
Vibration resistance Acc. to IEC 60068-2-6		Hz/mm	10 55/0.35		
Electromagnetic compatibility (E	EMC)		IEC 61000-6-2, IEC 61	000-6-4, IEC 61812-1	IEC 60947-4-1
Permissible mounting position			Any		
Conductor cross-sections					
Connection type			Screw terminal	S	
• Solid		mm ²	1 x (0.5 4), 2 x (0.5		
• Finely stranded with end sleeve		mm ²	1 x (0.5 2.5), 2 x (0.	5 1.5)	
AWG cables, solid or stranded Terminal parage		AWG	2 x (20 14)	u drivor oizo O or Donidaix O	
Terminal screwsTightening torque		Nm	0.8 1.2	w driver size 2 or Pozidriv 2)	
Connection type		INIII	Spring-type ter	minals	
Operating devices		mm	3.0 x 0.5		
Operating devices Solid		mm ²	2 x (0.25 1.5)		
Finely stranded with end sleeve		mm ²	2 x (0.25 1.5)		
• Finely stranded		mm ²	2 x (0.25 1.5)		
AWG cables, solid or stranded		AWG	2 x (24 16)		

Revised • 04/20/15

Contactors and Contactor Assemblies

Contactor Assemblies for Switching Motors

3RA reversing contactor assemblies

Design

Complete equipment assemblies

The fully wired reversing contactor assemblies are suitable for use in any climate. They are safe from touch to EN 50274.

The contactor assemblies each consist of two contactors with identical ratings. The contactors are mechanically and electrically interlocked (NC contact interlock). The main and control circuits are wired according to the circuit diagrams on page 2/199.

For motor protection, either 3RU2 or 3RB3 overload relays for direct mounting or individual mounting or thermistor motor protection tripping units must be ordered separately.

Components for customer assembly

Installation kits for all sizes are available for customer assembly of reversing contactor assemblies

Contactors, overload relays, the mechanical interlock and — for momentary-contact operation — auxiliary switch blocks for latching must be ordered separately

The following points should be noted:

Size S00

- For maintained-contact operation: use contactors with an NC contact in the basic unit for the electrical interlock.
- For momentary-contact operation: use contactors with an NC contact in the basic unit for the electrical interlock; in addition, an auxiliary switch block with at least one NO contact for latching is required per contactor.

Size S0 and S2

Contactors come equipped with integrated 1 NO and 1NC aux contacts in each contactor. Both electrical interlocking and latching are satisfied with the integrated auxiliaries. Mechanical interlocking is required in either size and comes in the assembly kits except for size S2 where you need to order 3RA2934-2B interlock separately.

Sizes S3

- For maintained-contact operation:
- the contactors have no auxiliary contact in the basic unit; NC contacts for the electrical interlock are therefore integrated in the mechanical interlock that can be mounted on the side of each contactor (one contact each for the left and right-hand contactors).
- For momentary-contact operation: the electrical interlock is the same as for maintained-contact operation; in addition, an auxiliary switch with one NO contact for latching is required per contactor. This contact can be snapped onto the top of the contactors. Alternatively, auxiliary switch blocks mounted on the side can be used; they must be fitted onto the outside of each contactor.

If the <u>front-mounted mechanical interlock</u> is used for size S2 to S3 contactors, two location holes for single-pole auxiliary switch blocks are provided on the front of each S2 contactor while three additional, single-pole auxiliary switch blocks can be snapped onto S3 contactors. The maximum auxiliary switch complements percontactorstatedonpage2/12 must not be exceeded.

When size S3 contactors are combined with a frontmounted mechanical interlock, the 3RA19 33-2B and 3RA19 43-2B installation kits cannot be used

Sizes S6 to S12

To insert the mechanical interlock, the prestamped location holes positioned opposite on the contactor must be knocked out. The internal auxiliary contacts (up to 1 NO + 1 NC per contactor) can be used for the electrical interlock and latching. The mechanical interlock itself does not contain any auxiliary contacts. Additional auxiliary contacts can be used on the outside and front (on the front in the case of 3RT10) of the reversing contactor assembly.

Principle of operation

The operating times of the individual 3RT10/20 contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, providing they are interlocked via their auxiliary switches (NC contact interlock) and the operating mechanisms. An additional dead interval of 50 ms is necessary on reversing if the individual contactors are used at voltages > 500 V. The operating times of the individual contactors are not affected by the mechanical interlock.

Surge suppression

Sizes S00 to S3

All contactor assemblies can be fitted with RC elements or varistors for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the front of the contactors (S00) or fitted onto the coil terminals on the top or bottom (S3). For sizes S0 and S2, the surge protection fits behind the hinged door on the front of the contactor and does not take up any additional space.

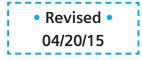
Sizes S6 to S12

The contactors are fitted with varistors as standard.

Siemens Industry, Inc. Industrial Controls Catalog

Contactor Assemblies for Switching Motors

3RA13 and 3RA23 reversing contactor assemblies





Overview

The 3RA13 and 3RA23 reversing contactor assemblies can be ordered as follows:

Sizes S00 to S3

 Fully wired and tested, open type, with mechanical and electrical interlock. 1)

Sizes S00 to S12

As components for customer assembly.

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

For overload relays for motor protection, see section 3.

The 3RA23 and 3RA13 contactor assemblies have screw connections and are available for screwing or snapping onto 35 mm standard mounting rails. The 3RA23 contactor assemblies are also available with spring-type terminals.

The **3** and **3** approvals only apply to the complete contactor assemblies and not to the components for customer assembly.

AC and DC operation

See pages 2/40 through 2/44 for complete part numbers.

Maximum horsepower rating at 460 V AC	AC-3 maximum inductive current	Size	Order No.					
НР	А		Contactor	Mechanical interlock ²)	Mechanical interlock 3)	Mechanical interlock 4)	Installation kit	Fully wired and tested contactor assembly
3 5 7.5 10	7 9 12 16	S00	3RT20 15 3RT20 16 3RT20 17 3RT20 18	3RA29 13-2AA1	6) –	-	3RA29 13-2AA1 ⁶)	3RA23 15-8XB30 3RA23 16-8XB30 3RA23 17-8XB30 3RA23 18-8XB30
7.5 10 15 20 25	12 16 25 32 38	S0	3RT20 24 3RA29 23-2AA1 ⁶) 3RT20 25 3RT20 26 3RT20 27 3RT20 28		⁶)	-	3RA23 24-8XB30 3RA23 25-8XB30 3RA23 26-8XB30 3RA23 27-8XB30 3RA23 28-8XB30	
30 40 50 50	40 50 65 80	S2	3RT20 35 3RT20 36 3RT20 37 3RT20 38	3RA29 34-2B		_	3RA29 33-2AA1 ⁷)	3RA23 35-8XB30-1 3RA23 36-8XB30-1 3RA23 37-8XB30-1 3RA23 38-8XB30-1
50 60 75	65 80 95	S3	3RT10 44 3RT10 45 3RT10 46	3RA19 24-2B	3RA19 24-1A	-	3RA19 43-2A ⁸)	3RA13 44-8XB30-1 3RA13 45-8XB30-1 3RA13 46-8XB30-1
100 125 150	115 150 185	S6	3RT10 54 3RT10 55 3RT10 56	-	-	3RA19 54-2A	3RA19 53-2A ⁹)	_
150 200 250	225 265 300	S10	3RT10 64 3RT10 65 3RT10 66	-	-	3RA19 54-2A	3RA19 63-2A ⁹)	-
300 400	400 500	S12	3RT10 75 3RT10 76	-	-	3RA19 54-2A	3RA19 73-2A9)	-

For accessories, see page 2/80-2/83. For circuit diagrams, see page 2/199. For dimension drawings, see page 2/218-2/220.

- 1) An additional dead interval of 50 ms is necessary on reversing at voltages > 500 V.
- 2) Laterally mountable with one auxiliary contact (except no auxiliary contact in S2)
- 3) For front mounting with one auxiliary contact.4) Laterally mountable without auxiliary contact.
- 5) Interlock must be ordered with installation kit.
- 6) Installation kit contains: mechanical interlock; 2 connecting clips for 2 contactors; wiring connectors on the top and bottom.
- Installation kit contains: 2 connecting clips for 2 contactors; wiring connectors on the top and bottom and the mechanical interlock.
- Installation kit contains: 2 connecting clips for 2 contactors; wiring connectors on the top and bottom
- Installation kit contains: wiring connector on the top and bottom.

Contactor Assemblies for Switching Motors

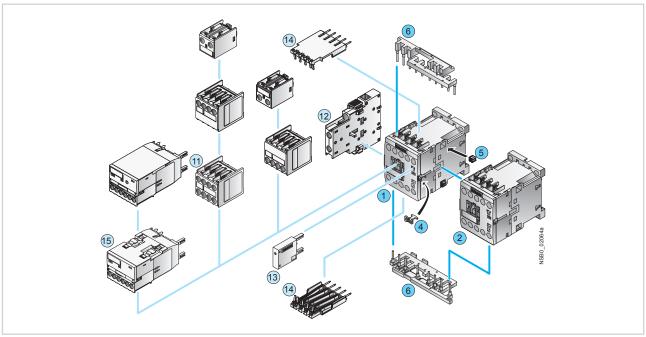


3RA23 reversing contactor assemblies

Selection and ordering data

Fully wired and tested contactor assemblies · Size S00 · Up to 10 HP

The figure shows the version with screw terminals



Mountable accessories		
Accessories	Order No.	Page
Auxiliary switch block, front ¹⁾	3RH29 11-1	2/66
Auxiliary switch block, lateral	3RH29 21-1DA	2/68
Surge suppressor	3RT29 16-1	2/73
M Solder pin adapter	3RT19 16-4KA1	2/78
Function module for connection to the control system	3RT27 11BA00	2/30

Fully wired and tested contactor assemblies										
Individu	al parts	Order No.		Page						
		Q11	Q12							
12	Contactor, 3 HP	3RT20 15	3RT20 15	2/8						
12	Contactor, 5 HP	3RT20 16	3RT20 16	2/8						
12	Contactor, 7.5 HP	3RT20 17	3RT20 17	2/8						
12	Contactor, 10 HP	3RT20 18	3RT20 18	2/8						
456	Assembly kit	3RA29 13-2AA1		2/81						

- 4 Mechanical interlocks
- 5 2 connecting clips for 2 contactors
- Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included², interruptible (NC contact interlock)

¹⁾ Auxiliary switch block according to EN 50005 must be used.

^{2) 3}RT20 1. contactors with one NC contact in the basic unit are required for the electrical interlock.

Contactor Assemblies for Switching Motors

3RA23 reversing contactor assemblies

• Revised • 12/10/14



Fully wired and tested contactor assemblies²⁾ · Size S00 · Up to 10 HP







3RA23 18-8XE30-1BB4

3RA23 1.-8XB30-1A.

3RA23 1.-8XB30-2A

AC data	UL data	а								Screw terminals	(1)	Weight approx.
Amp ratings	Single-p HP ratin		Three-pl HP ratin				Rated control supply voltage U _s	Auxi		Spring-type terminals	$\stackrel{\circ}{\mathbb{H}}$	
AC2/AC3	115 V	230 V	200 V	230 V	460 V	575 V	at 50/60 Hz	NO	NC	Order No.		
							V					kg
AC operation	on, 50/60) Hz										
Size S00 ¹⁾												
7 7 7	1/4 1/4 1/4	3/4 3/4 3/4	1 1/2 1 1/2 1 1/2	2 2 2	3 3 3	5 5 5	24 AC 110/120 AC 220/240 AC	0 0 0	2 2 2	3RA23 15-8XB30-□AB0 3RA23 15-8XB30-□AK6 3RA23 15-8XB30-□AP6	;	0.46/0.50 0.46/0.50 0.46/0.50
9 9 9	1/3 1/3 1/3	1 1 1	2 2 2	3 3 3	5 5 5	7 1/2 7 1/2 7 1/2	24 AC 110/120 AC 220/240 AC	0 0 0	2 2 2	3RA23 16-8XB30-□AB0 3RA23 16-8XB30-□AK0 3RA23 16-8XB30-□AP0	5	0.46/0.50 0.46/0.50 0.46/0.50
12 12 12	1/2 1/2 1/2	2 2 2	3 3 3	3 3 3	7 1/2 7 1/2 7 1/2	10 10 10	24 AC 110/120 AC 220/240 AC	0 0 0	2 2 2	3RA23 17-8XB30-□AB0 3RA23 17-8XB30-□AK0 3RA23 17-8XB30-□AP0	;	0.46/0.50 0.46/0.50 0.46/0.50
16 16 16	1 1 1	2 2 2	3 3 3	5 5 5	10 10 10	10 10 10	24 AC 110/120 AC 220/240 AC	0 0 0	2 2 2	3RA23 18-8XB30-□AB0 3RA23 18-8XB30-□AK0 3RA23 18-8XB30-□AP0	;	0.46/0.50 0.46/0.50 0.46/0.50
DC operation	on											
7	1/4	3/4	1 1/2	2	3	5	24 DC	0	2	3RA23 15-8XB30-□BB4	ļ	0.58/0.62
9	1/3	1	2	3	5	7 1/2	24 DC	0	2	3RA23 16-8XB30-□BB4	ļ	0.58/0.62
12	1/2	2	3	3	7 1/2	10	24 DC	0	2	3RA23 17-8XB30-□BB4	ļ	0.58/0.62
16	1	2	3	5	10	10	24 DC	0	2	3RA23 18-8XB30-□BB4	ļ	0.58/0.62
With commun	nication i	nterface ³⁾										
7	1/4	3/4	1 1/2	2	3	5	24 DC	0	2	3RA23 15-8XE30-□BB4		0.58/0.62
9	1/3	1	2	3	5	7 1/2	24 DC	0	2	3RA23 16-8XE30-□BB4		0.58/0.62
12	1/2	2	3	3	7 1/2	10	24 DC	0	2	3RA23 17-8XE30-□BB4		0.58/0.62
16	1	2	3	5	10	10	24 DC	0	2	3RA23 18-8XE30-□BB4		0.58/0.62

Screw terminals
Spring-loaded terminals

1 2

For accessories and spare parts, see page 2/66-2/83.

- 1) For coil operating range, see page 2/49.
- 2) The contactors integrated in the contactor assemblies have no unassigned auxiliary contacts.
- 3) For use with 3RA27 and 3RA28 communication modules. See pages 2/24 to 2/31.

For other voltages see page 2/49

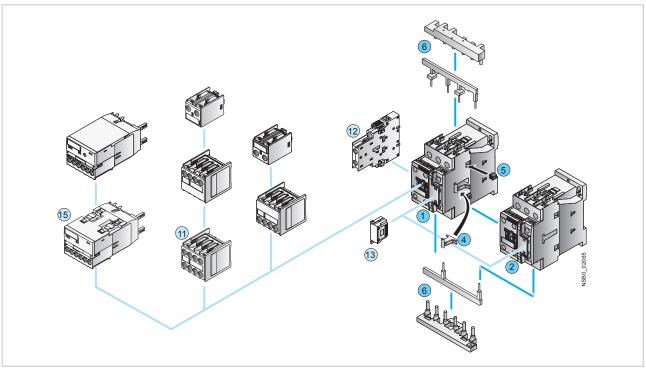
Contactor Assemblies for Switching Motors 3RA23 reversing



contactor assemblies

Fully wired and tested contactor assemblies \cdot Size S0 \cdot Up to 25 HP

The figure shows the version with screw terminals



Mountable accessories		
Individual parts	Order No.	Page
Auxiliary switch block, front	3RH29 21-1	2/66
Auxiliary switch block, lateral	3RH29 21-1DA	2/68
Surge suppressor	3RT29 26-1	2/73
Function module for connection to the control system	3RT27 11BA00	2/30

Fully wi	red and tested cont	actor assemblies		
Individu		Order No.		Page
	•	Q11	Q12	
12	Contactor, 7.5 HP	3RT20 24	3RT20 24	2/8
12	Contactor, 10 HP	3RT20 25	3RT20 25	2/8
12	Contactor, 15 HP	3RT20 26	3RT20 26	2/8
12	Contactor, 20 HP	3RT20 27	3RT20 27	2/8
12	Contactor, 25 HP	3RT20 28	3RT20 28	2/8
456	Assembly kit	3RA29 23-2AA1		2/81

- 4 Mechanical interlocks
- 5 2 connecting clips for 2 contactors
- Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)

Contactor Assemblies for Switching Motors

3RA23 reversing contactor assemblies

Revised04/20/15



Fully wired and tested contactor assemblies \cdot Size S0 \cdot up to 25 HP







3RA23 24-8XE30-1BB4

3RA23 2.-8XB30-1A.

3RA23 2.-8XB30-2A

3HAZ3 Z4-8	XE3U-1BB4	+	3RA23 2	8XB3U-1.	A		3RAZ3 Z8XB3U-2	∠A				
AC data	UL data	3								Screw terminals	(1)	Weight approx.
Amp ratings	Single-p HP ratin		Three-pl HP rating				Rated control supply voltage U _s	Auxil		Spring-type terminals	8	
AC2/AC3	115 V	230 V	200 V	230 V	460 V	575 V	at 50/60 Hz	NO	NC	Order No.		
							V					kg
AC operat	tion, 50/60) Hz										
Size S0 ¹⁾												
12 12 12	1 1 1	2 2 2	3 3 3	3 3 3	7 1/2 7 1/2 7 1/2	10 10 10	24 AC 110/120 AC 220/240 AC	2 2 2	2 2 2	3RA23 24-8XB30-□AC2 3RA23 24-8XB30-□AK6 3RA23 24-8XB30-□AP6	;	0.84/0.94 0.84/0.94 0.84/0.94
16 16 16	1 1 1	3 3 3	5 5 5	5 5 5	10 10 10	15 15 15	24 AC 110/120 AC 220/240 AC	2 2 2	2 2 2	3RA23 25-8XB30-□AC2 3RA23 25-8XB30-□AK6 3RA23 25-8XB30-□AP6	i	0.84/0.94 0.84/0.94 0.84/0.94
25 25 25	2 2 2	3 3 3	7 1/2 7 1/2 7 1/2	7 1/2 7 1/2 7 1/2	15 15 15	20 20 20	24 AC 110/120 AC 220/240 AC	2 2 2	2 2 2	3RA23 26-8XB30-□AC2 3RA23 26-8XB30-□AK6 3RA23 26-8XB30-□AP6	i	0.84/0.94 0.84/0.94 0.84/0.94
32 32 32	2 2 2	5 5 5	10 10 10	10 10 10	20 20 20	25 25 25	24 AC 110/120 AC 220/240 AC	2 2 2	2 2 2	3RA23 27-8XB30-□AC2 3RA23 27-8XB30-□AK6 3RA23 27-8XB30-□AP6	i	0.84/0.94 0.84/0.94 0.84/0.94
38 38 38	3 3 3	5 5 5	10 10 10	10 10 10	25 25 25	25 25 25	24 AC 110/120 AC 220/240 AC	2 2 2	2 2 2	3RA23 28-8XB30-□AC2 3RA23 28-8XB30-□AK6 3RA23 28-8XB30-□AP6	i	0.84/0.94 0.84/0.94 0.84/0.94
DC operat	tion											
12	1	2	3	3	7 1/2	10	24 DC	2	2	3RA23 24-8XB30-□BB4		1.22/1.32
16	1	3	5	5	10	15	24 DC	2	2	3RA23 25-8XB30-□BB4		1.22/1.32
25	2	3	7 1/2	7 1/2	15	20	24 DC	2	2	3RA23 26-8XB30-□BB4		1.22/1.32
32	2	5	10	10	20	25	24 DC	2	2	3RA23 27-8XB30-□BB4		1.22/1.32
38	3	5	10	10	25	25	24 DC	2	2	3RA23 28-8XB30-□BB4		1.22/1.32
With commi	unication i	nterface 2)										
12	1	2	3	3	7 1/2	10	24 DC	2	2	3RA23 24-8XE30-□BB4		1.22/1.32
16	1	3	5	5	10	15	24 DC	2	2	3RA23 25-8XE30-□BB4		1.22/1.32
25	2	3	7 1/2	7 1/2	15	20	24 DC	2	2	3RA23 26-8XE30-□BB4		1.22/1.32
32	2	5	10	10	20	25	24 DC	2	2	3RA23 27-8XE30-□BB4		1.22/1.32
38	3	5	10	10	25	25	24 DC	2	2	3RA23 28-8XE30-□BB4		1.22/1.32

Screw terminals
Spring-loaded terminals



For other voltages see page 2/49.

For accessories and spare parts, see page 2/66-2/83.

¹⁾ For coil operating range, see page 2/49.

²⁾ For use with 3RA27 and 3RA28 communication modules. See pages 2/24 to 2/31.

For Reversing Contactors with communication interface: replace the 8XB30-1NB3

with 8XE30-1NB3.

Contactors and Contactor Assemblies

Contactor Assemblies for Switching Motors

3RA23 reversing contactor assemblies

3RA2338-8XB30-1NB3

Selection and ordering data

Size S2 · up to 50 HP

5

15



AC data Amp ratings	Single- HP rati	phase	Three- HP rat				Rated control	Auxil	liarv	Screw	Weight
AC2/AC3	115 V	230 V	200 V	230 V	460 V	575 V	supply voltage 1)	conta	,	Terminals 🕀	approx.
Α	HP	HP	HP	HP	HP	HP		NO	NC	Order No.	kg
AC ope	eration										
40	3	7.5	10	15	30	40	24 V, 50/60 Hz	2	2	3RA2335-8XB30-1AC2	1.72
							120 V, 60 Hz	2	2	3RA2335-8XB30-1AK6	
							240 V, 60 Hz	2	2	3RA2335-8XB30-1AP6	
50	3	10	15	15	40	50	24 V, 50/60 Hz	2	2	3RA2336-8XB30-1AC2	1.72
							120 V, 60 Hz	2	2	3RA2336-8XB30-1AK6	
							240 V, 60 Hz	2	2	3RA2336-8XB30-1AP6	
65	5	10	20	20	50	50	24 V, 50/60 Hz	2	2	3RA2337-8XB30-1AC2	2.548
							120 V, 60 Hz	2	2	3RA2337-8XB30-1AK6	
							240 V, 60 Hz	2	2	3RA2337-8XB30-1AP6	
80	5	15	20	25	50	60	24 V, 50/60 Hz	2	2	3RA2338-8XB30-1AC2	2.548
							120 V, 60 Hz	2	2	3RA2338-8XB30-1AK6	
							240 V, 60 Hz	2	2	3RA2338-8XB30-1AP6	
AC/DC	opera	tion									
40	3	7.5	10	15	30	40	20-33 AC/DC	2	2	3RA2335-8XB30-1NB3	2.5
50	3	10	15	15	40	50	20-33 AC/DC	2	2	3RA2336-8XB30-1NB3	
65	5	10	20	20	50	50	20-33 AC/DC	2	2	3RA2337-8XB30-1NB3	

20-33 AC/DC

Fully wired and tested contactor assemblies · Size S2 · up to 50 HP
The figure shows the version with screw terminals

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Mc	ountable accessories (optional)		
То	be ordered separately	Article No.	Page
1	Auxiliary switch block, front	3RH2921-1	2/66
12	Auxiliary switch block, lateral	3RH2921-1DA	2/68
13	Surge suppressor	3RT2936-1	2/72
15	Function module for connection to the control system	3RA2711BA00	2/30

For further voltages, see page 2/49. For overview, see page 2/37-2/38. For accessories, see page 2/66-2/83. For circuit diagrams, see page 2/200. For dimension drawings, see page 2/218.

Coil voltage tolerance: at 50Hz: 0.8 to 1.1 x Us at 60Hz: 0.85 to 1.1 x Us at AC/DC: 0.8 to 1.1 x Us

Comple	Complete contactor assemblies												
Individu	ual parts Article No.	K1	K2	Page									
12	Contactor, 30 HP	3RT2035	3RT2035	2/8									
12	Contactor, 40 HP	3RT2036	3RT2036	2/8									
12	Contactor, 50 HP	3RT2037	3RT2037	2/8									
12	Contactor, 50 HP	3RT2038	3RT2038	2/79									
45	Assembly kit contains: comprising:	3RA2933-2	AA1										

- 4 2 connecting pins for 2 contactors
- (NC contact interlock)

 (Si Wiring modules on the top and bottom for connecting the main and auxiliary current paths, electrical interlock included (NC contact interlock)

Mechanical interlock 3RA2934-2B 2/80

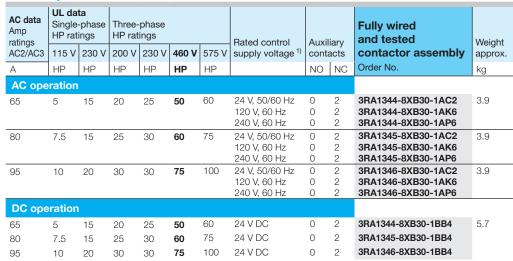
Contactor Assemblies for Switching Motors

3RA13 reversing contactor assemblies

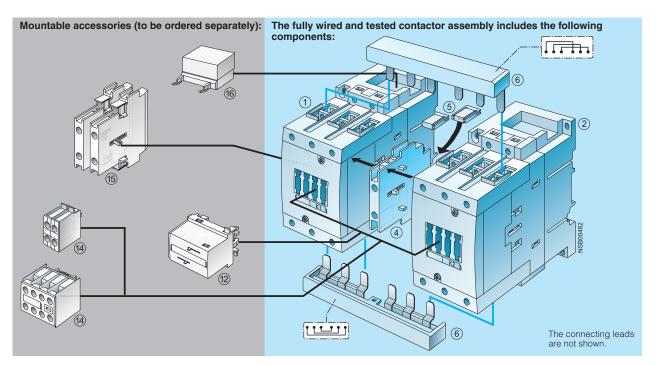


Selection and ordering data

Size S3 · up to 75 HP







Ac	cessory	Order No.	Page	Components		Order No. K1	K2	Page
12				12	Contactors, 50 HP	3RT1044	3RT1044	2/8
	mountable on the front	3RA1924-1A	2/80	(1)(2) Contactors, 60 HP		3RT1045	3RT1045	2/8
14	Auxiliary switch block, mountable on the front	3RH1921-1CA	2/66	12	Contactors, 75 HP	3RT1046	3RT1046	2/8
(15)	Auxiliary switch block,		2,00	4	Mechanical interlock,	201100400		0/00
	laterally mountable	3RH1921-1EA	2/68		laterally mountable	3RA1924-2E	_	2/80
16	Surge suppressor	3RT19 26-1	2/73	56 Installation kit		3RA19 43-2A	A	2/81
	cargo capprococi	3RT1936-1			The installation kit conta	ains:		

For further voltages, see page 2/49. For overview, see page 2/37-2/38. For accessories, see page 2/66-2/83. For circuit diagrams, see page 2/200. For dimension drawings, see page 2/218.

1) Coil voltage tolerance at 50 Hz: 0.8 \dots 1.1 x $U_{\rm s}$ at 60 Hz: 0.85 \dots 1.1 x $U_{\rm s}$

6 Wiring connectors on the top and bottom

^{5 2} connecting clips for 2 contactors with a clearance of 10 mm

3RA24 Contactor Assemblies for Wye-Delta Starting



3RA24 complete units, 5.5 ... 22 kW

Overview

These 3RA24 contactor assemblies for wye-delta starting are designed for standard applications.

Note

Contactor assemblies for wye-delta starting in special applications such as very heavy starting or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA24 contactor assemblies for wye-delta starting can be ordered as follows:

Sizes S00 and S0

- Fully wired and tested, with electrical and mechanical interlock.
- As individual parts for customer assembly.

A dead interval of 50 ms on reversing is already integrated in the function module for wye-delta starting.

There is also a range of accessories (lateral auxiliary switch blocks, etc.) that must be ordered separately.

For overload relays for motor protection see Chapter 3 "Overload Relays" --> "3RB3 Solid-State Overload Relays".

The 3RA24 contactor assemblies have screw or spring-type terminals and are suitable for screwing or snapping onto TH 35 standard mounting rails.

With the fully wired and tested 3RA24 contactor assemblies, the auxiliary contacts included in the basic devices are unassigned.

Motor protection

Overload relays or thermistor motor protection releases can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Surge suppression

Sizes S00 and S0

Surge suppression (varistor) is included in the function modules for wye-delta starting.

Function modules for wye-delta starting

The 3RA28 16-0EW20 wye-delta function module (see page 2/27 replaces the complete wiring in the control circuit and can be used in the voltage range from 24 to 240 V AC/DC. It is snapped onto the front of the contactor assembly size S00 or S0

One function module comprises a complete module kit:

- One 3RA29 12-0 basic module with integrated control logic and time setting,
- And two 3RA29 11-0 coupling modules with related connecting cables.

The scope of supply comprises a complete module kit for one contactor assembly for wye-delta starting size S00 or S0, regardless of the connection method.

Screw terminals

Rated data at AC 50 Hz 400 V			Size			
Power	Operational current $I_{\rm e}$			Line/delta contactor	Star contactor	Order No. complete
kW	A	Α				
5.5	12	9.5 13.8	S00-S00-S00	3RT20 15-1	3RT20 15-1	3RA24 15-8XF31-1
7.5	16	12.1 17		3RT20 17-1	3RT20 15-1	3RA24 16-8XF31-1
11	25	19 25		3RT20 18-1	3RT20 16-1	3RA24 17-8XF31-1
11	25	19 25	S0-S0-S0	3RT20 24-1	3RT20 24-1	3RA24 23-8XF32-1
15	32	24.1 34		3RT20 26-1	3RT20 24-1	3RA24 25-8XF32-1
18.5	40	34.5 40		3RT20 26-1	3RT20 24-1	3RA24 25-8XF32-1
22	50	31 43		3RT20 27-1	3RT20 26-1	3RA24 26-8XF32-1

Spring-type terminals

Rated data at AC 50 Hz 400	0 V		Size			
Power	Operational current $I_{\rm e}$	Motor current		Line/delta contactor	Star contactor	Order No. complete
kW	Α	Α				
5.5	12	9.5 13.8	S00-S00-S00	3RT20 15-2	3RT20 15-2	3RA24 15-8XF31-2
7.5	16	12.1 17		3RT20 17-2	3RT20 15-2	3RA24 16-8XF31-2
11	25	19 25		3RT20 18-2	3RT20 16-2	3RA24 17-8XF31-2
11	25	19 25	S0-S0-S0	3RT20 24-2	3RT20 24-2	3RA24 23-8XF32-2
15	32	24.1 34		3RT20 26-2	3RT20 24-2	3RA24 25-8XF32-2
18.5	40	34.5 40		3RT20 26-2	3RT20 24-2	3RA24 25-8XF32-2
25	50	31 43		3RT20 27-2	3RT20 26-2	3RA24 26-8XF32-2

Note:

The selection of contactor types refers to fused configurations.

3RA24 Contactor Assemblies for Wye-Delta Starting

3RA24 complete units, 5.5 ... 22 kW



Components for customer assembly

Assembly kits with wiring modules and mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, function modules for wye-delta starting or wye-delta timing relays, auxiliary switches for electrical interlock – if required also feeder terminals and base plates – must be ordered separately.

The wiring kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta

contactors (top) and between the delta and star contactors (bottom).

Control circuit

Features:

- Time setting range 0.5 to 60 s (3 selectable settings)
- Wide voltage range 24 to 240 V AC/DC
- Dead interval of 50 ms, non-adjustable.

Screw terminals

	Accessories for customer assembly			Overload relay, (trip class CLAS		Overload relay, s (trip class CLAS)	
Power	Function modules for wye-delta starting	Assembly kit B, for single infeed	Star jumper	Setting range Order No.		Setting range	Order No.
kW				А		А	
5.5	3RA28 16-0EW20	3RA29 13-2BB1 ¹⁾	3RT29 16-4BA31	5.5 8	3RU21 16-1HB0	4 16	3RB30 16-1TB0
7.5				7 10	3RU21 16-1JB0		
11				11 16	3RU21 16-4AB0		
11	3RA28 16-0EW20	3RA29 23-2BB1 ²⁾	3RT29 26-4BA31	11 16	3RU21 26-4AB0	6 25	3RB30 26-1QB0
15				14 20	3RU21 26-4BB0		
18.5				20 25	3RU21 26-4DB0		
22				20 25	3RU21 26-4DB0		

Spring-type terminals

	Accessories for customer assembly			Overload relay, t		Overload relay, s (trip class CLASS	
Power	Function modules for wye-delta starting	Assembly kit B, for single infeed	Star jumper	Setting range Order No.		Setting range	Order No.
kW				А		Α	
5.5	3RA28 16-0EW20	3RA29 13-2BB2 ¹⁾	3RT29 16-4BA32	5.5 8	3RU21 16-1HC0	4 16	3RB30 16-1TE0
7.5				7 10	3RU21 16-1JC0		
11				11 16	3RU21 16-4AC0		
11	3RA28 16-0EW20	3RA29 23-2BB2 ²⁾	3RT29 26-4BA32	11 16	3RU21 26-4AC0	6 25	3RB30 26-1QE0
15				14 20	3RU21 26-4BC0		
18.5				20 25	3RU21 26-4DC0		
22				20 25	3RU21 26-4DC0		

¹⁾ The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper and auxiliary circuit wiring

Order No. scheme

Digit of the Order No.	1 3.	4.	5.	6.	7.		8.	9.	10.	11.	12.		13.	14.	15.	16.
						-						-				
SIRIUS contactor assemblies	3 R A															
2nd generation		2														
Device type (e. g. 4 = contactor assembly for wye-delta starting)			4													
Contactor size (1 = S00, 2 = S0)																
Power dependent on size (e. g. 25 = 15 kW)																
Type of overload relay (8X = without)																
Assembly (F = ready-assembled, E, H = ready-assembled with communication)																
Interlock (3 = mechanical and electrical)																
Free auxiliary switches (e. g. S00: 1 = 3 NO total, S0: 2 = 3 NO + 3 NC total)																
Connection type (1 = screw, 2 = spring)																
Operating range / solenoid coil circuit (e. g. A = AC standard / without)																
Rated control supply voltage (e. g. K6 = 110/120 V, 50/60 Hz)																
Example	3 R A	2	4	2	5	_	8	Х	F	3	2	_	1	Α	K	6

²⁾ The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper.



3RA24 Contactor Assemblies for Wye-Delta Starting

3RA24 complete units, 5.5 ... 22 kW

Fully wired and tested contactor assemblies · Size S00-S00-S00 · Up to 11 kW







3RA24 1.-8XE31-2BB4

3RA24 1.-8XF31-1A.0

3RA24 1.-8XF31-2A.0

Rated da					Rated control supply voltage	Screw terminals	(1)	Weight approx.	Spring-type terminals	8	Weight approx.
Operational current I_e up to		ion mot	ors		<i>U</i> _s ¹⁾ at 50/60 Hz	Order No.		apper a m	Order No.		
400 V	230 V	400 V	500 V	690 V							
Α	kW	kW	kW	kW	V			kg			kg
AC ope	ration	50/60	Hz								
12	3.3	5.5	7.2	9.2	24 AC 110/120 AC 220/240 AC	3RA24 15-8XF31-1AB0 3RA24 15-8XF31-1AK6 3RA24 15-8XF31-1AP6		0.910 0.850 0.850	3RA24 15-8XF31-2AB0 3RA24 15-8XF31-2AK6 3RA24 15-8XF31-2AP6		0.910 0.910 0.910
16	4.7	7.5	10.3	9.2	24 AC 110/120 AC 220/240 AC	3RA24 16-8XF31-1AB0 3RA24 16-8XF31-1AK6 3RA24 16-8XF31-1AP6		0.910 0.850 0.850	3RA24 16-8XF31-2AB0 3RA24 16-8XF31-2AK6 3RA24 16-8XF31-2AP6		0.910 0.910 0.910
25	5.5	11	11	11	24 AC 110/120 AC 220/240 AC	3RA24 17-8XF31-1AB0 3RA24 17-8XF31-1AK6 3RA24 17-8XF31-1AP6		0.850 0.850 0.850	3RA24 17-8XF31-2AB0 3RA24 17-8XF31-2AK6 3RA24 17-8XF31-2AP6		0.910 0.910 0.910
DC ope	ration										
12	3.3	5.5	7.2	9.2	24 DC	3RA24 15-8XF31-1BB4		0.910	3RA24 15-8XF31-2BB4		0.910
16	4.7	7.5	10.3	9.2	24 DC	3RA24 16-8XF31-1BB4		0.910	3RA24 16-8XF31-2BB4		0.910
25	5.5	11	11	11	24 DC	3RA24 17-8XF31-1BB4		1.030	3RA24 17-8XF31-2BB4		1.090
For IO-L	Link co	nnect	ion								
12	3.3	5.5	7.2	9.2	24 DC	3RA24 15-8XE31-1BB4		1.030	3RA24 15-8XE31-2BB4		1.090
16	4.7	7.5	10.3	9.2	24 DC	3RA24 16-8XE31-1BB4		1.030	3RA24 16-8XE31-2BB4		1.090
25	5.5	11	11	11	24 DC	3RA24 17-8XE31-1BB4		1.030	3RA24 17-8XE31-2BB4		1.090
For AS-	Interfa	ice coi	nnecti	on							
12	3.3	5.5	7.2	9.2	24 DC	3RA24 15-8XH31-1BB4		1.050	3RA24 15-8XH31-2BB4		1.110
16	4.7	7.5	10.3	9.2	24 DC	3RA24 16-8XH31-1BB4		1.050	3RA24 16-8XH31-2BB4		1.110
25	5.5	11	11	11	24 DC	3RA24 17-8XH31-1BB4		1.050	3RA24 17-8XH31-2BB4		1.110

The wye-delta starters listed here are assembled from individual contactors which are UL Listed. The overall assembly Catalog Number is not UL Listed.

For other voltages see page 2/49.

 $^{^{1)}}$ Coil operating range at 50 Hz: 0.8 ... 1.1 x $U_{\rm S}$; at 60 Hz: 0.85 ... 1.1 x $U_{\rm S}$

3RA24 Contactor Assemblies for Wye-Delta Starting

Revised09/30/14



3RA24 complete units, 5.5 ... 22 kW

Fully wired and tested contactor assemblies \cdot Size S0-S0-S0 \cdot Up to 22 kW







3RA24 2.-8XF32-1A.2

3BA24 2 -8XE32-2A 2

3RA24 2.	8XE32	8XE32-1BB4 3R.			AA24 28XF32-1A.2		3R	3RA24 28XF32-2A . 2			
Rated da	ata AC-3 Rating				Rated control supply voltage	Screw terminals		Weight approx.	Spring-type terminals		Weight approx.
tional current I_e up to	induct at 50 H	ion mot Iz and			Us ¹⁾ at 50/60 Hz	Order No.			Order No.		
400 V	230 V	400 V	500 V	690 V							
Α	kW	kW	kW	kW	V			kg			kg
AC ope	ration,	50/60	Hz								
25	7.1	11	15.6	19	24 AC 110/220 AC 220/240 AC	3RA24 23-8XF32-1AC2 3RA24 23-8XF32-1AK6 3RA24 23-8XF32-1AP6		1.370 1.370 1.370	3RA24 23-8XF32-2AC2 3RA24 23-8XF32-2AK6 3RA24 23-8XF32-2AP6		1.530 1.530 1.530
32 / 40	11.4	15 / 18.5	19	19	24 AC 110/220 AC 220/240 AC	3RA24 25-8XF32-1AC2 3RA24 25-8XF32-1AK6 3RA24 25-8XF32-1AP6		1.370 1.370 1.370	3RA24 25-8XF32-2AC2 3RA24 25-8XF32-2AK6 3RA24 25-8XF32-2AP6		1.530 1.530 1.530
50		22	19	19	24 AC 110/220 AC 220/240 AC	3RA24 26-8XF32-1AC2 3RA24 26-8XF32-1AK6 3RA24 26-8XF32-1AP6		1.390 1.390 1.390	3RA24 26-8XF32-2AC2 3RA24 26-8XF32-2AK6 3RA24 26-8XF32-2AP6		1.550 1.550 1.550
DC ope	ration										
25	7.1	11	15.6	19	24 DC	3RA24 23-8XF32-1BB4		1.940	3RA24 23-8XF32-2BB4		2.100
32 / 40	11.4	15 / 18.5	19	19	24 DC	3RA24 25-8XF32-1BB4		1.940	3RA24 25-8XF32-2BB4		2.100
50		22	19	19	24 DC	3RA24 26-8XF32-1BB4		1.960	3RA24 26-8XF32-2BB4		2.120
For IO-I	Link co	nnec	tion								
25	7.1	11	15.6	19	24 DC	3RA24 23-8XE32-1BB4		1.940	3RA24 23-8XE32-2BB4		2.100
32 / 40	11.4	15 / 18.5	19	19	24 DC	3RA24 25-8XE32-1BB4		1.940	3RA24 25-8XE32-2BB4		2.100
50		22	19	19	24 DC	3RA24 26-8XE32-1BB4		1.960	3RA24 26-8XE32-2BB4		2.120
For AS-	-Interfa	ce co	nnecti	on							
25	7.1	11	15.6	19	24 DC	3RA24 23-8XH32-1BB4		1.960	3RA24 23-8XH32-2BB4		2.120
32 / 40	11.4	15 / 18.5	19	19	24 DC	3RA24 25-8XH32-1BB4		1.960	3RA24 25-8XH32-2BB4		2.120
50		22	19	19	24 DC	3RA24 26-8XH32-1BB4		1.980	3RA24 26-8XH32-2BB4		2.140

The wye-delta starters listed here are assembled from individual contactors which are UL Listed. The overall assembly Catalog Number is not UL Listed.

For other voltages see page 2/49.

 $^{^{1)}}$ Coil operating range at 50 Hz: 0.8 ... 1.1 x $U_{\rm S}$; at 60 Hz: 0.85 ... 1.1 x $U_{\rm S}$.

Contactors and Contactor Assemblies 3RT / 3RA Contactors

Rated control supply voltages

Selection and ordering data

			3RT201 3RA211	3RT231 3RT251	3RT202 3RA212	3RT232 3RT252	3RT2617 3RT2627 3RT2637	3RT203 3RA213	3RT233 3RT253	3RT104 3RT134 3RT144 3RA114
			S00	S00	S0	S0	S00-S2	S2	S2	S3
Rated control su	upply voltag	es (changes t	to 10th and	11th positi	ons of the	Order No.)				
AC Operation ¹⁾										
Coils for 50 Hz	24 V AC		B0	B0	B0	B0	B0	B0	B0	B0
(exception:	42 V AC		D0	D0	D0			D0		D0
size S00: 50	48 V AC		H0	H0	H0			H0		H0
and 60 Hz ²⁾	110 V AC		F0	F0	F0	F0	F0	F0	F0	F0
	230 V AC		P0	P0	P0	P0	P0	P0	P0	P0
	400 V AC		V0	V0	V0	V0	V0	V0	V0	V0
Coils for	24 V AC		В0	B0	C2	C2	C2	C2	C2	C2
50 and 60 Hz 2)	42 V AC		D0	D0	D2	D2		D2	D2	D2
	48 V AC		H0	H0	H2	H2		H2	H2	H2
	110 V AC		F0	F0	G2	G2	G2	G2	G2	G2
	208 V AC		M2	M2	M2	M2	M2	M2	M2	M2
	220 V AC		N2	N2	N2	N2	N2	N2	N2	N2
	230 V AC		P0	P0	L2	L2	L2	L2	L2	L2
	240 V AC		P2	P2	P2	P2	P2	P2	P2	P2
For USA	50 Hz:	60 Hz:								
and Canada 3)	110 V AC	120 V AC	K6	K6	K6	K6	K6	K6	K6	K6
	220 V AC	240 V AC	P6	P6	P6	P6	P6	P6	P6	P6
		277 V AC	_	_	_	U6	_	U6	U6	U6
		480 V AC	V6	_	V6	_	_	V6	V6	V6
		600 V AC	_			T6	_	T6	T6	T6
For Japan	50/60 Hz ⁴⁾ :	60 Hz ⁵⁾ :								
	100 V AC	110 V AC	G6	G6	G6	G6	G6	G6	G6	G6
	200 V AC	220 V AC	N6	N6	N6	N6	N6	N6	N6	N6
	400 V AC	440 V AC	R6	R6	R6	R6	R6	R6	R6	R6
DC Operation ¹⁾										
	12 V DC		A4	A4	_	_	_	_	_	_
	24 V DC		B4	B4	B4	B4	_	_	_	B4
	42 V DC		D4	D4	D4	D4	_	_	_	D4
	48 V DC		W4	W4	W4	W4	_	_	_	W4
	60 V DC		E4	E4	E4	E4	_	_	_	E4
	72 V DC		J8	J8	J8	J8	_	_	_	J8
	80 V DC		_	_	_	_	_	_	_	E8
	110 V DC		F4	F4	F4	F4	_	_	_	F4
	125 V DC		G4	G4	G4	G4	_	_	_	G4
	220 V DC		M4	M4	M4	M4	_	_	_	M4
	230 V DC		P4	P4	P4	_		_	_	P4

Coil codes for frame sizes S6-S12 can be found on page 2/9. Further voltages on request

Rated control supply	Contactor type	-	3RT2. 2N	Rated control supply		3RT2. 3N
oltage J _{s min} U _{s max} 6)	Size	S00	S0	voltage $U_{\text{s min}} \dots U_{\text{s max}}^{6)}$	type Size	

Sizes S00 to S2

AC/DC operation (50/60 Hz AC, DC)

,	, ,		
21 28 V AC/DC		B3	20 33 V
95 130 V AC/DC_		F3	83 155 V
200 280 V AC/DC ⁷⁾		P3	175 280 V

¹⁾ For deviating coil voltages and coil operating ranges of sizes S00 and S0, the SITOP power 24 V DC power supply unit with wide range input (93 to 264 V AC; 30 to 264 V DC) can be used for coil excitation (For more SITOP information see section 15).

at 60 Hz: 0.8 ... 1.1 x $U_{\rm S}$ at 50 Hz and 60 Hz: 0.8 ... 1.1 x $U_{\rm S}$

F3 P3

²⁾ Coil operating range at 50 Hz: 0.8 ... $1.1 \times U_{\rm S}$ at 60 Hz: 0.85 ... $1.1 \times U_{\rm S}$

³⁾ Coil operating range at 50 Hz: 0.85.... 1.1 x U_s Size S00: Size S0:

V AC/DC V AC/DC V AC/DC

⁴⁾ Coil operating range Size S00: at 50/60 Hz: 0.85 ... 1.1 x U_s Size S0: at 50 Hz: 0.8 ... 1.1 x U_s at 60 Hz: 0.85 ... 1.1 x U_s

⁵⁾ Coil operating range at 60 Hz: 0.8 ...1.1 x U_s

⁷⁾ The following applies to S0 and $U_{\rm S\ max}$ = 280 V: Upper limit =1.1 x $U_{\rm S\ max}$

Control Relays, Coupling Relays

3RH21 control relays, 4-pole

SIRIUS

Selection and ordering data AC and DC operation





Rated current Auxiliary contacts



3RH11..-2....

Size S00 – Terminal designations according to EN 50011

For screw and snap-on mount

	at 240 V NEMA A600/Q600	Ident- ification No.	Versio	n /	Rated control supply voltage <i>U</i> _s	AC Operation Screw Terminals ^{1) 2)}	Rated control supply voltage <i>U</i> _s	DC Operation Screw Terminals ^{1) 2}
	Amps		NO	NC	V AC 50/60 $\mathrm{Hz}^{3)}$	Order No.	V DC	Order No.
ıti	ng onto TH 3	5 standard	d mou	ınting ı	rail			
	10	40E	4		24 110/120 220/240	3RH2140-1AB00 3RH2140-1AK60 3RH2140-1AP60	24 110 220	3RH2140-1BB40 3RH2140-1BF40 3RH2140-1BM40
	10	31E	3	1	24 110/120 220/240	3RH2131-1AB00 3RH2131-1AK60 3RH2131-1AP60	24 110 220	3RH2131-1BB40 3RH2131-1BF40 3RH2131-1BM40
	10	22E	2	2	24	3RH2122-1AB00	24	3RH2122-1BB40

Notes

For further voltages, see page 2/49.
For accessories, see pages 2/66-2/77.
For technical data, see pages 2/185-2/188.
For overview, see page 2/116.
For position terminals, see page 2/202-2/203.
For dimension drawings, see page 2/124.

1)The 3RH21 contactor relays are also available with spring-type terminals. Replace the 8th digit of the order number with a "2" e.g. "3RH2140-2AB00"

3RH2122-1AK60

3RH2122-1AP60

110

220

3RH2122-1BF40

3RH2122-1BM40

- 2)The 3RH21 contactor relays are also available with ring lug terminals. Replace the 8th digit of the order number with a "4" e.g. "3RH2140-4AB00"
- 3)AC coil operating range at 50 Hz: 0.8 to 1.1 x Us at 60 Hz: 0.85 to 1.1 x Us

110/120

220/240

4)For AC-15/AC-14 the following applies: I_{e} = 6A for mounted auxiliary contacts.



Revised 09/30/14

Contactors and Contactor Assemblies Control Relays, Coupling Relays

3RH24 latched control relays, 4-pole

Overview

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

The number of auxiliary contacts can be extended by means of front auxiliary switch blocks (up to 4 poles).

RC elements, varistors diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

Selection and ordering data

Size S00 - Terminal designations according to FN 5001

312e 300 - Termina	ai designations according	I TO EIN SOOT							
		Rated current at 240 V AC-14, AC-15 NEMA A600/Q600	Aux. contacts Ident. Version No.			Rated control supply voltage U_S	AC Operation Screw Terminals ¹⁾	Rated control supply voltage <i>U</i> _S	DC Operation Screw Terminals
		Amps		NO	NC	V AC	Order No.	V DC	Order No.
For screw and sr	nap-on mounting or	ito TH 35 st	andar	d mo	unti	ng rail			
care care	E2(-) A2(-) 14 24 34 44	10	40E	4	_	24, 50/60 Hz 110, 50 Hz/120, 60 Hz 220, 50 Hz / 240, 60 Hz 230, 50/60 Hz	3RH2440-1AB00 3RH2440-1AK60 3RH2440-1AP60 3RH2440-1AP00	24 110 125 220	3RH2440-1BB40 3RH2440-1BF40 3RH2440-1BG40 3RH2440-1BM40
3RH2422-1BB40	E2(-) A2(-) 14 22 34 44	10	31E	3	1	24, 50/60 Hz 110, 50 Hz / 120, 60 Hz 220, 50 Hz / 240, 60 Hz 230, 50/60 Hz	3RH2431-1AB00 3RH2431-1AK60 3RH2431-1AP60 3RH2431-1AP00	24 110 125 220	3RH2431-1BB40 3RH2431-1BF40 3RH2431-1BG40 3RH2431-1BM40
	E1(+) A1(+) 13 21 31 43 E2(-) A2(-) 14 22 32 44	10	22E	2	2	24, 50/60 Hz 110, 50 Hz / 120, 60 Hz 220, 50 Hz / 240, 60 Hz 230, 50/60 Hz	3RH2422-1AB00 3RH2422-1AK60 3RH2422-1AP60 3RH2422-1AP00	24 110 125 220	3RH2422-1BB40 3RH2422-1BF40 3RH2422-1BG40 3RH2422-1BM40

For accessories for 3RH24, see below and page 2/66-2/77 For technical data, see page 2/185-2/188. For overview, see page 2/116.

For position of terminals, see page 2/202-2/203. For dimension drawings, see page 2/224.

Auxiliary switch blocks for 3RH21, 3RH24 control relays

				Weight				
type			ion	approx.				
	Block Ident. No.	,	L,					
					Screw Terminals	Spring Terminals		
		NO	NC	kg.	Order No.	Order No.		
Auxiliary switch blocks for snapping onto the front according to EN 50011								
	type	type HS Block Ident. No.	type HS Block Ident. No. NO	type HS Block Ident. No. NO NC	type HS Version approx. Block Ident. No. NO NC kg.	type HS Block Ident. No. NO NC kg. Screw Terminals Order No.		



3RH2911-1GA40



3RH2911-2GA40

or	snapping onto the	front acco	rding to	EN:	5001	1		
	53 63 73 83 54 64 74 84	3RH2140, 3RH2440, Ident. No. 40 E	80E	4	_	0.050	3RH2911-1GA40	3RH2911-2GA40
	53 61 73 83 	3RH2140, 3RH2440, Ident. No. 40 E	71E	3	1	0.050	3RH2911-1GA31	3RH2911-2GA31
	53 61 71 83 	3RH2140, 3RH2440, Ident. No. 40 E	62E	2	2	0.050	3RH2911-1GA22	3RH2911-2GA22
	53 61 71 81 	3RH2140, 3RH2440, Ident. No. 40 E	53E	1	3	0.050	3RH2911-1GA13	3RH2911-2GA13
_	51 61 71 81	3RH2140, 3RH2440, Ident. No. 40 E	44E	_	4	0.050	3RH2911-1GA04	3RH2911-2GA04

¹⁾ Coil voltage tolerance at 50 Hz: 0.8 to 1.1 x Us at 60 Hz: 0.85 to 1.1 x U_{S}

For further accessories see pages 2/66-2/77

2/51

Coupling Relays

3RH21 coupling relays for switching auxiliary circuits, 4 pole



0.300

0.300

0.300

0.300

0.300

0.300

0.300

0.300

0.300

Application

DC operation

IEC 60 947 and EN 60 947

The 3RH21 coupling relays for switching auxiliary circuits are tailored to the special requirements of working with electronic controls.

10

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10

The 3RH21 coupling relays cannot be extended with auxiliary switch blocks.

Coupling relays have a low power consumption, an extended coil voltage tolerance and an integrated surge suppressor for damping opening surges on select versions

3RH2140-2HB40

3RH2131-2HB40

3RH2122-2HB40

3RH2140-2JB40

3RH2131-2JB40

3RH2122-2JB40

3RH2140-2KB40

3RH2131-2KB40

3RH2122-2KB40

Selection and ordering data DC operation

Size S00 - Terminal designations according to EN 50 011

	Rated current	Auxiliary of	Auxiliary contacts				
Surge suppressor	at 240 V NEMA A600/Q600	Ident- ification No.	Vers	4	Screw Terminals ¹⁾	Spring Terminals ¹⁾	Weight approx.
	Amps		NO	NC	Order No.	Order No.	kg.

3RH2140-1HB40

3RH2131-1HB40

3RH2122-1HB40

3RH2140-1JB40

3RH2131-1JB40

3RH2122-1JB40

3RH2140-1KB40

3RH2131-1KB40

3RH2122-1KB40

40E

31E

22E

40E

31E

22E

40E

31E

22E

3 1

2 2

4

3

2 2

4

3 1

2 2

1

For screw and snap-on mounting onto TH 35 standard mounting rail

Diode, varistor,

or RC element

can be mounted

Diode integrated

Suppressor diode integrated

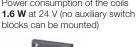
Rated control supply voltage $U_s =$ 24 V DC, coil voltage tolerance 0.7 to 1.25 x U_s

Power consumption of the coils 2.8 W at 24 V (no auxiliary switch blocks can be mounted)



	3RH2140-1HB40
atod control cupp	ly voltage II

= 24 V DC, coil voltage tolerance 0.85 to 1.85 x U_s Power consumption of the coils





3RH2140-2SB40

-0							
Diode, varistor,	10	40E	4		3RH2140-1MB40-0KT0	3RH2140-2MB40-0KT0	0.300
or RC element	10	31E	3	1	3RH2131-1MB40-0KT0	3RH2131-2MB40-0KT0	0.300
can be mounted	10	22E	2	2	3RH2122-1MB40-0KT0	3RH2122-2MB40-0KT0	0.300
Diode integrated	10 10 10	40E 31E 22E	4 3 2	 1 2	3RH2140-1VB40 3RH2131-1VB40 3RH2122-1VB40	3RH2140-2VB40 3RH2131-2VB40 3RH2122-2VB40	0.300 0.300 0.300
Suppressor diode integrated	10	40E	4		3RH2140-1SB40	3RH2140-2SB40	0.300
	10	31E	3	1	3RH2131-1SB40	3RH2131-2SB40	0.300
	10	22E	2	2	3RH2122-1SB40	3RH2122-2SB40	0.300

For technical data, see 2/189. For position of terminals, see 2/202-2/203. For dimension drawings, see 2/224.

¹⁾ Ring lug terminals are also available. Replace the 8th digit of the order number with a "4", e.g. 3RH2140-4HB40

	Suppressor element mountable	Diode integrated	Suppressor diode integrated
40E	A1(+) 13 23 33 43	A1(+) 13 23 33 43	A1(+) 13 23 33 43
	A2(-) 14 24 34 44	A2 (-) 14 24 34 44	A2(-) 14 24 34 44
31E	A1(+) 13 21 33 43	A1(+) 13 21 33 43	A1(+) 13 21 33 43
	A2(-) 14 22 34 44	A2 (-) 14 22 34 44	A2(-) 14 22 34 44
22E	A1(+) 13 21 31 43	A1(+) 13 21 31 43	A1(+) 13 21 31 43
	A2(-) 14 22 32 44	A2(-) 14 22 32 44	A2(-) 14 22 32 44

Contactors for Switching Motors

3TF68 and 3TF69 vacuum contactors, 3-pole

■=1

==8

Selection and ordering data

Maximum inductive current AC-3	UL Ra	Ŭ		Ü	IEC ratings 1000 V	Max. resistive current AC-1	Auxiliary contacts	Rated control supply voltage 1)		Weight approx.
Α	HP	HP	HP	HP	kW	Α	NO NC	V	Order No.	kg
Size 14 Auxiliary and control conductors: screw terminals Main conductor: bar connections • AC Operation										



AC operation ^{2) 3)}

Main co	ry and co onductor peration	r: bar c			crew ter	minals					
630	200	250	500	600	600	700	4	4	110-132, 50/60 Hz	3TF6844-■CF7	15
630	200	250	500	600	600	700	4	4	200-240, 50/60 Hz	3TF6844-■CM7	15
820	290	350	700	860	800	910	4	4	110-132, 50/60 Hz	3TF6944- ■C F7	19
820	290	350	700	860	800	910	4	4	200-240, 50/60 Hz	3TF6944-■CM7	19
								•	shown in above table: use only up to 1000 V:		
• DC O	peration										
630	200	250	500	600	600	700	3	3	24 V DC	3TF6833-■DB4	16.9
820	290	350	700	860	800	910	3	3	24 V DC	3TF6933-■DB4	20.9

UL ratings shown in above table:

For IEC use only up to 1000 V:

Accessories and Spare parts for 3TF68 and 3TF69 vacuum contactors

Selection and ordering data

	Details	For contactor type		Weight approx.
			Order No.	kg
Coils				
	AC Operation The coils are fitted with varistors for damping surges as standard; the coil is supplied with the closing electronics included. DC Operation Reversing contactors are required for size 14 contactors:	3TF68 3TF69	3TY7683-0C●● 3TY7693-0C●●	0.65
	Contactor type Reversing contactor type 3TF68 and 3TF69: 3TC44 (70 mm wide, 85 mm high)	3TF68 3TF69	3TY7683-0D●● 3TY7693-0D●●	0.56
3TY7	The coils are supplied without a reversing contactor. •• For rated control supply voltages, see page 2/102.			

Va a reresa inche une e	
Vacuum interru	0112162
Tabaanii iiitoii a	7

3TY7680-0B 3TF68 32 In order to ensure reliable operation of the contactors, only Siemens original replacement interrupters should be used. 3TF69 3TY7690-0B 3 vacuum interrupters with mouning parts per set. 3.5

Auxiliary switch blocks w



	1 N 1 N
an.	Aux
4	1 N
	Sol
r	For

with screw termina	ls					
1 NO and 1 NC	First auxiliary switch block, left or right. Replacement type for: 3TY7561-1A, -1B	3TF68 / 3TF69	3TY7561-1AA00	0.042		
1 NO and 1 NC	First auxiliary switch block, left or right late break	3TF68 / 3TF69	3TY7561-1EA00	0.042		
1 NO and 1 NC	Second auxiliary switch block, left or right. Replacement type for: 3TY7 561-1K, -1L	3TF68 / 3TF69	3TY7561-1KA00	0.042		
Auxiliary switches for	coil reconnection, for DC economy circuit with	screw connections				
1 NC	Auxiliary switch block late break	3TF68 / 3TF69	3TY7681-1G	0.042		
Solid-state compatible auxiliary switch block with screw terminals						
For mounting onto the and electronic circuits I_e AC-14 and DC-13 fr	3TY7561-1UA00	0.042				

For accessories, see page 2/53-2/54. For technical data, see page 2/172-2/177. For description, see page 2/117. For internal circuit diagrams, see page 2/211. For position of terminals, see page 2/208 For dimension drawings, see page 2/221.

3TF68/69 vacuum contactors are supplied with integrated surge suppression for the main conducting paths (for description, see page 2/117). In operation in circuits with DC choppers, frequency converters, variable-speed drives, for example, this protective circuitry is not required. It might be damaged by voltage peaks and harmonics generated, possibly followed by phase-to-phase shortcircuits. For this reason, the contactors can be supplied without overvoltage damping. To order these versions add a "-Z" and the order code "A02'

¹⁾ For further voltages, see page 2/102.

²⁾ Surge suppression integrated: fitted with varistor.

³⁾ For EMC, see description on page 2/11

Contactors for Switching Motors

Accessories and Spare parts for 3TF68 and 3TF69 vacuum contactors



Selection and ordering data For contactor Design Order No. Weight Std. approx. Pack Size Type kg Qty Interface for control by PLC 3TX7 090-0D Coil voltage tolerance: DC 17 V to 30 V Power consumption: 0.5 W at DC 24 V Fitted with varistor For technical data, see Part 7. 3TF68 and For snapping onto the side of auxiliary switch 3TX7 090-0D 0.1 14 3TF69 blocks, with surge suppression **Terminal covers** 3TX7 686-0A (Order No. and price per set) 14 3TF68 for protection against inadvertent contact 3TX7 686-0A 1 set = with the exposed busbar connections 2 units 3TF69 (DIN VDE 0106 Part 100)" 3TX7 696-0A Link for paralleling (star jumper) · 3-pole, without terminal 1) 14 3TF68 3TX7 680-0D 0.26 1 · Cover plate for paralleling link 3TF68 A cover plate must be used in order to protect 3TX7 680-0E 0.18 against inadvertent contact (DIN VDE 0106 Part 100). Box terminals for laminated copper bars · Without auxiliary conductor terminal 3TX7570-1E With single covers for protection against inadvertent contact (EN 50274) 14 3TF68 3TX7 570-1E 0.6 1 · With auxiliary conductor terminal 3TF69 Conductor cross-sections for auxiliary conduc-3TX7 690-1F 2.0 Solid: 2 × (0.75 ... 2.5) mm² Finely stranded 2 × (0.5 ... 2.5) mm² 2 × (18 ... 12) AWG 0.8 Nm ... 1.4 Nm with end sleeve: Solid or stranded: Tightening torque: (7 ... 12 lb.in) Surge suppressors — Varistors 3TX7 572-3G For DC economy circuit; Rated control 3TF68 and for lateral snapping onto supply voltage, 3TF69 auxiliary switches V DC 24 ... 48 3TX7 572-3G 0.09 The varistor is included 48 ... 127 3TX7 572-3H 0.09 in the scope of supply of 127 ... 240 0.09 3TX7 572-3J the 3TF68 and 3TF69 contactors with AC operation. Includes the peak value of the alternating voltage on the DC side.

¹⁾ The link for paralleling can be reduced by one pole.



DC Power Controls Contactors and Replacement Parts

General Purpose - Type 3TC

Ordering information

- · Select Contactor from table below.
- Complete catalog number replace the two daggers (††) with appropriate coil voltage suffix. See corresponding coil voltage suffix table below.
- Technical Data see page 2/178-2/181.
- Dimensions see page 2/221.





3TC44

Frame	Ampere	Rating	2 Pole I (DC-3,	DC HP Ra	atings		Auxiliary		AC-Operated	DC-Operated
Size	Open	Enclosed	115 V	230 V	500 V	575 V	NO	NC	Order No.	Order No.
3TC DC Contactors										
2	40	40	5	10	15	15	2	2	3TC4417-0B††	3TC4417-0A††
4	75	68	8	18	40	45	2	2	3TC4817-0B††	3TC4817-0A††
8	220	200	25	50	100	100	2	2	3TC5217-0B††	3TC5217-0A††
12	330	300	40	75	150	150	2	2	3TC5617-0B††	3TC5617-0A††

	Device	Frame Size	Catalog Number					
Coils, AC			24V AC	120V AC	220/240V AC	277V AC	480V AC	600V AC
Tractor .		3TC4417-0B††	3TY7403-0AC2	3TY7403-0AK6	3TY7403-0AP6	3TY7403-0AU1	3TY7403-0AV0	3TY7403-0AS0
18		3TC4817-0B††	3TY6483-0AC1	3TY6483-0AK6	3TY6483-0AP6	3TY6483-0AP0	3TY6483-0AV0	3TY6483-0AS0
	3TC	3TC5217-0B††		3TY6523-0AK6	3TY6523-0AP6	3TY6523-0AP0	3TY6523-0AV0	
		3TC5617-0B††		3TY6566-0AK6		3TY6566-0AP0	3TY6566-0AV0	3TY6566-0AS0
3TY6483-0AK6								
Coils, DC			24V DC	48V DC	110V DC	125V DC	230V DC	
		3TC4417-0A††	3TY6443-0BB4		3TY6443-0BF4	3TY6443-0BG4		
	OTO	3TC4817-0A††	3TY6483-0BB4	3TY6483-0BW4	3TY6483-0BF4	3TY6483-0BG4		
	3TC	3TC5217-0A††	3TY6523-0BB4		3TY6523-0BF4	3TY6523-0BG4	3TY6523-0BP4	
3TY6483-0BB4		3TC5217-0A††	3TY6563-0BB4		3TY6563-0BF4	3TY6563-0BG4	3TY6563-0BP4	

	Frame size	Contactor type	Mounting position	Solid state	Order No.
Auxiliary Co	ntact Bl	ocks with 1	NO + 1 NC contact	s ²⁾	
	2, 4	3TC44 or	1st block, left or right	_	3TY6501-1AA00
4		3TC48	2nd block, left or right	Yes3)	3TY7561-1UA00
	4	3TC48	2nd block, left ⁵⁾	_	3TY6501-1K
4 6			2nd block, right ⁵⁾	_	3TY6501-1L
3TY6501-1A	8, 12	3TC52 or	1st block, left	_	3TY6561-1A
		3TC56	1st block, right	_	3TY6561-1B
			2nd block, left ⁵⁾	_	3TY6561-1K
		-	2nd block, right ⁵⁾	_	3TY6561-1L

	Device Type	Frame Size	Catalog Number
Main Contacts 1)			
n = # 40		3TC44	3TY2440-0A
-비를 좀 [8]		3TC48	3TY2480-0A
D = = 18	3TC	3TC52	3TY2520-0A
-레토함 때		3TC56	3TY2560-0A
3TY2480-0A			
Arc Chutes			
		3TC44	3TY2442-0A
	3TC	3TC48	3TY2482-0A
		3TC52	3TY2522-0A
		3TC56	3TY2562-0A
3TY2482-0A			

Coil Suffix Table ††

Replace †† in the contactor Order No. with a coil code from the table below.

V AC 50/60 Hz	Code
24	C1
120	K1*
240	P1
460	VO
600	S0

*1	ISA	SLIffix	K2	for	3T	C.44	

V DC	Code
24	B4
36	V4
48	W4
60	E4
72	J8
110	F4
125	G4
220	M4
230	P4

- 1) Main contact kits for size 3TC48 and larger include springs. Smaller sizes do not.
- 2) On DC operated contactors the maximum number of auxiliary contacts is 2 NO, 2 NC.
- 3) For use in dusty atmosphere and electronic circuits with rated operational currents I_e AC-14 and DC-13 from 1 mA to 300 mA at 3V to 60V. With 1 changeover contact.
- 4) Discount Code: DC Contactors
- 5) Can only be mounted on AC-operated contactors.

DC Power Controls

DC Contactor Replacement Parts

General Purpose - Type 3TC



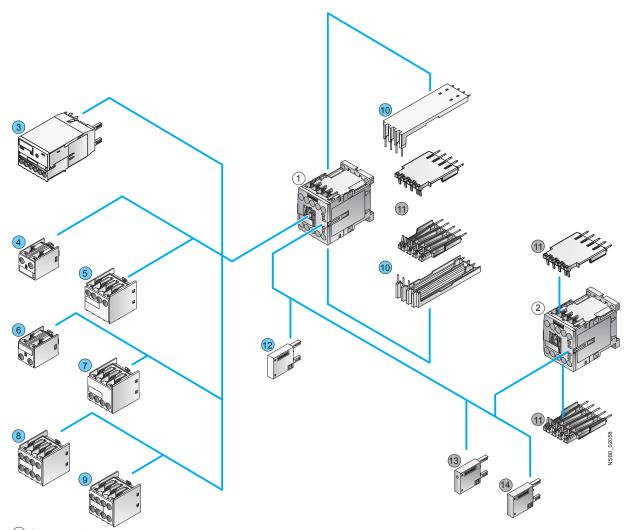
	For contact	tors	Version	Rated control supply voltage $U_{\rm S}$		Order No.	Std. Pack
	Size	Туре		V AC	V DC		Qty
Surge suppressors · Va	ristors						
T C	2	3TC44 ¹⁾	Varistors ²⁾ with line spacer, for mounting onto the coil terminal	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250	3TX7 402-3G 3TX7 402-3H 3TX7 402-3J 3TX7 402-3K 3TX7 402-3L	1 1 1 1
3TX7 402-3.	4	3TC48	Varistors ²⁾ for sticking onto the contactor base or for mounting separately	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250	3TX7 462-3G 3TX7 462-3H 3TX7 462-3J 3TX7 462-3K 3TX7 462-3L	1 1 1 1
	8 and 12	3TC52, 3TC56	Varistor for sticking onto the contactor base or for mounting separately	24 48 48 127 127 240 240 400 400 600		3TX7 462-3G 3TX7 462-3H 3TX7 462-3J 3TX7 462-3K 3TX7 462-3L	1 1 1 1
3TX7 462-3. 3TX7 522-3.	8 and 12	3TC52, 3TC56	Varistors ²⁾ for separate screw connection or snapping onto TH 35 standard mounting rail		24 70 70 150 150 250	3TX7 522-3G 3TX7 522-3H 3TX7 522-3J	1 1 1
Surge suppressors · RO							
See East	4	3TC48	RC elements For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250	3TX7 462-3R 3TX7 522-3R 3TX7 462-3S 3TX7 522-3S 3TX7 462-3T 3TX7 522-3T 3TX7 462-3U 3TX7 462-3U	
3TX7 462-3., 3TX7 522-3.	8 and 12	3TC52, 3TC56	RC elements For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 48 48 127 127 240 240 400 400 600		3TX7 522-3R 3TX7 522-3S 3TX7 522-3T 3TX7 522-3U 3TX7 522-3V	
Surge suppressors · Di							
3TX7 462-3.	4 to 12	3TC48, 3TC52, . 3TC56	Diode assemblies ³⁾ (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately		24 250	3TX7 462-3D	
Terminal covers							
	6	3TC48	For protection against inadvertent of exposed busbar connections. Can on free screw end. Covers one bus	be screwed	n	3TX6 506-3B	1 set= 6 units
3TX6 506-3B	10 and 14	3TC52, 3TC56				3TX6 546-3B	1 set= 6 units

The connection piece for mounting the surge suppressor must be bent slightly.
 Includes the peak value of the alternating voltage on the DC side.

³⁾ Not for DC economy circuit.



Contactor relays and coupling relays Size S00 with accessories



- (1) Contactor relay
- (2) Coupling relay for auxiliary circuits
- 3 Solid-state timing relay block
- 4 1-pole auxiliary switch block, cable entry from the top
- 5 2-pole auxiliary switch block, cable entry from the top
- 6 1-pole auxiliary switch block, cable entry from the bottom
- 7 2-pole auxiliary switch block, cable entry from the bottom
- 4-pole auxiliary switch block (terminal designations according to EN 50011 or EN 50005)
- 2-pole auxiliary switch block, solid-state compatible version (terminal designations according to EN 50005)
- 10 Solder pin adapter for contactor relays with 4-pole auxiliary switch block
- 11) Solder pin adapter for contactor and coupling relays
- 12 Additional load module for increasing the permissible residual current
- (13) Surge suppressor with LED
- (14) Surge suppressor without LED

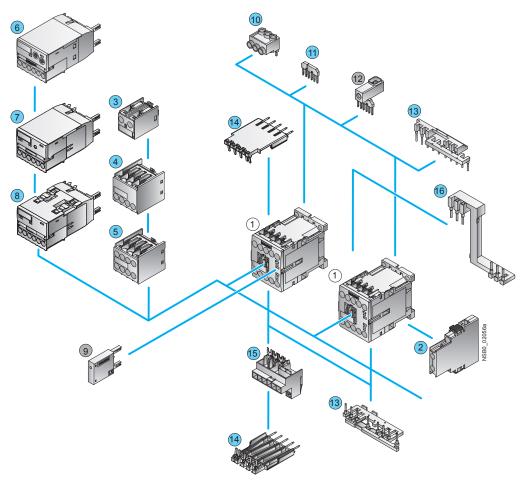
3RT2 contactors and coupling relays Size S00 with mountable accessories



Overview

The SIRIUS family of controls

The SIRIUS modular system with its components for the switching, starting, protection and monitoring of motors and industrial systems stands for the fast, flexible and space-saving construction of control cabinets.



- 1 Contactor size S00
- 2 1-pole auxiliary switch block, laterally mountable
- 3 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
- 4 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
- 5 4-pole auxiliary switch block, for snapping onto the front
- 6 3RA28 function module
- 3RA27 function module for AS-Interface, direct starting
- 8 3RA27 function module for IO-Link, direct starting
- 9 Surge suppressor with/without LED
- 10 Three-phase feeder terminal

For accessories see pages 2/66 to 2/83.

For contactor assemblies see pages 2/40 to 2/47.

For assembly kit for reversing contactor assemblies (mech. interlocking, wiring modules) see page 2/81.

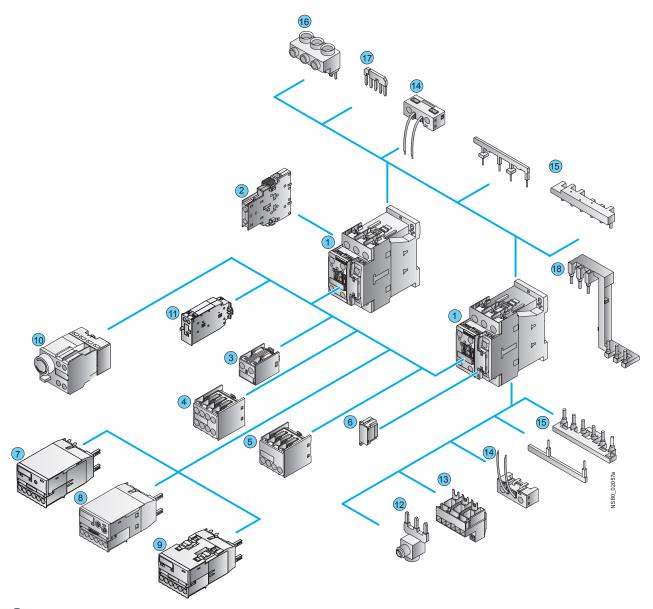
- 11 Star jumper, 3-pole, without connecting terminal
- Link for paralleling, 3-pole, with connecting terminal
- (13) Wiring modules, on the top and bottom (reversing duty)
- Solder pin adapter
- (5) Connection module (adapter and connector) for contactors with screw-type connection
- Safety main current connector for two contactors
- For contactors
- For contactors and coupling contactors (interface)

For mountable overload relays see Chapter 3, Overload Relays

For Motor Starters see Chapter 4, Combination Starters



3RT2 contactors and coupling relays Size S0 with mountable accessories



- 1 Contactor size S0
- 2 1-pole auxiliary switch block, laterally mountable
- 3 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
- 4-pole auxiliary switch block, for snapping onto the front
- 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
- 6 Surge suppressor with/without LED
- 7 3RA27 function module for AS-Interface, direct starting
- 8 3RA28 function module
- 9 3RA27 function module for IO-Link, direct starting
- 10 Pneumatic delay block

- 11 Mechanical latching block
- 12 Link for paralleling, 3-pole, with connecting terminal
- (3) Connection module (adapter and plug) for contactors with screw-type connection
- (4) Coil terminal module, on the top and bottom
- (15) Wiring modules, on the top and bottom (reversing duty)
- Three-phase feeder terminal
- Link for paralleling (star jumper), 3-pole, without connecting terminal
- Safety main current connector for two contactors

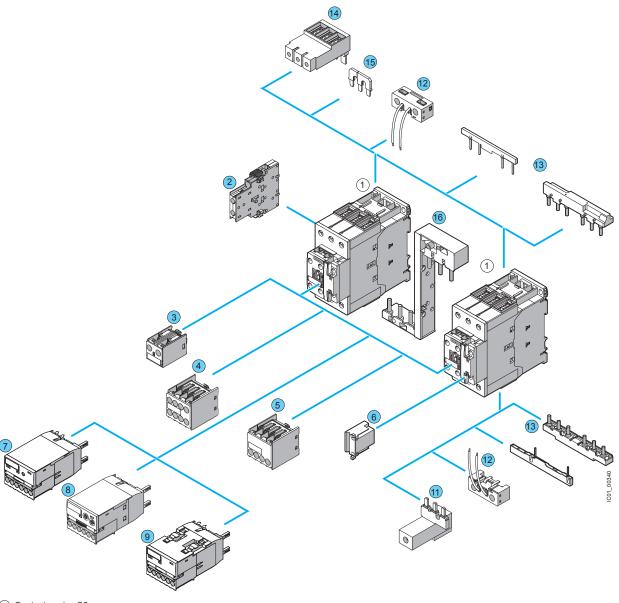
For accessories see pages 2/66 to 2/83.

Revised04/20/15



3RT2 contactors
Size S2 with mountable accessories

Size S2 with mountable accessories



- 1 Contactor, size S2
- 2 2-pole auxiliary switch block, laterally mountable
- 3 1-pole auxiliary switch block, for snapping onto the front, cable entry from above
- 4-pole auxiliary switch block, for snapping onto the front
- 2-pole auxiliary switch block, for snapping onto the front, cable entry from below
- 6 Surge suppressor with/without LED
- 7 3RA27 function modules for AS-Interface, direct start
- 8 3RA28 function modules

Accessories see pages 2/66 to 2/81.

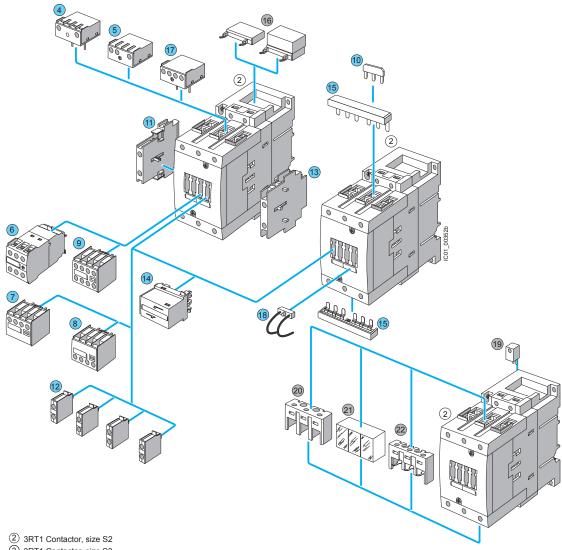
- 9 3RA27 function modules for IO-Link, direct start
- Link for paralleling, 3-pole, with connection terminal
- (12) Coil terminal module, top and bottom
- (3) Wiring modules, top and bottom (reversing duty)
- 3-phase feeder terminal
- Link for paralleling (star jumper), 3-pole, without connection terminal
- 16 Safety main current connector for two contactors



Revised 04/20/15

> **3RT1** contactors Size S3 with mountable accessories

Size S3 with mountable accessories



3 3RT1 Contactor, size S3

For sizes S2 and S3:

- 4 Electronic timing relay block, ON-delay
- Electronic timing relay block, OFF-delay
- Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
- 2-pole auxiliary switch block, cable entry from above
- 2-pole auxiliary switch block, cable entry from below
- 9 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
- Link for paralleling (star jumper), 3-pole, without connecting terminal
- 1 Link for paralleling, 3-pole, with connecting terminal
- 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005)
- (3) Single-pole auxiliary switch block (up to 4 can be snapped on)
- (14) Mechanical interlock, laterally mountable
- Mechanical interlock, mountable to the front
- Wiring connectors on the top and bottom (reversing duty)

Accessories see pages 2/66 to 2/81.

- Surge suppressor (varistor, RC element, diode assembly), can be mounted on the top or bottom
- Mechanical latching interface for mounting directly onto contactor coil
- (9) LED module for indicating contactor operation

Only for size S2:

Mechanical latching

Only for sizes S2 and S3:

- 2) Coil repeat terminal for making contactor assemblies
- Terminal cover for box terminal

Only for size S3:

- Terminal cover for cable lug and bar connection
- 24 Auxiliary conductor terminal, 3-pole
- Accessories identical for sizes S2 and S3
- Accessories differ according to size

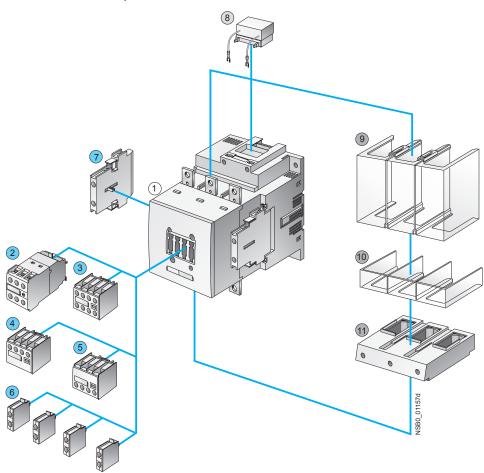
Motor Starters see Chapter 4 Combination Starters & Starters for group installation

2/61

3RT1 contactors Sizes S6 to S12 with mountable accessories



(illustration for basic unit)



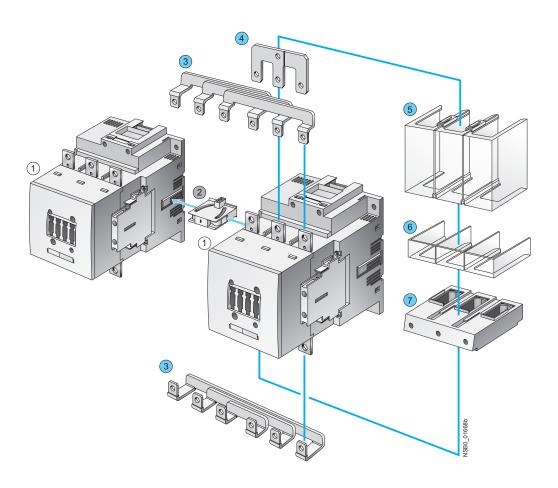
- (1) 3RT10 and 3RT14 air-break contactors, sizes S6, S10 and S12
- Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
- 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
- 4 2-pole auxiliary switch block, cable entry from above
- 5 2-pole auxiliary switch block, cable entry from below
- 6 Single-pole auxiliary switch block (up to 4 can be snapped on)
- 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005) (identical for S0 to S12)
- 8 Surge suppressor (RC element) for plugging into top of withdrawable coil
- Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12
- Terminal cover for box terminal, different for sizes S6 and S10/S12
- 11) Box terminal block, different for sizes S6 and S10/S12
- Accessories identical for sizes S0 to S12
- Accessories identical for sizes S6 to S12
- Accessories differ according to size

For accessories see pages 2/66 to 2/83.

For mountable overload relays see Chapter 3, "Overload Relays".



3RT1 contactors Size S6 with accessories



- 1) 3RT10 and 3RT14 air-break contactor, size S6
- 2 Mechanical interlock, laterally mountable
- 3 Wiring modules on the top and bottom 3RA1953-2A
- 4 Link for paralleling (star jumper), 3-pole, with through-hole, 3RT1956-4BA31
- 5 Terminal cover for cable lug and bar connection different for sizes S6 and S10/S12
- 6 Terminal cover for box terminal different for sizes S6 and S10/S12
- Box terminal block, different for sizes S6 and S10/S12

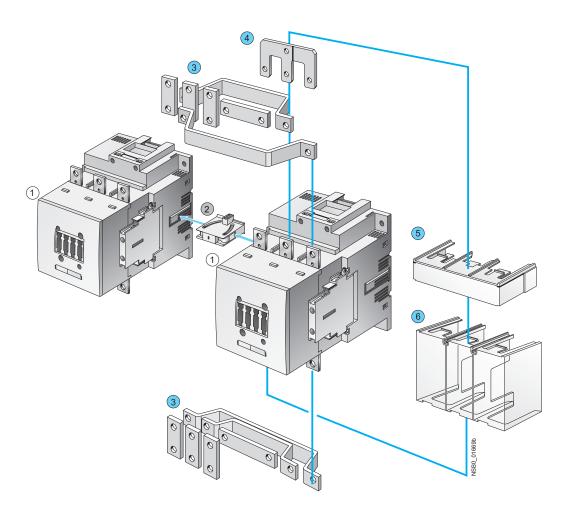
For accessories see pages 2/66-2/83.

Mountable overload relays see Chapter 3, "Overload Relays".

- Accessories identical for sizes S6 to S12
- Accessories differ according to size

3RT1 contactors Sizes S6, S10 and S12 with accessories





- ① 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12 or 3RT12 vacuum contactor, sizes S10 and S12
- 2 Mechanical interlock, laterally mountable
- 3 Wiring modules on the top and bottom, 3RA19
- 4 Link for paralleling (star jumper), 3-pole, with through-hole, 3RT19 56-4BA31
- (5) Terminal cover for box terminal, different for sizes S6 and S10/S12

For accessories see pages 2/66-2/83.

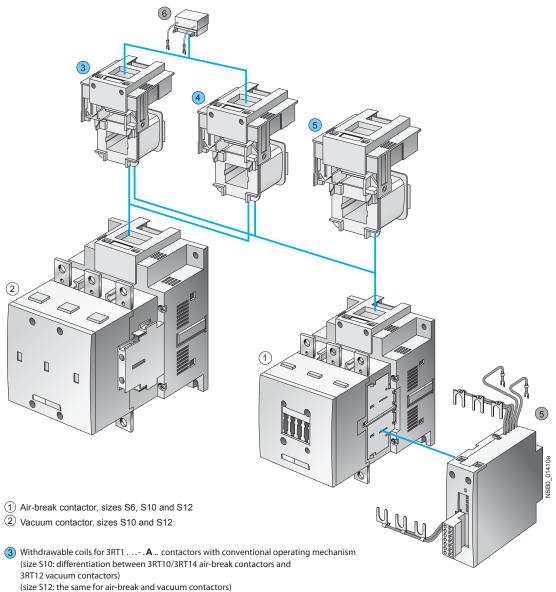
(6) Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12

For mountable overload relays see Chapter 3, "Overload Relays".

Accessories identical for sizes S6 to S12Accessories different according to size



3RT1 contactors Sizes S6 to S12 with accessories



- 4 Withdrawable coils for 3RT1 N.. contactors with solid-state operating mechanism. (size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors) (size S12: the same for air-break and vacuum contactors)
- (5) Withdrawable coils and laterally mountable module (plug-on) for 3RT1...-.P..air-break contactors with solid-state operating mechanism and remaining lifetime indicator
- 6 Surge suppressor (RC element), plug-mountable on withdrawable coils
 - \bullet 3RT1. ..-. A.. with conventional operating mechanism
 - 3RT1. ..-.N.. with solid-state operating mechanism
- Identical for sizes S6 to S12
- Different according to size

For surge suppressors see page 2/73, withdrawable coils see page 2/98.

For mountable overload relays see Chapter 3, "Overload Relays".

Accessories for 3RT contactors / 3RH control relays

Revised04/20/15



Auxiliary switch blocks

Selection and ordering data









3RH2911-1HA01

For contactors/ Rated control relays operational

Current ³⁾ 6A NEMA A600/Q600

Contactor with HS block Ident. No.

Connections position

Auxiliary contacts

Version

Screw Terminals¹⁾

Order No.

NC

Spring Terminals¹⁾

Order No.

Туре	NO	NC	NO
Auxiliary switch blocks for snapping onto the front a		~	V 50012
(also compliant with the requirements according to	EN 5000)5)	

Size	SOC	2)

For assembling contactors with 2, 3, 4, or 5 auxiliary contacts $\,$

3RT201.,	11E	_	1	_	_	3RH2911-1HA01	3RH2911-2HA01
Ident. No. 10E	12E	_	2	_	_	3RH2911-1HA02	3RH2911-2HA02
3RT231.	13E	_	3	_	_	3RH2911-1HA03	3RH2911-2HA03
3RT251.	21E	1	_	_	_	3RH2911-1HA10	3RH2911-2HA10
	21E	1	1	_	_	3RH2911-1HA11	3RH2911-2HA11
	22E	1	2	_	_	3RH2911-1HA12	3RH2911-2HA12
	23E	1	3	_	_	3RH2911-1HA13	3RH2911-2HA13
	31E	2	_	_	_	3RH2911-1HA20	3RH2911-2HA20
	31E	2	1	_	_	3RH2911-1HA21	3RH2911-2HA21
	32E	2	2	_	_	3RH2911-1HA22	3RH2911-2HA22
	41E	3	_	_	_	3RH2911-1HA30	3RH2911-2HA30
	41E	3	1	_	_	3RH2911-1HA31	3RH2911-2HA31

Size S0 to S2

For assembling contactors with 3, 4, or 5 auxiliary contacts

3RT202.,	12E	_	1	_	_	3RH2911-1HA01	3RH2911-2HA01
Ident. No. 11E	13E	_	2	_	_	3RH2911-1HA02	3RH2911-2HA02
3RT232.	14E	_	3	_	_	3RH2911-1HA03	3RH2911-2HA03
3RT252.	21E	1	_	_	_	3RH2911-1HA10	3RH2911-2HA10
3RT203.	22E	1	1	_	_	3RH2911-1HA11	3RH2911-2HA11
3RT233.	23E	1	2	_	_	3RH2911-1HA12	3RH2911-2HA12
3RT235.	24E	1	3	_	_	3RH2911-1HA13	3RH2911-2HA13
	31E	2	_	_	_	3RH2911-1HA20	3RH2911-2HA20
	32E	2	1	_	_	3RH2911-1HA21	3RH2911-2HA21
	33E	2	2	_	_	3RH2911-1HA22	3RH2911-2HA22
	41E	3	_	_	_	3RH2911-1HA30	3RH2911-2HA30
	42E	3	1	_	_	3RH2911-1HA31	3RH2911-2HA31

Auxiliary switch blocks for snapping onto the front according to EN 50012

Sizes S3 to S12

4-pole

3RT1. 4 to	31		3	1	_	_	3RH1921-1HA31	3RH1921-2HA31
3RT1.7,	22		2	2	_	_	3RH1921-1HA22	3RH1921-2HA22
3RT11.	13		1	3	_	_	3RH1921-1HA13	3RH1921-2HA13
	22	(with location	2	2	_	_	3RH1921-1XA22-0MA0	3RH1921-2XA22-0MA0
		digits 5, 6, 7, 8)						

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers.

For position of the terminals see pages 2/202-2/206. For int. circuit diagrams see page 2/190.

3RH29 aux blocks are not intended for use with 3RT1 or 3RH1 contactors and relays.

3RH19 aux blocks are not intended for use with 3RT2 or 3RH2 contactors and relays.

For auxiliary switch blocks for 3RH2140 and 3RH2440 see page 2/51.

- 1) The 3RH2911-.HA., aux. switches are available with ring-lug terminals. Replace the 8th digit of the Order No. with a "4".
- Size S00 can be mounted according to EN 50012 only on basic units which have no integrated NC contact.

3) UL ratings: See appendix page 19/7



• Revised • 04/20/15

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Auxiliary switch blocks

Selection and ordering data













3RH2911-1FA40

3RH2911-2FA40

3RH19 21-1C...

3RH19 21-2C . . .

3RH19 21-1LA . .

3RH19 21-1MA..

For contactors/ control relays	Rated operational	Contactor	Connections position	Auxilia	y conta	cts		Screw	Spring
Control relays	Current ³⁾ 6A	HS block Ident. No.	position	Version	L _z	را	L ₇	Terminals ¹⁾	Terminals ¹⁾
	NEMA A600/Q600				((Order No.	Order No.
Type				NO	NC	NO	NC		

Type			110	140	110	IVO					
Auxiliary switch blocks for snapping onto the front according to EN 50005											
Sizes S00 to S2											
2- or 4-pole auxiliary swith 3 and 5 or 4 and			actors								
3RT2. 1.,	40		4	_	_	_	3RH2911-1FA40	3RH2911-2FA40			
3RT2. 2.,	22		2	2	_	_	3RH2911-1FA22	3RH2911-2FA22			
3RT2. 3.,	04 ¹⁾		_	4	_	_	3RH2911-1FA04	3RH2911-2FA04			
3RH21,	11 ²⁾		_	_	1	1	3RH2911-1FB11	3RH2911-2FB11			
3RH24	22 ²⁾		1	1	1	1	3RH2911-1FB22	3RH2911-2FB22			
	22 ²⁾		_	_	2	2	3RH2911-1FC22	3RH2911-2FC22			
1- and 2- pole auxiliar	y switch blocks,	cable entry from									
3RT2. 1.,	10	Тор	1	_	_	_	3RH2911-1AA10	_			
3RT2. 2.,		Bottom	1	_	_	_	3RH2911-1BA10	_			
3RT2. 3.,	01	Тор	_	1	_	_	3RH2911-1AA01	_			
3RH21		Bottom	_	1	_	_	3RH2911-1BA01	_			
3RH24	11	Тор	1	1	_	_	3RH2911-1LA11	_			
		Bottom	1	1	_	_	3RH2911-1MA11	_			
	20	Тор	2	_	_	_	3RH2911-1LA20	_			
		Bottom	2	_	_	_	3RH2911-1MA20	_			
Sizes S3 to S12											
4-pole auxiliary switch	h blocks										
3RT1. 4 to	40		4	_	_	_	3RH1921-1FA40	3RH1921-2FA40			
3RT1. 7,	31		3	1	_	_	3RH1921-1FA31	3RH1921-2FA31			
3RT11	22		2	2	_	_	3RH1921-1FA22	3RH1921-2FA22			
SHITI	04		_	4	_	_	3RH1921-1FA04	3RH1921-2FA04			
	22 U		_	4	2	2	3RH1921-1FC22	3RH1921-2FC22			
							3NH 1921-1FG22	3NT1921-2FG22			
Single-pole auxiliary s	switch blocks (al	so compliant with	EN 5001 ²⁾								
3RT1. 4 to	_		1	_	_	_	3RH1921-1CA10	3RH1921-2CA10			
3RT1.7,	_		_	1	_	_	3RH1921-1CA01	3RH1921-2CA01			
3RT11	_		_	_	1	_	3RH1921-1CD10	_			
	_		_	_	_	1	3RH1921-1CD01	_			
2-pole auxiliary switch	h blocks with cal	ble entry from one	side								
3RT1, 4 to	_	Тор	1	1	_	_	3RH19 21-1LA11	_			
3RT1. 7,	_	Bottom	1	1	_	_	3RH19 21-1MA11	_			
3RT11	_	Top	2	_	_	_	3RH19 21-1LA20				
O	_	Bottom	2	_	_	_	3RH19 21-1MA20	_			
	_	Тор	_	2	_	_	3RH19 21-1LA02	_			

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers. For position of the terminals see pages 2/202-2/206. For int. circuit diagrams see page 2/190.

Mounting is permitted only on basic units which have no integrated NC contact.

²⁾ Version with early make and delayed break contacts

³⁾ UL ratings: See appendix page 19/7

Accessories for 3RT contactors / 3RH control relays

Revised 04/20/15



Laterally mountable auxiliary switch blocks

Selection and ordering data









SPH2911-1DA02 SPH2911-2DA02 SPH2921-1DA02 SPH2921-1DA02		or.		0	ODI HO	01.154	3RH2921-1DA02	
Current High Block Contactor High Block High Block Contactor High Block High Block Contactor High Block High Block High Block High Block High Block Contactor High Block Hi	3RH2911-1DA02	JF	AHZYTT-ZDAU		38119		3RH2921-1DAU2	
NO NC NO NC NO NC		operational Current ⁴⁾ 6A	with HS block	to contactor/ contactor			Terminals ¹⁾	Terminals ¹⁾
Laterally mountable auxiliary switch blocks according to EN 50012 Laterally mountable auxiliary switch block, 2-pole Size S00 1/2) SRT201.							Order No.	Order No.
Laterally mountable auxiliary switch block, 2-pole	Туре				NO	NC		
Size S00 1/2 Size S00 1/2 A600/G600 12E right or left - 2 3RH2911-1DA02 3RH2911-2DA02 3RH1, 3 to 3RT1. 7 A600/G600 right or left 1 1 3RH1921-1DA11 3RH1921-2DA11 3RH1921-2DA02 3RH2911-1DA02 3RH2911-1DA02 3RH2911-2DA02 3RH2911					to EN	50012		
SRT201.	•	e auxiliary sw	ritch block, 2	-pole				
SRT2.2.9	3RT201. Ident. No. 10E			0	_ 1			
Sizes S3 to S12 SRT1. 3 to 3RT1. 7 A600/Q600 right or left 1 1 3RH1921-1DA11 3RH1921-2DA11	3RT2.2. ³⁾ Ident.No. 11E	A600/Q600	22E	right or left		1	3RH2921-1DA11	3RH2921-2DA11
Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12		ntable auxilia	y switch blo	ck, 2-pole				
Sizes S3 to S12 SRT1. 4 to SRT1. 7 A300/Q300 right or left 1 1 3RH1921-1JA11 3RH1921-2JA11		A600/Q600		right or left	1	1	3RH1921-1DA11	3RH1921-2DA11
ART1. 4 to ART1. 7		ountable aux	iliary switch	block, 2-pole				
First laterally mountable auxiliary switch block, 2-pole Sizes S00 1) 2) 3RT2.1.		A300/Q300		right or left	1	1	3RH1921-1JA11	3RH1921-2JA11
Sizes S00 ^{1) 2)} 3RT2.1. A600/Q600 02 right or left — 2 3RH2911-1DA02 3RH2911-2DA02 Ident.No. 10E A600/Q600 11 right or left 1 1 3RH2911-1DA11 3RH2911-2DA11 A600/Q600 20 right or left 2 — 3RH2921-1DA02 3RH2911-2DA02 3RT2.2., A600/Q600 11 right or left 1 1 3RH2921-1DA02 3RH2921-2DA02 3RT2.3. ³⁾ A600/Q600 11 right or left 2 3RH2921-1DA11 3RH2921-2DA11 A600/Q600 20 right or left 2 3RH1921-1EA02 3RH2921-2DA20 Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left 2 3RH1921-1EA02 3RH1921-1EA02 3RT1. 4 to A300/Q300 right or left 2 3RH1921-1EA02 3RH1921-1EA20 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02	Laterally mounta	ble auxiliary	switch blo	cks according	to EN	50005		
3RT2.1.	First laterally mour	ıtable auxiliaı	y switch blo	ck, 2-pole				
Ident.No. 10E	Sizes S00 1) 2)							
A600/Q600 20 right or left 2 3RH2911-1DA20 Sizes S0 to S2 3RT2.2., A600/Q600 Q2 right or left — 2 3RH2921-1DA02 3RH2921-2DA02 3RH2921-2DA02 3RT2.3.3) A600/Q600 11 right or left 1 1 3RH2921-1DA02 3RH2921-2DA11 3RH2921-1DA20 3RH2921-1DA20 3RH2921-1DA20 3RH2921-2DA20 Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left 1 1 3RH1921-1EA02 3RH1921-2EA02 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2KA02 3RT1. 7 A300/Q300 right or left — 2 3RH1921-1KA11 —					_			
3RT2.2., A600/Q600 02 right or left — 2 3RH2921-1DA02 3RH2921-2DA02 3RT2.3.3) A600/Q600 11 right or left 1 1 3RH2921-1DA11 3RH2921-2DA11 3RH2921-1DA20 3RH2921-2DA20 Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1EA02 3RH1921-2EA02 3RT1. 7 A300/Q300 right or left 2 — 3RH1921-1EA11 — 3RH1921-1EA20 3RH1921-2EA20 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1EA20 3RH1921-2EA20 Second sterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2EA02 3RT1.7 A300/Q300 right or left 1 1 1 3RH1921-1KA02 3RH1921-2EA00	ident.No. 10E					_		
3RT2.3.3) A600/Q600 A600/Q600	Sizes S0 to S2							
A600/Q600 20 right or left 2 — 3RH2921-1DA20 3RH2921-2DA20 Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1EA02 3RH1921-2EA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1EA11 — 3RH1921-1EA11 — 3RH1921-1EA20 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2EA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1KA02 3RH1921-2KA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1KA11 —				0	_			
Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1EA02 3RH1921-2EA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1EA11 — A300/Q300 right or left 2 — 3RH1921-1EA20 3RH1921-2EA20 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2KA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1KA11 —	3RT2.3. ³⁾			0		1		
3RT1. 7	Sizes S3 to S12	/1000/Q000	20	ngni or leit	۷	_	OTTI IZOZ I - IDAZO	011112321-2DA20
A300/Q300 right or left 2 — 3RH1921-1EA20 3RH1921-2EA20 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2KA02 3RT1. 7 A300/Q300 right or left 1 1 1 3RH1921-1KA11 —				0				3RH1921-2EA02
Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2KA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1KA11 —	onti./							 3RH1921-2EA20
3RT1. 4 to A300/Q300 right or left — 2 3RH1921-1KA02 3RH1921-2KA02 3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1KA11 —	Second laterally me		iliary switch					
3RT1. 7 A300/Q300 right or left 1 1 3RH1921-1KA11 —	•		-	•				
				0	-			3RH1921-2KA02
	SKII. /							 3RH1921-2KA20

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers. For position of the terminals see pages 2/202-2/206. For int. circuit diagrams see pages 2/190-2/195.

¹⁾ With size S00, mounting according to EN 50012 is permitted only on basic units which have no NC contact

²⁾ Ident. No. 41, 32 and 23 according to EN 50012 is also possible. Please note the corresponding circuit diagrams for mounting 3RH29 11-1DA.. on the left.

³⁾ With 3RT23 2., 3RT25. 2. mountable only on the right. 4) UL ratings: See appendix page 19/7



• Revised • 04/20/15

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Solid-state auxiliary switch blocks

Selection and ordering data

- Operation in dusty atmospheres
- Solid-state circuits with rated operational currents $I_{e'}$ AC-14 and DC-13 from 1 ... 300 mA at 3 ... 60 V
- Hard gold-plated contacts
- Mirror contacts according to EN 60947-4-1, Appendix F, for laterally mountable auxiliary switches

Selection and ordering data 3RH2911-1NF02 3RH2911-2NF02 3RH2911-2DE11 3RH1921-2DE11 3RH29 21-2DE11 For contactors/ Contactor Auxiliary contacts Mountable Screw **Spring** control relays to contactor/ with Terminals¹⁾ Terminals¹⁾ HS block contactor Ident. No. relay side Order No. Order No. Type NO NC NO NC Solid-state compatible auxiliary switch blocks for snapping onto the front according to EN 50005 Sizes S00 to S2 3RT2. 1., 3RH2911-2NF02 02 3RH2911-1NF02 3RH2911-2NF11 3RT2.2., 3RT2.3. 11 3RH2911-1NF11 3RH21 .., 20 3RH2911-1NF20 3RH2911-2NF20 3RH24 .. Sizes S3 to S12 3RT1. 4 to 3RH1921-1FE22 3RH19 21-2FE22 3RT1.7 2 3RH1921-2FJ22 Solid-state compatible auxiliary switch blocks, laterally mountable, according to EN 50012 First laterally mountable auxiliary switch block, 2-pole Size S00 2) 3RH2911-2DE11 3RT2. 1., 21E right Ident. No. 10E Size S0 to S2 3RT2. 2, 3RT2. 3 3RH2921-2DE11 22E right Ident. No. 10E Sizes S3 to S12 3RT1. 4 to right or left 3RH1921-2DE11 3RT1.7 Second laterally mountable auxiliary switch block, 2-pole Sizes S3 to S12 3RT1. 4 to right or left 3RH1921-2JE11 3RT1.7 Solid-state compatible auxiliary switch blocks, laterally mountable, according to EN 50005 Size S00 3RT2. 1., 11 3RH2911-2DE11 right or left Ident. No. 10E Size S0 to S2 3RT2. 2., 3RH2921-2DE11 11 right or left 3RT2.3

EN50005 and EN50012 designate the markings of the auxiliary terminal numbers. For position of the terminals see pages 2/202 -2/206. For int. circuit diagrams see pages 2/190-2/195.

The 3RH29 11-.NF.. auxiliary switches are also available with ring lug terminal connection. The 8th digit of the order number must be replaced with "4", e. a.; 3RH2911-1NF11 -> 3RH2911-4NF11

Size S00 can be mounted according to EN 50012 only on basic units which have no integrated NC contact.

Accessories for 3RT contactors / 3RH control relays

Revised • 04/20/15



Auxiliary switch blocks, delayed

Selection and ordering data

	For contactors	Rated control supply voltage U_s^{-1}	Time setting range t	Output / auxiliary contacts	Screw Terminals	Spring Terminals
	Туре	V	Sec		Order No.	Order No.
ne-delay, solid-state to the front accord		itch blocks for snap 99-5	pping			
	auxiliary swite	connection between the ch and the contactor und when it is snapped on ar	erneath is establis	shed		
	Sizes S00	to S2				
3RA2813-1AW10		ON-delay (varistor	integrated)			
	3RT2., 3RH21 ²⁾ 3RH24	24 240 AC/DC	0.05 100 (1, 10, 100, selectable)	1 CO 1 NO + 1 NC	3RA2813-1AW10 3RA2813-1FW10	3RA2813-2AW10 3RA2813-2FW10
105		OFF-delay with aux	xiliary voltage (v	aristor integrated)		
44664		24 240 AC/DC	0.05 100 (1, 10, 100, selectable)	1 CO 1 NO + 1 NC	3RA28 14-1AW10 3RA28 14-1FW10	3RA28 14-2AW10 3RA28 14-2FW10
		OFF-delay without		3) (varistor integrated)		
		24 240 AC/DC	0.05 100 (1, 10, 100, selectable)	1 CO 1 NO + 1 NC	3RA2815-1AW10 3RA2815-1FW10	3RA2815-2AW10 3RA2815-2FW10
	Sizes S3 to	S12				
3RT1926-2FJ11		ON-delay (varistor	•			
	3RT10, 3RT13, 3RT14,	24 AC/DC ⁴⁾	0.05 1 0.5 10 5 100	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC	3RT19 26-2EJ11 3RT19 26-2EJ21 3RT19 26-2EJ31	_
SIEMENS	3RT15	100 127 AC ⁴⁾	0.05 1 0.5 10 5 100	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC	3RT19 26-2EC11 3RT19 26-2EC21 3RT19 26-2EC31	=
9 9 9		200 240 AC ⁴⁾	0.05 1 0.5 10	1 NO + 1 NC 1 NO + 1 NC	3RT19 26-2ED11 3RT19 26-2ED21	_
The second secon			5 100	1 NO + 1 NC	3RT19 26-2ED31	
		OFF-delay without			2DT40 06 0F 144	
		24 AC/DC "	0.05 100 (1, 10, 100, selectable)	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC	3RT19 26-2FJ11 3RT19 26-2FJ21 3RT19 26-2FJ31	=
		100 127 AC ⁴⁾	0.05 100 (1, 10, 100,	1 NO + 1 NC 1 NO + 1 NC	3RT19 26-2FK11 3RT19 26-2FK21	=
		200 240 AC ⁴⁾	selectable) 0.05 100 (1, 10, 100,	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC	3RT19 26-2FK31 3RT19 26-2FL11 3RT19 26-2FL21	_ _
			selectable)	1 NO + 1 NC	3RT19 26-2FL31	_
		WYE-delta function	n	·		
		24 AC/DC ⁴⁾	1.5 30	each have:	3RT19 26-2GJ51	_
		100 127 AC ⁴⁾ 200 240 AC ⁴⁾	1.5 30 1.5 30	1 NO delayed 1 NO instant	3RT19 26-2GC51 3RT19 26-2GD51	_
		200 240 AU 7	1.0 30	interval 50ms	ON 1 19 20-201001	

For technical data, see pages 2/182-2/183. For int. circuit diagrams, see page 2/198. For position of terminals, see page 2/206.

When the solid-state time-delay auxiliary switches are used, no other auxiliary switches are allowed to be mounted on the basic units.

- 1) AC voltage values apply for 50 Hz and 60 Hz.
- 2) Cannot be fitted onto coupling relays.
- 3) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact change-over to the correct setting.
- 4) Terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch must be connected to the associated contactor by means of connecting leads.
- 5) Position of the output contacts not defined in the as-delivered state (bistable relay). Applying the control voltage once results in the contacts switching to the correct position.



• Revised • 04/20/15

For contactors Rated control supply voltage $U_s^{(1)}$ Time setting range t

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Function modules, delay blocks

Selection and ordering data





3RA2812-1DW10

v terminals	Spring-type terminals	Weight
N.I.	O I N I -	

. o. comacioro	rated control cappily vertage og	Time county range t	•	terminals \square	g.n.
Туре	V AC/DC	S	Order No.	Order No.	kg
Timing relay	ys for mounting on 3RT2 con	tactors			
	Sizes S00 to S2		_		
	The electrical connection betwee contactor underneath is establish snapped on and locked.				
	ON-delay Two-wire design, varistor integrat	ed			
3RT20, 3RT23, 3RT25, 3RH21 ²⁾ , 3RH24	24 240	0.05100 (1, 10, 100; selectable)	3RA2811-1CW10	3RA2811-2CW10	
3RT203.	24 90	0.05100	3RA2831-1DG10	3RA2831-2DG10	
	90 240	(1, 10, 100; selectable)	3RA2831-1DH10	3RA2831-2DH10	
	OFF-delay with control signal Varistor integrated				
3RT20, 3RT23, 3RT25, 3RH21 ²⁾ , 3RH24	24 240	0.05100 (1, 10, 100; selectable)	3RA2812-1DW10	3RA2812-2DW10	
3RT203.	24 90	0.05100	3RA2832-1DG10	3RA2832-2DG10	
	90 240	(1, 10, 100; selectable)	3RA2832-1DH10	3RA2832-2DH10	

¹⁾ AC voltage values apply for 50 Hz and 60 Hz.

For description, see page 2/119. For technical data, see page 2/182. For circuit diagrams, see page 2/198.

²⁾ Cannot be fitted onto coupling relays.

¹⁾ AC voltage ratings apply for 50 and 60 Hz.

²⁾ The 3RA28 time-delay blocks are available with spring-type terminals. Replace the 8th digit of the order number with a "2".

³⁾ Cannot be fitted onto coupling relays

Accessories for 3RT contactors / 3RH control relays

Function modules, delay blocks, and mechanical latching blocks





Selection and ordering data

	For contactors	Rated control supply voltage U_s^{-1}	Time setting range t	Screw Terminals 2) Order No.	Weight approx.
	Туре	V	sec	Order No.	kg
	lay blocks with semico	nductor output			
RT1926-2CG11		g on the terminals on top of	the contactors		
1	ON-delay (varistor in 3RT104, 3RT13 ⁵⁾ ,	ntegrated) 24 66 AC/DC	0.05 1	3RT1926-2CG11	0.035
Same S	3RT15	24 00 AO/DO	0.05 10	3RT1926-2CG11	0.035
	611116		5 100	3RT1926-2CG31	0.035
		90 240 AC/DC	0.05 1	3RT1926-2CH11	0.035
1 1			0.5 10	3RT1926-2CH21	0.035
	Off dolay with auxili	ary voltage (varistor integi	5 100	3RT1926-2CH31	0.035
	3RT104, 3RT13 ⁵⁾ ,	24 66 AC/DC	0.05 1	3RT1926-2DG11	0.037
	3RT15	21007.0720	0.5 10	3RT1926-2DG21	0.037
			5 100	3RT1926-2DG31	0.037
		90 240 AC/DC	0.05 1	3RT1926-2DH11	0.037
			0.5 10 5 100	3RT1926-2DH21 3RT1926-2DH31	0.037
			5100	3K1 1920-2DH31	0.037
ff-delay device					
RT2916-2B.01	Sizes S00 to S2				
0	For contactors with	DC operation. Non-adjust	able delay time		
9999	3RT2.,	110 AC/DC	S00: > 0.1	3RT2916-2BK01	0.150
	3RH21BF40		S0: > 0.08; S2: > 0.25		
	3RT2.,	220 230 AC/DC	S00: > 0.5	3RT2916-2BL01	0.150
	3RH21BM40		S0: > 0.3; S2: > 0.8		
OT4040 ODE04	3RT2.,	24 DC	S00: > 0.2	3RT2916-2BE01	0.150
RT1916-2BE01	3RH21BB40		S0: > 0.1; S2: > 0.1		
Marie Land	Sizes S3				
00000	3RT1. 4	24 DC	S3: 70 fixed	3RT1916-2BE01	0.093
neumatic delay blo	ocks, terminal designat	ion according to EN 50	0005 ⁴⁾		
RT2926-2PA01	Size S0				
		ne front of contactors 5) Au	uxiliary contacts 1 NO and 1 NC		
1995	With ON-delay	_	0.1 30	3RT2926-2PA01	0.080
300	3RT2. 2		1 60	3RT2926-2PA11	0.080
Miner	With OFF-delay	_	0.1 30	3RT2926-2PR01	0.080
200	3RT2. 2		1 60	3RT2926-2PR11	0.080
lechanical latching	blocks				
	For mounting onto t	he front of contactors			
RT2926-3AB31		ins in the energized state	even after voltage failure		
	Size S0	24 AC/DC		3RT2926-3AB31	0.100
1-1	3RT2. 2	24 AC/DC 110 AC/DC		3RT2926-3AB31 3RT2926-3AF31	0.100
	JIIIZ. Z	230 AC/DC	_	3RT2926-3AP31	0.100

For description, see page 2/119. For technical data, see page 2/182. For circuit diagrams, see page 2/198.

¹⁾ AC voltage ratings apply for 50 and 60 Hz.

²⁾ The 3RA28 time-delay blocks are available with spring-type terminals. Replace the 8th digit of the order number with a "2".

³⁾ Cannot be fitted onto coupling relays

Versions according to DIN VDE 0116 on request.

⁵⁾ In addition to these, no other auxiliary contacts are permitted.

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Surge suppressors

Selection and ordering data

For contactors	Version	Rated control supply voltage $U_s^{(1)}$		Order No.	Weight
		AC operation	DC operation		
Туре		V AC	V DC		kg
100	EB /alex forest days to a				

Surge suppressors without LED (also for spring-type terminals)

Size S00

Size S0

3RT2.2

3RT2.2

3RT2.2

3RT2916-1B.00

	For plugging onto the fron (with and without auxiliary		ntactors	
3RT2.1, 3RH2.	Varistors	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 	3RT2916-1BB00 3RT2916-1BC00 3RT2916-1BD00 3RT2916-1BE00 3RT2916-1BF00
3RT2.1, 3RH2.	RC elements	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 	3RT2916-1CB00 3RT2916-1CC00 3RT2916-1CD00 3RT2916-1CE00 3RT2916-1CF00
3RT2.1, 3RH2.	Noise suppression diodes		12 250	3RT2916-1DG00
3RT2.1, 3RH2.	Diode assemblies (diode and Zener diode) for DC operation		12 250	3RT2916-1EH00

3RT2926-1E.00

For plugging onto the (prior to mounting of			
Varistors	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250	3RT2926-1BB00 3RT2926-1BC00 3RT2926-1BD00 3RT2926-1BE00 3RT2926-1BF00
RC elements	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 	3RT2926-1CB00 3RT2926-1CC00 3RT2926-1CD00 3RT2926-1CE00 3RT2926-1CF00
Diode assembly		24	3RT2926-1ER00



3RT2936-1B.00



3RT2936-1E.00

	for DC operation		30 250	3RT2926-1ES00	
Size S2					
	For plugging onto the (prior to mounting of				
3RT2.3.	Varistors	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 	3RT2936-1BB00 3RT2936-1BC00 3RT2936-1BD00 3RT2936-1BE00 3RT2936-1BF00	
3RT2.3.	RC elements	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 	3RT2936-1CB00 3RT2936-1CC00 3RT2936-1CD00 3RT2936-1CE00 3RT2936-1CF00	
3RT2.3.	Diode assembly for DC operation		24 30 250	3RT2936-1ER00 3RT2936-1ES00	

¹⁾ Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

Accessories for 3RT contactors / 3RH control relays

Revised04/20/15



Surge suppressors

Selection and ordering data

	For contactors	Version	Rated control voltage $U_s^{1)}$ AC operation V AC	supply DC operation V DC	mW	Order No.	Weight
INGO CINDOROGO	Type	LED /alco for caring type town		V DC	TTIVV		kg
	Sizes S3	LED (also for spring-type term For plugging onto coil terminals		ottom			
Γ1926-1B. 00	3RT1. 4	Varistor	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 —		3RT1926-1BB00 3RT1926-1BC00 3RT1926-1BD00 3RT1926-1BE00 3RT1926-1BF00	0.01 0.01 0.01 0.01 0.01
	3RT1. 4	RC element	24 48 48 127 127 240 240 400 400 600	24 70 70 150 150 250 —		3RT1936-1CB00 3RT1936-1CC00 3RT1936-1CD00 3RT1936-1CE00 3RT1936-1CF00	0.01 0.01 0.01 0.01 0.01
	3RT1. 4	Diode assembly	_				
		for DC operation For plugging onto top (e. g. for contactors with overload relay) For plugging onto bottom (e. g. for fuseless motor starters)	_	24 30 250 24 30 250		3RT1936-1ER00 3RT1936-1ES00 3RT1936-1TR00 3RT1936-1TS00	0.01 0.01 0.01 0.01
T1936-1C. 00	Sizes S6, S10, S12	For plugging onto the convention	nal or solid-stat	e coil			
	3RT1. 5, 3RT1. 6 3RT1. 7	RC element	24 48 48127 127 240 240 400 400 600	24 70 70 150 150 250 —		3RT1956-1CB00 3RT1956-1CC00 3RT1956-1CD00 3RT1956-1CE00 3RT1956-1CF00	0.03 0.03 0.03 0.03 0.03
		O (also for spring-type terminal		re			Н
	Size S00	For plugging onto the front side (with and without auxiliary switch	of the contacto n block)		10 100	ODT0046 4 LI00	0.010
T2916-1J.00		For plugging onto the front side	of the contacto	12 24 24 70 70 150 150 250	10 120 20 470 50 700 160 950	3RT2916-1JJ00 3RT2916-1JK00 3RT2916-1JL00 3RT2916-1JP00	0.010 0.010 0.010 0.010
	Size S00 3RT2.1,	For plugging onto the front side (with and without auxiliary switch	of the contacto n block) 24 48 48127 127 240	12 24 24 70 70 150	20 470 50 700	3RT2916-1JK00 3RT2916-1JL00	0.010 0.010
T2916-1J.00	Size S00 3RT2.1, 3RH2.	For plugging onto the front side (with and without auxiliary switch Varistor Noise suppression diode For plugging onto the front side of	of the contacto n block) 24 48 48 127 127 240 —	12 24 24 70 70 150 150 250 24 70 50 150 150 250	20 470 50 700 160 950 20 470 50 700	3RT2916-1JK00 3RT2916-1JL00 3RT2916-1JP00 3RT2916-1LM00 3RT2916-1LN00	0.010 0.010 0.010 0.010 0.010
T2916-1J.00	Size S00 3RT2.1, 3RH2. 3RT2.1, 3RH2.	For plugging onto the front side (with and without auxiliary switch Varistor Noise suppression diode	of the contacto n block) 24 48 48 127 127 240 —	12 24 24 70 70 150 150 250 24 70 50 150 150 250	20 470 50 700 160 950 20 470 50 700	3RT2916-1JK00 3RT2916-1JL00 3RT2916-1JP00 3RT2916-1LM00 3RT2916-1LN00	0.010 0.010 0.010 0.010 0.010
T2916-1J.00	Size S00 3RT2.1, 3RH2. 3RT2.1, 3RH2.	For plugging onto the front side (with and without auxiliary switch Varistor Noise suppression diode For plugging onto the front side (prior to mounting of the auxiliary)	of the contacto 1 block) 24 48 48127 127 240 — — — — of the contacto 7 switch block) 24 48 48127	12 24 24 70 70 150 150 250 24 70 50 150 150 250 rs	20 470 50 700 160 950 20 470 50 700 160 950	3RT2916-1JK00 3RT2916-1JL00 3RT2916-1JP00 3RT2916-1LM00 3RT2916-1LN00 3RT2916-1LP00 3RT2926-1JJ00 3RT2926-1JK00	0.010 0.010 0.010 0.010 0.010 0.010 0.010
	Size S00 3RT2.1, 3RH2. 3RT2.1, 3RH2. Size S0 3RT2. 2	For plugging onto the front side (with and without auxiliary switch Varistor Noise suppression diode For plugging onto the front side (prior to mounting of the auxiliary Varistor	of the contacton block) 24 48 48 127 127 240	12 24 24 70 70 150 150 250 24 70 50 150 150 250 rs 12 24 24 70 70 150	20 470 50 700 160 950 20 470 50 700 160 950	3RT2916-1JK00 3RT2916-1JL00 3RT2916-1JP00 3RT2916-1LM00 3RT2916-1LN00 3RT2916-1LP00 3RT2926-1JJ00 3RT2926-1JK00 3RT2926-1JL00	0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010

¹⁾ Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Surge suppressors, terminals, labels

Selection and ordering data

For contactors	Version		Order No.	Weight approx.
		Units		kg

Main conducting path surge suppression module for 3RT12 vacuum contactors

Sizes S10 and S12 3RT12 For damping overvoltages and protecting the motor windings against multiple reignition when switching off three-phase motors. For connection on the contactor feeder side (2-T1/4-T2/6-T3). For separate installation.

Rated operational voltage $U_{\rm e} \ge 500$ V AC ... ≤ 690 V AC Rated operational voltage $U_{\rm e} \le 1000$ V AC

3RT1966-1PV3 0.18 **3RT1966-1PV4** 0.36

Auxiliary conductor terminal, 3-pole

3RT1946-4F



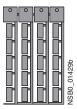
Size S3

3RT104. For connecting auxiliary and control leads to the main conductor terminals (for one side).

3RT1946-4F

Blank Labels

3RT19 00- 1SB20



Unit labeling plates 20 mm x 7 mm, pastel PC labeling system for individual inscription of unitlabeling plates available from: murrplastik Systems, Inc.

10 mm x 7 mm

340 units

816 units

3RT19 00- 1SB20

0.200

0.294

3RT1900-1SB10

Links for paralleling







3RT1916-4BB41



3RT1936-4BB31



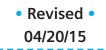
3RT1956-4BA31

Size	For contactors	Maximum resistive current le/AC-1 (at 60 °C) of contactors	Max. conductor cross sections	Screw Terminals	Standard package quantity	Weight approx.
	Type	A		Order No.		kg
S00	3RT201.	3-pole, with terminal 1), 2)	4 AWG, stranded	3RT1916-4BB31		0.015
S0	3RT202.		0 AWG, stranded	3RT2926-4BB31		0.042
S2	3RT203.		95 mm2	3RT1936-4BB31		0.139
S3	3RT104.	3-pole, with through hole	185 mm2	3RT1946-4BB31		0.205
S6	3RT1.5	(WYE jumpers) 1), 2)	_	3RT1956-4BA31		0.159
S10/S12	3RT1.6 3RT1.7		_	3RT1966-4BA31		0.541
S00	3RT231. 3RT251.	4-pole, with terminal 1), 2)	4 AWG, stranded	3RT1916-4BB41		0.016

¹⁾ Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

Accessories for 3RT contactors / 3RH control relays

Other function blocks, PLC control, load modules, control kit





Selection and ordering data

For contactors	Version	Order No.	Weight
Type			

EMC suppression modules; 3-phase, up to 10 HP

Size S00 (for contactors with AC or DC operation)



3RT201 RC elements $(3 \times 220 \Omega/0.22 \mu F)$ Up to 400 V Up to 575 V

Up to 690 V **Varistors** Up to 400 V Up to 575 V Up to 690 V

3RT2916-1PA1 3RT2916-1PA2 3RT2916-1PA3

Screw terminals

3RT2916-1PB1 3RT2916-1PB2 3RT2916-1PB3

Coupling links for control by PLC

Size S0

3RT201



3RT2.2 For mounting onto the coil terminals of the contactors (only for contactors with screw terminals)

With LED for indicating switching state. With integrated varistor for damping opening surges.

24 V DC control, 17 ... 30 V DC operating range

3RH2924-1GP11

Sizes S00 to S2



3RT2.1, For mounting on the front side of contactors 3RT2.2, 3RT2.3 with AC, DC or AC/DC operation

24 V DC control

17 ... 30 V DC operating range

3RH2914-1GP11

Spring-type terminals

3RH2914-2GP11

3RH2914-1GP11

24 V DC control,

17 ... 30 V DC operating range

Additional load modules

Size S00



For plugging onto the front side of the contactors with or without auxiliary switch blocks

For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor.

Rated voltage: 50/60 Hz, 180 to 255 V AC

3RT2916-1GA00

3RT2916-1GA00

LED module for indicating contactor operation

Sizes S00 to S2

3RT2

For snapping into the location hole of an inscription label on the front of a contactor

either directly on the contactor or on the front auxiliary switch. The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state.

Yellow LED.

Rated voltage: 24 ... 240 V AC/DC, with reverse polarity protection.

3RT2926-1QT00

3RT2926-1QT00 **Control kit**

Sizes S00 to S2



For manual operation of the contactor contacts

for start-up and service

3RT2.1, 3RH2. 3RT2.2 3RT2.3

3RT2916-4MC00

3RT2926-4MC00 3RT2936-4MC00



Revised 04/20/15

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Terminals, covers, adapters, connectors

Selection and orde	ring data	
	For contactors	\/

Version Order No. Weight For contactors Туре

Sealable covers

Sizes S00 to S2



3RT2.1, Sealable covers 3RT2.2, for preventing manual operation 3RT2.3, 3RH2.¹⁾ (Not suitable for coupling relays) 3RT2916-4MA10

3RT2916-4MA10

Connection modules for contactors with screw terminals

Sizes S00 and S0



3RT2.1, 3RH2. 3RT2.2

3RT2.1,

3RT2.2, 3RH2

Ambient temperature $T_{u \text{ max}} = 60 \, ^{\circ}\text{C}$ Size S00, rated operational current Ie at AC-3/400 V: 20 A Size S0, rated operational current $I_{\rm e}$ at AC-3/400 V: 25 A

Adapters for contactors

Plugs for contactors

Screw terminals

3RT1916-4RD01

3RT1926-4RD01

3RT1900-4RE01



Terminal covers for contactors with box terminals

Size S2



Coil connection modules

Covers for box terminals 3RT203 For 3-pole contactors 3RT233, For 4-pole contactors (see Chapter 4) 3RT253

3RT2936-4EA2 3RT2936-4EA4

3RT2936-4EA2

Sizes S0 and S2



3RT2.2, 3RT2.3

Connection from top Connection from below Connection diagonally

3RT2926-4RA11 3RT2926-4RB11 3RT2926-4RC11

Spring-type terminals

8



3RT2.2 Connection from top Connection from below

3RT2926-4RA12 3RT2926-4RB12

Covers for contactors with ring cable lug connections

Size S00



3RT2.1, 3RH2

Covers for ring terminal lug connections

Single covers

Ring terminal lug connections

3RT2916-4EA13

3RT2926-4EB13



3RT2916-4FA13

3RT2926-4EB13

Size S0

Covers for ring terminal lug connections

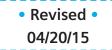
Set for one device, comprising 4 single covers: - 2 x 3RT2926-4EB13

3RT2.2

- 2 x 3RV2928-4AA00

¹⁾ Exception: contactors and contactor relays with auxiliary switch block

Accessories for 3RT contactors / 3RH control relays





 \oplus

Terminals, covers, adapters, connectors

For contactors Version Order No. Weight Туре Screw adapters for fixing the contactors Sizes S0 and S2 3RT2.2, 3RT1926-4P Screw adapters for easier screw fixing 3RT2.3 2 units required per contactor (1 pack contains 10 sets for 10 contactors) NSB0 01470 3RT1926-4P

Solder pin adapters for contactors up to 7.5 HP / 12 A

3RH21

Size S00, up to 7.5 HP



3RT2.1, Assembly kit for soldering contactors onto a printed circuit board.

For 1 contactor, 1 set is required.

Screw terminals

3RT1916-4KA1



Solder pin adapters for contactors up to 7.5 HP / 12 A with mounted 4-pole auxiliary switch block

Size S00, up to 7.5 HP



3RT2.1, Assembly kit for soldering contactors with an auxiliary switch block onto a printed circuit board.

For 1 contactor, 1 set is required.

3RT1916-4KA2





Safety main current connectors for 2 contactors

Sizes S00 to S2



For series connection of 2 contactors

3RA2916-1A 3RA2926-1A 3RA2936-1A

3RA2926-1A

¹⁾ Exception: contactors and contactor relays with auxiliary switch block



• Revised • 04/20/15

Contactors and Contactor Assemblies Accessories for 3RT contactors / 3RH control relays

Terminals, covers, accessories

Selection and	ordering of	lata

	For contacto	ors	Design	Order No.		Weight approx.
	Size	Туре				kg.
Box terminal block for 3RT19 54G			For circular conductors and ribbon cables For connectable cross-sections, see technical data of contactors, page 2/99			
D n	S3 S6	3RT1.4 3RT1.5	16 mm ² / 10 AWG (solid), 70 mm ² / 0 AWG (stranded up to 70 mm ² / 2/0 AWG	3RT19 46-4G		0.23
	30	(3RB205)	up to 120 mm ² / 4/0 AWG	3RT19 56-4G		0.23
	S10, S12	3RT1. 6, 3RT1. 7 (3RB206)	240 mm ² - 500 mm ² / 500 MCM - 750 MCM with auxiliary conductor connection	3RT19 66-4G		0.64
Covers for contactors	with sc	rew connec				
3RT29 36-4EA2			Terminal cover for box terminals			
-1-1-	S2	3RT20 3	Additional shock-hazard protection for mounting on the box terminals (2 units required per contactor)	3RT29 36-4EA	2	0.012
	S3	3RT10 4, 3RT14 4		3RT19 46-4EA	2	
	S6	3RT1.5	Length: 25 mm	3RT19 56-4EA	2	0.016
	S10, S12	3RT1 . 6, 3RT1 . 7	Length: 30 mm	3RT19 66-4EA	2	
			Terminal cover for cable lug and busbar connection	1		
3RT19 46-4EA1	S3	3RT10 4, 3RT14 4	For complying with the phase clearances and as shock-hazard protection in the case of a distant box terminal 1) (2 units required per contactor)	3RT19 46-4EA	1	0.028
9 9 9	S6	3RT1.5	Length: 100 mm	3RT19 56-4EA	1	0.05
9	S10, S12	3RT1 . 6, 3RT1 . 7	Length: 120 mm	3RT19 66-4EA	1	
	S6	3RT1.5	For covering bars between the contactor and 3RB20 overload relay or wiring connector for contactor assemblies Length: 27 mm	3RT19 56-4EA		0.018
	S10, S12	3RT1 . 6, 3RT1 . 7	Length: 42 mm	3RT19 66-4EA	3	
	Design			Order No.	Package quantity	Weight approx.
			he conductor insulation			
on conductors up to 1 r	mm² (17	AWG)				
3RT1916-4JA02	leaula#:-	n atan atrica	and he inserted in cable entry of the anging to			
	(2 strips	per contactor	can be inserted in cable entry of the spring terminal required) 00 (3RT201. or 3RH2.), removable individually	3RT2916-4JA02	20 strips	0.005
			ntrol circuit on basic devices size S0 and S2 (3RT2.2., ountable 3RH29 auxiliary switches, removable in pairs	3RT1916-4JA02	20 strips	0.010

Tool for opening spring-type terminals

3RA2908-1A

Screwdriver

Length: approx. 200 mm, 3.0 mm x 0.5 mm,

for all SIRIUS devices with spring-type terminals

titanium gray//black, partially insulated

0.045

3RA2908-1A

1 unit

¹⁾ Refer to the note on page 2/142, conductor cross-sections.

Contactor Assemblies for Switching Motors 3RA13, 3RA23 reversing contactor assemblies





Accessories

	For contactors	Size	Design	Order No.	Weight
	Type	0			approx. kg
Mechanical interlock	,,				
3RA19 24-2B	3RT2.3	S2	laterally mountable for 3RT2 S2 contactors only.	3RA2934-2B	0.04
4			There are no NC auxiliary contacts. Use the integrated NC auxiliary on the contactor.	UIIAZJUT-ZD	0.04
6 6	3RT104, 3RT134, 3RT144	S3 ¹⁾	laterally mountable each with one auxiliary contact (1 NC) per contactor (can only couple contactors of max. 1 level different size. The mounting depth of the smaller contactor has to be adapted.) Interlock width: 10 mm	3RA19 24-2B	0.05
	3RT10 4;	S3;	front mountable on S3 contactors (for contactors of the same size respectively)	3RA19 24-1A	0.04
			Note Size S3: Use 3RA19 32-2C mechanical connectors.		
00.105100					
3RA19 54-2C	3RT104	S3	adapter to mechanically interlock a 3RT104 with a 3RT105	3RA19 54-2C	
a .	to 3RT105	to S6	includes the adapter and QTY 2 - 3RA1942-2G mechanical connectors		
			requires the 3RA1954 - 2A to be ordered separately		
			Note: Fits 3RT104 AC coil versions only.		
			Does not fit 3RT104 DC coil versions.		
3RA19 54-2A	3RT1. 5 to 3RT1. 7	\$6, \$10, \$12	laterally mountable without auxiliary contacts; size S6, S10 and S12 contactors can be interlocked with each other as required; no adaptation of mounting depth is necessary. Contactor clearance 10 mm.	3RA19 54-2A	0.02
Repeat coil terminal				1 set	
3RA19 23-3B	3RT10 4	S3	for coil terminals A1 and A2 for reversing starters of size S3 contactors.	3RA19 23-3B	0.02
4 4 11			2 x A1 and 1 x A2 are required per assembly.		
			(1 set contains 2 x A1 and 1 x A2)		
0					
Baseplates				1 unit	<u> </u>
Daseplates	3RT10 5	S6	for customer mounting of contactor assemblies	3RA19 52-2A	1.3
0 00	5.11.10.0	-	for reversing	S.IATO OL LA	1.0
	3RT1.6	S10		3RA19 62-2A	2.4
	3RT1. 7	S12		3RA19 72-2A	2.6

¹⁾ Can also be used for size S3 4-pole contactors.



Revised 04/20/15

Contactors and Contactor Assemblies Contactor Assemblies for Switching Motors

3RA13, 3RA23 reversing

contactor assemblies

Accessories

	For contactors	Size	Details	Screw Terminals	Spring Terminals	Pkg. qty.
	Туре			Order No.	Order No.	
Assembly kits for ma						
3RA2913-2AA1	3RT201	S00	The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, Wiring modules on the top and bottom • For main, auxiliary and control circuits	3RA2913-2AA1	3RA2913-2AA2	1 kit
3RA2923-2AA2	3RT202	S0	The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, Wiring modules on the top and bottom			
			• For main, auxiliary and control	3RA2923-2AA1	_	1 kit
citte			circuits ¹⁾ • Only for main circuit ²⁾	_	3RA2923-2AA2	1 kit
3RA2933-2AA1	3RT203	S2	The installation kit contains: 2 connecting clips for 2 contactors, Wiring modules on the top and bottom	3RA2933-2AA1	_	1 kit
			• Only for main circuit ³⁾	_	3RA2933-2AA2	1 kit
3RA1943-2A	3RT104	S 3	The installation kit contains: 2 connecting clips for 2 contactors, Wiring modules on the top and bottom and the mechanical interlock	3RA1943-2A	_	
3RA19 53-2A	3RT105	S6	The installation kit contains: Wiring modules on the top and bottom (for connection with box terminal)	3RA19 53-2A	_	1 kit
The state of the s	3RT105 3RT1. 6 3RT1. 7	\$6 \$10 \$12	The installation kit contains: Wiring modules on the top and bottom (for connection without box terminals)	3RA1953-2M 3RA1963-2A 3RA1973-2A		1 kit
6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						

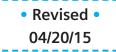
Use of the 3RA2923-2AA1 assembly kit in conjunction with the 3RT202.-.....3MA0 contactors is limited because the auxiliary switches in the basic unit are not allowed to be used on account. of the permanently mounted auxiliary switch block.

²⁾ Version in size S0 with spring-type terminals: Only the wiring modules for the main circuit are included. No connectors are included for the auxiliary and control circuit.

³⁾ Version in size S2 with spring-type terminals in the auxiliary and control circuits: Only the wiring modules for the main circuit are included. A cable set is included for the auxiliary circuit.

Contactor Assemblies for Switching Motors 3RA13, 3RA23 reversing

contactor assemblies





Accessories

	For contactors	Size	Contactor gap for interlock	Version		Screw Terminals	Spring Terminals	Pkg. qty.
	Туре					Order No.	Order No.	
Wiring modules								
3RA2913-3DA1	3RT201	S00- S00	0 mm	Top (in-phase) Bottom (phase reve	rsal)	3RA2913-3DA1 3RA2913-3EA1	3RA2913-3DA2 3RA2913-3EA2	1 1
	3RT202	S0- S0	0 mm	Top (in-phase) Bottom (phase reve	rsal)	3RA2923-3DA1 3RA2923-3EA1	3RA2923-3DA2 3RA2923-3EA2	1 1
3RA2913-3EA1	3RT203	S2- S2	10 mm	Top (in-phase) Bottom (phase reve	rsal)	=	=	1 1
111	3RT104	S3- S3	10 mm	Top (in-phase) Bottom (phase reve	rsal)	3RA1943-3D 3RA1943-3E	=	1 1
3RA1953-3D	3RT105	S6- S6	10 mm	Top (in-phase, for country with box terminal)	onnection	3RA1953-3D	-	1
3RA1953-3P				Top (with phase review for connection with terminal)		3RA1953-3P	-	1
	For contactors	Size	Contactor gap for interlock	Interlock Type	Version		Order No.	Pkg.
	Туре							
Mechanical connect	ors ¹⁾							
BRA29. 2-2H	3RT201	S00- S00	0 mm	Laterally mountable	For 3-pole of 4-pole conta	contactors and actors	3RA2912-2H	1 set
T "	3RT202	S0- S0	0 mm	Laterally mountable	For 3-pole of 4-pole conta	contactors and actors	3RA2922-2H	1 set
BRA2932-2C	3RT203	S2- S2	0 mm	Laterally mountable	For 3-pole of	contactors	3RA2932-2C	5 sets
			10 mm	Laterally mountable	For 3-pole of	contactors	3RA2932-2D	5 sets
3RA2932-2D	3RT233			Laterally mountable	For 4-pole of	contactors	3RA2932-2G	5 sets
	3RT1. 4	S3- S3	0 mm	Mountable on front	For 3-pole o	contactors	3RA1932-2C	10 set
3RA2932-2G			10 mm	Laterally mountable	For 3-pole o	contactors	3RA1932-2D	10 set
					For 4-pole of	contactors	3RA1942-2G	10 set
3RA1942-2G	3RT1. 5	S6- S6	10 mm	Laterally mountable		ase reversal, on without box	3RA1932-2D	10 set

Note: Standard package quantities may change. Check Industry Mall for current package quantities.

^{1) 1} set for 1 contactor. Size S00 & S0: 1 set includes 2 connectors and 1 interlock. Size S2: The mechanical interlock must be ordered separately. S3-S6: 1 set includes 2 connectors; one connector for top and one connector for bottom.



• Revised • 04/20/15

Contactor Assemblies Contactor Assemblies for Switching Motors

WYE-delta accessories

	· T	
	,,,	

Accessories					
	Design	Sizes	Order No.		Weight approx kg
Installation kits ^{1) 2)}					3
	The installation kit contains: Mechanical interlock, 4 connecting clips, WYE jumper, Wiring connectors on the top and bottom,- For main, auxiliary, and control circuits 3)	S00-S00-S00	3RA29 13-2BB1	1 set	0.05
	The installation kit contains: mechanical interlock, 4 connecting clips, WYE jumper, wiring connectors on the top	S0-S0-S0	3RA29 23-2BB1	1 set	0.10
RA19 53-2B	and bottom - For main, auxiliary, and control circuits 3)	S2-S2-S0 S2-S2-S2	3RA29 33-2C 3RA29 33-2BB1	1 set	0.16 0.16
	The installation kit contains: WYE jumper on the top Wiring jumper on the bottom	S3-S3-S2 S3-S3-S3 S6-S6-S6	3RA19 43-2C 3RA19 43-2B 3RA19 53-2B		0.33 0.16 0.85
RA19 53-2N, 3RA19 63- 3, 3RA19 73-2B	(The wiring connector on the top is not included in the scope of supply. A double infeed between the line contactor and the delta contactor is recommended.)	S6-S6-S6 S10-S10-S10 S12-S12-S12	3RA19 53-2N 3RA19 63-2B 3RA19 73-2B		0.60 1.80 2.20
3-phase feeder tern	ninal				
	Feeder terminal block for the line contactor for large conductor cross-sections Conductor cross-section: 6 mm², 10 AWG Conductor cross-section: 16 mm², 6 AWG Conductor cross-section: 70 mm², 2/0 AWG	\$00 \$0 \$2	3RA29 13-3K 3RV29 25-5AB 3RV29 35-5A	unit	0.02 0.04 0.10
1-phase feeder tern	ninals				
	Conductor cross-section: 95 mm ²	S3	3RA19 43-3L		0.280
3-phase busbar	For in-phase bridging of all input terminals of the line contactor (K1) and the delta contactor (K3)	S0 S2	3RV19 15-1AB 3RV29 35-5E	unit	0.03 0.15
Link for paralleling	, 3-pole (WYE jumpers)				
3RT19 26-4BA31	Without terminal (the links for paralleling can be reduced by one pole)	\$00 ¹⁾ \$0 ¹⁾ \$2 \$3 \$6 ⁴⁾ \$10, \$12 ⁴⁾	3RT19 16-4BA31 3RT19 26-4BA31 3RT19 36-4BA31 3RT19 46-4BA31 3RT19 56-4BA31 3RT19 66-4BA31	unit	0.010 0.020 0.02 0.02 0.02
Baseplates	For customer assembly of WYE-delta contactor assemblies with a laterally mounted time-delay		1	unit	
	Side-by-side mounting	S2 S2 S0	3RA29 32-2F		0.45
	10 mm clearance between K3 and K2	S2 S2 S2	3RA29 32-2F		0.48
	Side-by-side mounting	S3 S3 S2	3RA19 42-2E		0.72
	10 mm clearance between K1, K3 and K2	S. S. S. S. S. S6 S6 S6 S6 S6 S6 S6 S6 S6 S10 S10 S10 S10 S12	1 3RA19 52-2E 3RA19 52-2F 3RA19 62-2E 3RA19 62-2F 3RA19 72-2E 3RA19 72-2F	unit	2.0 2.1

¹⁾ Size S00, S0 and S2 installation kits for paralleling are available in spring-type terminals. Change the last digit of the order number to a "2".

²⁾ When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required. See page 2/45 for more information.

³⁾ Also requires quantity (1) 3RA2816-0EW20 function module set for all control functions. See page 2/45.

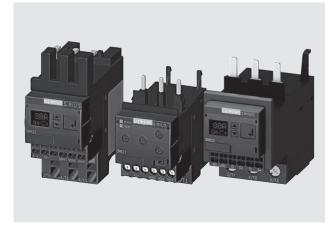
⁴⁾ The 3RT19 56-4EA1 (S6) or 3RT19 66-4EA1 (S10, S12) cover can be used for shock-hazard protection.

Contactor Assemblies for Switching Motors

Current Monitoring Relays

• Revised • SIRIUS

Overview



SIRIUS 3RR2242, 3RR2142 and 3RR2243 current monitoring relays

The SIRIUS 3RR2 current monitoring relays are suitable for the load monitoring of motors or other loads. In two or three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR2 current monitoring relays can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal supports for stand-alone installation are available for separate standard rail mounting.

Versions

Basic versions

The basic versions with two-phase apparent current monitoring, a CO contact output and analog adjustability provide a high level of monitoring reliability especially in the rated and overload range.

Standard versions

The standard versions monitor the current in three phases with selectable active current monitoring. They have additional diagnostics options such as residual current monitoring and phase sequence monitoring, and they are also suitable for monitoring motors below the rated torque. These devices have an additional independent semiconductor output, an actual value indicator, and are digitally adjustable.

Both versions are available optionally with screw or spring-type terminals, in each case for sizes S00 and S0. With variants of size S2 the main current paths always have screw terminals; the control current side can have screw or spring-type terminals.

Note:

In addition to the features of the standard versions, 3RR24 monitoring relays for mounting onto 3RT2 contactors for IO-Link also offer the possibility of transmitting the measured values and diagnostics data to a controller via an IO-Link. Furthermore, the devices can be parameterized on the devices themselves or via IO-Link.

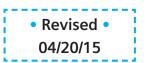
Benefits

- Can be mounted directly on 3RT2 contactors and 3RA23 reversing contactor assemblies, in other words, there is no need for additional wiring in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- · Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw terminals or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for broken cables, phase failure, phase sequence, residual current and motor blocking

Application

- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on conveyor belts or cranes due to an excessive load
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. caused by damaged insulation or moisture





Contactor Assemblies for Switching Motors

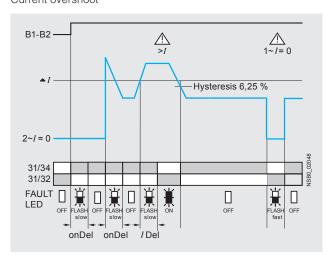
Current Monitoring Relays

Technical specifications

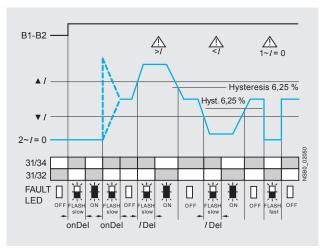
Function charts of 3RR214.-.A.30 basic variants, analog dial adjustable

Closed-circuit principle upon application of the control supply voltage

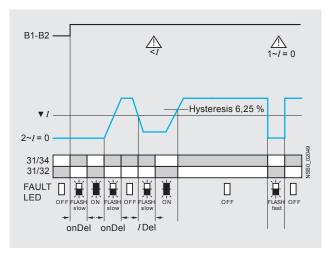
Current overshoot



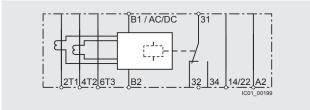
Range monitoring



Current undershoot



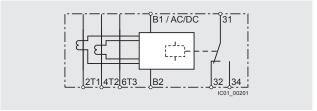
Circuit diagrams



3RR2141-1A.30

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.



3RR2141-2A.30, 3RR2142-.A.30, 3RR2143-.A.30

Contactor Assemblies for Switching Motors

• Revised • 04/20/15

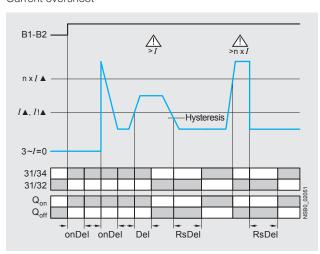


Current Monitoring Relays

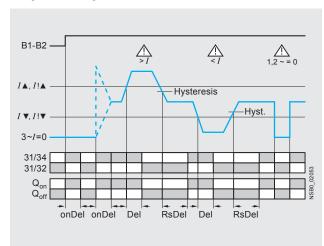
Function charts of 3RR224.-.F.30 standard versions, digitally adjustable

With the closed-circuit principle selected upon application of the control supply voltage

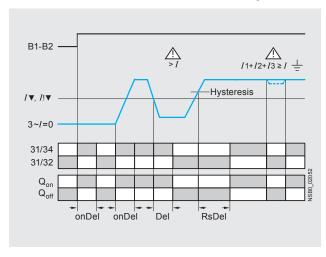
Current overshoot



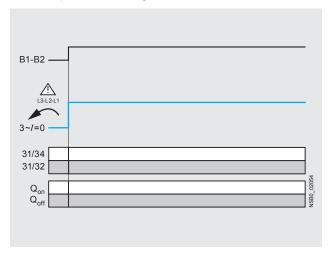
Range monitoring



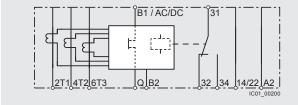
Current undershoot with residual current monitoring



Phase sequence monitoring



Circuit diagrams



3RR2241-1F.30

B1 / AC/DC 31 L 2T1 4T2 6T3 Q B2 32 34 ICO1_00202

3RR2241-2F.30, 3RR2242-.F.30, 3RR2243-.F.30

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Contactors and Contactor Assemblies Contactor Assemblies for Switching Motors

Current Monitoring Relays

Selection and ordering data

SIRIUS 3RR21/3RR22 current monitoring relays

- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
 Starting and tripping delay can be adjusted separately
 Tripping delay 0 to 30 s
- Auto or Manual RESET













3RR2142-1AW30

3RR2242-1FW30

3RR2141-2AA30

3RR2243-3FW30

Size	Measuring range	Hysteresis	Control supply voltage U _s	Screw terminals	+	Spring-type terminals	
	A	A	V	Order No.		Order No.	
Basic	versions						
Close1 CO2-phaAppa	gically adjustable ad-circuit principle contact ase current monitoring rent current monitorin up delay 0 60 s	g J					
S00	1.6 16	6.25 % of threshold value	24 AC/DC 24 240 AC/DC	3RR2141-1AA30 3RR2141-1AW30		3RR2141-2AA30 3RR2141-2AW30	
S0	4 40	6.25 % of threshold value	24 AC/DC 24 240 AC/DC	3RR2142-1AA30 3RR2142-1AW30		3RR2142-2AA30 3RR2142-2AW30	
S2	8 80	6.25 % of threshold value	24 AC/DC 24 240 AC/DC	3RR2143-1AA30 3RR2143-1AW30		3RR2143-3AA30 3RR2143-3AW30	
Stand	ard versions						
LC diOpen1 CO1 sen3-phaActivePhaseResiceBlockRecloStart-	ally adjustable splay or closed-circuit prin contact niconductor output ase current monitoring e current or apparent e sequence monitorin lual current monitoring current monitoring current monitoring delay time 0 3 up delay 0 99 s rate settings for warni	current monitoring g g g g g g g g	holds				
S00	1.6 16	0.1 3	24 AC/DC 24 240 AC/DC	3RR2241-1FA30 3RR2241-1FW30		3RR2241-2FA30 3RR2241-2FW30	
S0	4 40	0.1 8	24 AC/DC 24 240 AC/DC	3RR2242-1FA30 3RR2242-1FW30		3RR2242-2FA30 3RR2242-2FW30	
S2	8 80	0.2 16	24 AC/DC 24 240 AC/DC	3RR2243-1FA30 3RR2243-1FW30	,	3RR2243-3FA30 3RR2243-3FW30	

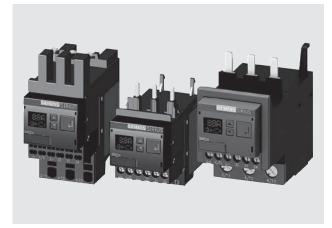
Contactor Assemblies for Switching Motors

Current Monitoring Relays with IO-Link

• Revised • 04/20/15



Overview



SIRIUS 3RR2441, 3RR2442 and 3RR2443 current monitoring relays

The SIRIUS 3RR24 current monitoring relays for IO-Link are suitable for the load monitoring of motors or other loads. In three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option, which is also selectable, can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR24 current monitoring relays for IO-Link can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal supports for stand-alone installation are available for separate standard rail mounting.

The SIRIUS 3RR24 current monitoring relays for IO-Link also offer many other options based upon the monitoring functions of the conventional SIRIUS 3RR2 monitoring relays:

- Measured value transmission to a controller, including resolution and unit, may be parameterizable as to which value is cyclically transmitted
- Transmission of alarm flags to a controller
- Full diagnosis capability by inquiry as to the cause of the fault in the diagnosis data record
- Remote parameterization is also possible, in addition to or instead of local parameterization

- Rapid parameterization of the same devices by duplication of the parameterization in the controller
- Parameter transmission by upload to a controller by IO-Link call or by parameter server (if IO-Link master from IO-Link Specification V 1.1 and higher is used)
- Consistent central data storage in the event of parameter change locally or via a controller
- Automatic reparameterizing when devices are exchanged
- Blocking of local parameterization via IO-Link possible
- Faults are saved in parameterizable and non-volatile fashion to prevent an automatic start up after voltage failure and to make sure diagnostics data is not lost
- By integration into the automation level the option exists of parameterizing the monitoring relay at any time via a display unit or displaying the measured values in a control room or locally at the machine/control cabinet

Even without communication via IO-Link the devices continue to function fully autonomously:

- Parameterization can take place locally at the device, independently of a controller
- In the event of failure or before the controller becomes available the monitoring relays work as long as the control supply voltage (24 V DC) is present
- If the monitoring relays are operated without the controller, the 3RR24 monitoring relays for IO-Link have, thanks to the integrated SIO mode, an additional semiconductor output, which switches when the adjustable warning threshold is exceeded

Thanks to the combination of autonomous monitoring relay function and integrated IO-Link communication, redundant sensors and/or analog signal converters – which previously took over the transmission of measured values to a controller, leading to considerable extra cost and wiring outlay – are no longer needed.

Because the output relays are still present, the monitoring relays increase the functional reliability of the system, since only the controller can fulfill the control tasks if the current measured values are available, whereas the output relays can also be used for the disconnection of the system if limit values that cannot be reached during operation are exceeded.

For further information on the IO-Link communication system, see Chapter 14.

Contactor Assemblies Contactor Assemblies for Switching Motors

Current Monitoring Relays with IO-Link

Benefits

- Can be mounted directly on 3RT2 contactors and 3RA23 reversing contactor assemblies, in other words, there is no need for additional wiring in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for current unbalance, broken cables, phase failure, phase sequence, residual current and motor blocking
- Integrated counter for operating cycles and operating hours to support requirements-based maintenance of the monitored machine or application
- Simple cyclical transmission of the current measured values, relay switching states and events to a controller
- Remote parameterization
- · Automatic reparameterizing when devices are exchanged
- Simple duplication of identical or similar parameterizations
- Reduction of control current wiring
- · Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Cost saving and space saving in control cabinet due to the elimination of AI and IO modules as well as analog signal converters and duplicated sensors

Application

- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on pumps due to a dirty filter system
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. caused by damaged insulation or moisture

The use of SIRIUS monitoring relays for IO-Link is particularly recommended for machines and plant in which these relays, in addition to their monitoring function, are to be connected to the automation level for the rapid, simple and fault-free provision of the current measured values and/or for remote parameterization.

The monitoring relays can either relieve the controller of monitoring tasks or, as a second monitoring entity in parallel to and independent of the controller, increase the reliability in the process or in the system. In addition, the elimination of Al and IO modules allows the width of the controller to be reduced despite significantly expanded functionality.

Contactor Assemblies for Switching Motors

• Revised • 04/20/15



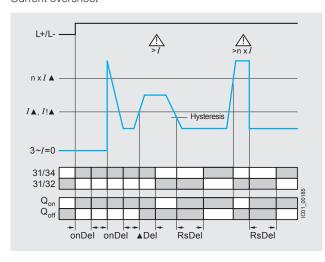
Current Monitoring Relays with IO-Link

Technical specifications

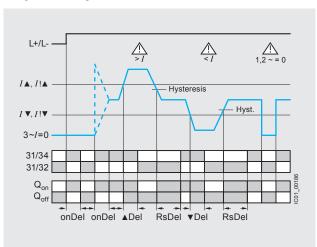
Function charts of 3RR24 for IO-Link, digitally adjustable

With the closed-circuit principle selected upon application of the control supply voltage

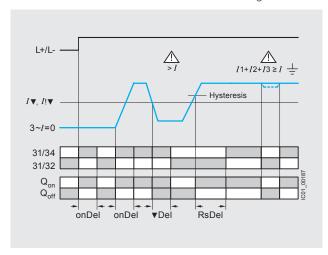
Current overshoot



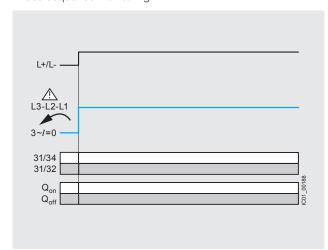
Range monitoring



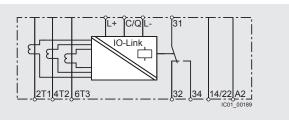
Current undershoot with residual current monitoring



Phase sequence monitoring



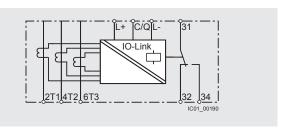
Circuit diagrams



3RR2441-1AA40

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.



3RR2441-2AA40, 3RR2442-.AA40, 3RR2443-.AA40



Revised 04/20/15

Contactors and Contactor Assemblies Contactor Assemblies for Switching Motors

Current Monitoring Relays

Selection and ordering data

SIRIUS 3RR24 current monitoring relays for IO-Link

- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
 Starting and tripping delay can be adjusted separately
 Tripping delay 0 to 999.9 s
- Auto or Manual RESET













3RR2441-1AA40

3RR2442-1AA40

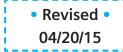
3RR2441-2AA40 3RR2442-2AA40

3RR2443-1AA40

3RR2443-3AA40

Size	Measuring range	Hysteresis	Control supply voltage U _s	Screw terminals	+	Spring-type terminals	\cong
	А	А	V	Order No.		Order No.	
 LC dis Open 1 CO 1 sem 3-pha Active Curre Phase Resid Block Opera Opera Reclo Start-I 	Illy adjustable splay or closed-circuit prin contact iiconductor output (in se current monitoring e current or apparent in unbalance monitoring usequence monitoring current monitoring taing current monitoring taing curlent monitoring at your counter at your pelay time 0 3 up delay 0 999.9 sate settings for warni	SIO mode) current monitorining g g d d d d d d d d d d d d d d d d d					
S00	1.6 16	0.1 3	24 DC	3RR2441-1AA40		3RR2441-2AA40	
S0	4 40	0.1 8	24 DC	3RR2442-1AA40		3RR2442-2AA40	
S2	8 80	0.2 16	24 DC	3RR2443-1AA40		3RR2443-3AA40	

Contactor Assemblies for Switching Motors





Current Monitoring Relay Accessories

ccessories						
	Use	Version	Size	Order No.		Standard Pack Quantity
erminal supports	s for stand-a	alone installation ¹⁾				
	For 3RR21, 3RR22, 3RR24	For separate mounting of the ov or monitoring relays; screw and onto TH 35 standard mounting r IEC 60715	snap-on mounting	Screw terminals	+	
1111		• Screw connection	\$00 \$0 \$2	3RU2916-3AA01 3RU2926-3AA01 3RU2936-3AA01		1 unit 1 unit 1 unit
RU2916-3AA01				Spring-type terminals	<u> </u>	
		Spring-type connection	\$00 \$0	3RU2916-3AC01 3RU2926-3AC01		1 unit 1 unit
RU2926-3AC01						
172900-1SB20	For 3RR21, 3RR22, 3RR24	Unit labeling plates²⁾ For SIRIUS devices 20 mm x 7 mm, titanium gray		3RT2900-1SB20		340 units
ealable covers	F 0DD04	Oceleble course		000000		F
	For 3RR21, 3RR22, 3RR24	Sealable covers For securing against unintention adjustment of settings	al or unauthorized	3RR2940		5 units
	For 3RR21	Sealing foil For securing against unauthorize setting knobs	ed adjustment of	3TK2820-0AA00		1 unit
RR2940 cols for opening	spring-type	e terminals				
		Screwdrivers	ng-type terminals;	Spring-type terminals	\bigotimes	

¹⁾ The accessories are identical to those of the 3RU21 thermal overload relays and the 3RB3 electronic overload relays, see Chapter 3 "Overload Relays"

PC labeling system for individual inscription of unit labeling plates available from: Systems, Inc. www.murrplastic.com



Revised 04/20/15

Contactors and Contactor Assemblies Contactor Assemblies for Switching Motors

NEMA 1 Enclosure

Selection and ordering data

- * NEMA Type 1 Enclosures
- * Lift off cover
- * Accepts SIRIUS power control components
- * Non-reversing contactors
- * Reversing contactors
- * Starters with thermal overload relays
- * Starters with solid-state overload relays

Application

The 49EC14*B separate enclosures are designed for field assembly of a wide range of Siemens SIRIUS open style control components and field modification kits as listed in the charts below. Note that certain components require the addition of a DIN Rail kit for proper mounting in the enclosure.



49EC14EB110705R

NEMA 1 Enclosures

Max. current	Contactor		Max. current	Overload relay		Required DIN rail kit	NEMA 1 Enclosure
А	Non-reversing	Reversing	А	Thermal	Solid-state	Order No.	Order No.
16	3RT201	3RA231	16	3RU2116	3RB3016	MTR5	49EC14EB110705R
38	3RT202	3RA232	40	3RU2126	3RB3026	MTR5	
50	3RT103		50	3RU1136	3RB2036	_	49EC14GB140807R
12		3RA131	12	3RU1116	3RB2016	MTR5	
25		3RA132	25	3RU1126	3RB2026	MTR5	
50		3RA133	50	3RU1136	3RB2036	_	
95	3RT104		100	3RU1146	3RB2046	_	49EC14IB201208R
95		3RA134	100	3RU1146	3RB2046	_	

Accessories for NEMA 1 Enclosures







49SBLBF

Accessory type	Description	Marking	Voltage	Order No.
Push button		Start-stop		49SBPB5
rusii bulloii		Reset (blue)		49MBRS
	2 position	Off-on		49SBSB4
Selector switch		Hand-off-auto		49SBSB1
Selector Switch	3 position	For-off-rev		49SBSB2
		High-off-low		49SBSB3
Pilot light	Lens colors: red, green, amber	Legends: ON, RUN, OFF, OL TRIPPED, FORWARD, REVERSE, LOW HIGH	24 V AC 120 V AC 208, 240, 277 V AC 480 V AC 600 V AC	49SBLBJ 49SBLBF 49SBLBG 49SBLBH 49SBLBE

For 3RT contactors, see page 2/8. For 3RA reversing, see pages 2/37.

For thermal overloads, see page 3/10.

For solidstate overloads, see pages 3/22.

For enclosure dimensions, see figures 1, 2, and 3 on page 9/150.

3RT Contactors

Revised04/20/15



Spare parts for 3RT2 contactors

Selection and ordering data

For screw, spring-type and ring lug terminal connection



3RT29 24-5A.01

or contact	tors	Rated cont	trol supply voltage	U_{s}	Order No.	Weigl appro
Size	Туре	50 Hz	50/60 Hz	60 Hz		Arte
		V	V	V		k
Solenoid	coils · AC oper	ration				
0	3RT20 23,	24			3RT29 24-5AB01	0.10
	3RT20 24, 3RT20 25	42 48			3RT29 24-5AD01 3RT29 24-5AH01	0.10 0.10
		110			3RT29 24-5AF01	0.10
		230			3RT29 24-5AP01	0.10
		400			3RT29 24-5AV01	0.10
			24 42		3RT29 24-5AC21 3RT29 24-5AD21	0.10 0.10
			48		3RT29 24-5AH21	0.10
			110		3RT29 24-5AG21	0.10
			220 230		3RT29 24-5AN21 3RT29 24-5AL21	0.10 0.10
		110		120	3RT29 24-5AK61	0.1
		220		240	3RT29 24-5AP61	0.1
			100 200	110 220	3RT29 24-5AG61 3RT29 24-5AN61	0.1 0.1
			400	440	3RT29 24-5AR61	0.1
0	3RT20 26,	24			3RT29 26-5AB01	0.1
	3RT20 27, 3RT20 28	42			3RT29 26-5AD01	0.1
	3RT23 25,	48 110			3RT29 26-5AH01 3RT29 26-5AF01	0.1 0.1
	3RT23 26, 3RT23 27	230 400			3RT29 26-5AP01 3RT29 26-5AV01	0.1 0.1
	3RT25 26		24		3RT29 26-5AC21	0.10
			42 48		3RT29 26-5AD21 3RT29 26-5AH21	0.10 0.10
			110		3RT29 26-5AG21	0.1
			208		3RT29 26-5AM21	0.1
			220 230		3RT29 26-5AN21 3RT29 26-5AL21	0.1 0.1
		110		120	3RT29 26-5AK61	0.1
		220		240	3RT29 26-5AP61	0.10
			100 200	110 220	3RT29 26-5AG61 3RT29 26-5AN61	0.1 0.1
			400	440	3RT29 26-5AR61	0.1
		500		-	3RT29 26-5AQ21	0.1
			277		3RT29 26-5AU61	0.1
			480		3RT29 26-5AV61	0.1
			600		3RT29 26-5AT61	0.10

Note:

Contactors with AC and AC/DC coils have different depths. It is only possible to replace the coils on AC contactors with AC coils, and on AC/DC contactors with AC/DC coils. It is not possible to replace the coils on DC contactors in the S0 frame.



• Revised • 04/20/15

Contactor Assemblies Contactor Assemblies for Switching Motors

Spare parts for 3RT2 contactors

For screw, spring-type and ring terminal lug connection





3RT2934-5N.31

		31112934-3	14.51			3N12934-3A.01	
For contac	tors	Rated cont	rol supply voltage (J _s	Order No.	Weigh approx	
Size	Туре	50 Hz	50/60 Hz	60 Hz	DC		
		V	V	V			
Solenoid	l coils · AC oper	ation					
S2	3RT203A	24				3RT2934-5AB01	
	3RT233A	42				3RT2934-5AD01	
	3RT253A	48				3RT2934-5AH01	
		110				3RT2934-5AF01	
		230 400				3RT2934-5AP01 3RT2934-5AV01	
			24			3RT2934-5AC21	
			42			3RT2934-5AD21	
			48			3RT2934-5AH21	
			110			3RT2934-5AG21	
			220			3RT2934-5AN21	
			230			3RT2934-5AL21	
		110 220		120 240		3RT2934-5AK61 3RT2934-5AP61	
				480		3RT2934-5AV61	
				600		3RT2934-5AT61	
			100	110		3RT2934-5AG61	
			200	220		3RT2934-5AN61	
			400	440		3RT2934-5AR61	
Solenoid	coils · AC/DC	peration, w	ith varistor				
S2	3RT203N		20 33		20 33	3RT2934-5NB31	
	3RT233N		30 42		30 42	3RT2934-5ND31	
	3RT253N		48 80		48 80	3RT2934-5NE31	
			83 155		83 155	3RT2934-5NF31	
			175 280		175 280	3RT2934-5NP31	

Note:

It is only possible to replace the coils on AC contactors with AC coils, and on AC/DC contactors with AC/DC coils.

3RT Contactors

Spare parts for 3RT1 contactors



Selection and	ordering data
---------------	---------------

	For co	ntactor	Rated control supply voltage <i>U</i> _s	Screw connection	Spring-type connection	Weight approx.
			.s.ago o _s	Order No.	Order No.	αρρίολ.
	Size	Туре				kg
Coils · AC operation		турс				Ng
3RT19 24-5A. 01	SO	3RT10 2 ., 3RT13 2 ., 3RT15 2 .	24 V, 50 Hz 42 V, 50 Hz 48 V, 50 Hz 110 V, 50 Hz 230 V, 50 Hz 240 V, 50 Hc 24 V, 50/60 Hz 42 V, 50/60 Hz 42 V, 50/60 Hz 42 V, 50/60 Hz 110 V, 50/60 Hz 208 V, 50/60 Hz 220 V, 50/60 Hz 230 V, 50/60 Hz 230 V, 50/60 Hz 210 V, 50/60 Hz 210 V, 50 Hz/120 V, 60 Hz 220 V, 50 Hz/240 V, 60 Hz 480 V, 60 Hz 100 V, 50/60 Hz/110 V, 60 Hz 200 V, 50/60 Hz/140 V, 60 Hz	3RT19 24-5AB01 3RT19 24-5AH01 3RT19 24-5AH01 3RT19 24-5AF01 3RT19 24-5AF01 3RT19 24-5AC21 3RT19 24-5AC21 3RT19 24-5AD21 3RT19 24-5AD21 3RT19 24-5AB21 3RT19 24-5AB21 3RT19 24-5AB21 3RT19 24-5AB21 3RT19 24-5AK61 3RT19 24-5AK61 3RT19 24-5AK61 3RT19 24-5AK61 3RT19 24-5AG61	3RT19 24-5AB02 3RT19 24-5AD02 3RT19 24-5AH02 3RT19 24-5AP02 3RT19 24-5AP02 3RT19 24-5AV02 3RT19 24-5AV02 3RT19 24-5AD22 3RT19 24-5AH22 3RT19 24-5AH22 3RT19 24-5AH22 3RT19 24-5AM22 3RT19 24-5AM22 3RT19 24-5AM62 3RT19 24-5AH62	0.069
3RT19 24-5A.02	S2	3RT10 33 3RT10 34	24 V, 50 Hz 42 V, 50 Hz 48 V, 50 Hz 110 V, 50 Hz 230 V, 50 Hz 440 V, 50 Hz 440 V, 50 Hc 42 V, 50/60 Hz 48 V, 50/60 Hz 24 V, 50/60 Hz 110 V, 50/60 Hz 210 V, 50/60 Hz 220 V, 50/60 Hz 230 V, 50/60 Hz 230 V, 50/60 Hz 210 V, 50/60 Hz 210 V, 50 Hz/120 V, 60 Hz 277 V, 60 Hz 480 V, 60 Hz 100 V, 50/60 Hz/110 V, 60 Hz 200 V, 50/60 Hz/1440 V, 60 Hz	3RT19 34-5AB01 3RT19 34-5AH01 3RT19 34-5AH01 3RT19 34-5AF01 3RT19 34-5AP01 3RT19 34-5AP01 3RT19 34-5AD21 3RT19 34-5AH21 3RT19 34-5AH21 3RT19 34-5AH21 3RT19 34-5AM21 3RT19 34-5AM21 3RT19 34-5AM21 3RT19 34-5AM21 3RT19 34-5AH21	3RT19 34-5AB02 3RT19 34-5AD02 3RT19 34-5AH02 3RT19 34-5AP02 3RT19 34-5AP02 3RT19 34-5AP02 3RT19 34-5AD22 3RT19 34-5AD62	0.088
3RT19 34-5A. 01		3RT10 35, 3RT10 36, 3RT13 3., 3RT15 3.	42 V, 50 Hz	3RT19 35-5AB01 3RT19 35-5AB01 3RT19 35-5AB01 3RT19 35-5AF01 3RT19 35-5AP01 3RT19 35-5AP01 3RT19 35-5AC21 3RT19 35-5AD21 3RT19 35-5AD21 3RT19 35-5AB21 3RT19 35-5AB61	3RT19 35-5AB02 3RT19 35-5AD02 3RT19 35-5AH02 3RT19 35-5AF02 3RT19 35-5AP02 3RT19 35-5AV02 3RT19 35-5AV02 3RT19 35-5AD22 3RT19 35-5AD22 3RT19 35-5AB22 3RT19 35-5AB62 3RT19 35-5AB62	0.088



Spare parts for 3RT1 contactors

	For contactor		Rated control supply voltage $U_{\rm s}$	Screw connection	Spring-type connection	Weigh
				Order No.	Order No.	
	Size	Tuno				ka
Coils · AC operation		Туре				kg
3RT19 45-5A . 01	S3	3RT10 44	24 V, 50 Hz 42 V, 50 Hz 48 V, 50 Hz 110 V, 50 Hz 230 V, 50 Hz 2400 V, 50 Hz 24 V, 50/60 Hz 42 V, 50/60 Hz 48 V, 50/60 Hz 110 V, 50/60 Hz 208 V, 50/60 Hz 208 V, 50/60 Hz 210 V, 50/60 Hz 220 V, 50/60 Hz 210 V, 50/60 Hz 220 V, 50/60 Hz 220 V, 50/60 Hz 210 V, 50 Hz/120 V, 60 Hz 277 V, 60 Hz 480 V, 60 Hz 600 V, 60 Hz 100 V, 50/60 Hz/110 V, 60 Hz 240 V, 50/60 Hz/110 V, 60 Hz 240 V, 50/60 Hz/110 V, 60 Hz	3RT19 44-5AB01 3RT19 44-5AB01 3RT19 44-5AH01 3RT19 44-5AF01 3RT19 44-5AF01 3RT19 44-5AF01 3RT19 44-5AC21 3RT19 44-5AC21 3RT19 44-5AH21	3RT19 44-5AB02 3RT19 44-5AD02 3RT19 44-5AF02 3RT19 44-5AF02 3RT19 44-5AV02 3RT19 44-5AV02 3RT19 44-5AV22 3RT19 44-5AD22 3RT19 44-5AD22 3RT19 44-5AM22 3RT19 44-5AM22 3RT19 44-5AM22 3RT19 44-5AM62 3RT19 44-5AC62	0.130
3RT19 45-5AP02		3RT10 45, 3RT10 46, 3RT13 4., 3RT14 46	24 V, 50 Hz	3RT19 45-5AB01 3RT19 45-5AB01 3RT19 45-5AD01 3RT19 45-5AF01 3RT19 45-5AF01 3RT19 45-5AV01 3RT19 45-5AV01 3RT19 45-5AC21 3RT19 45-5AC21 3RT19 45-5AH21	3RT19 45-5AB02 3RT19 45-5AD02 3RT19 45-5AH02 3RT19 45-5AF02 3RT19 45-5AF02 3RT19 45-5AV02 3RT19 45-5AV02 3RT19 45-5AC22 3RT19 45-5AH22 3RT19 45-5AH62	0.130
Coils · DC operation						
3RT19 44-5BM42	S2	3RT10 3., 3RT13 3., 3RT15 3.		3RT19 34-5BB41 3RT19 34-5BD41 3RT19 34-5BW41 3RT19 34-5BE41 3RT19 34-5BF41 3RT19 34-5BG41 3RT19 34-5BM41 3RT19 34-5BP41	3RT19 34-5BB42 3RT19 34-5BD42 3RT19 34-5BW42 3RT19 34-5BE42 3RT19 34-5BF42 3RT19 34-5BM42 3RT19 34-5BM42 3RT19 34-5BP42	0.558
E = [S 3	3RT10 4., 3RT13 4., 3RT14 4.	24 V 42 V 48 V 60 V 110 V 125 V 220 V	3RT19 44-5BB41 3RT19 44-5BD41 3RT19 44-5BW41 3RT19 44-5BE41 3RT19 44-5BF41 3RT19 44-5BG41 3RT19 44-5BG41	3RT19 44-5BB42 3RT19 44-5BD42 3RT19 44-5BW42 3RT19 44-5BE42 3RT19 44-5BF42 3RT19 44-5BM42 3RT19 44-5BM42	0.916

Product Category: IEC

3RT Contactors

Spare parts for 3RT1 contactors



	ing data				
	For contact		Rated control supply voltage $U_{\rm smin}$ to $U_{\rm smax}$	Order No.	Weigh appro
	Size	Туре	AC/DC V		kg
/ithdrawable coils					
		onal operating			
RT19 55-5A	S6	3RT10 5, 3RT14 5	23 26 42 48 110 127 200 220 220 240 240 277 380 420 440 480 500 550 575 600	3RT19 55-5AB31 3RT19 55-5AB31 3RT19 55-5AF31 3RT19 55-5AM31 3RT19 55-5AP31 3RT19 55-5AU31 3RT19 55-5AV31 3RT19 55-5AR31 3RT19 55-5AR31 3RT19 55-5AR31	0.49
	S10	3RT10 6, 3RT14 6	23 26 42 48 110 127 200 220 220 240 240 277 380 420 440 480 500 550 575 600	3RT19 65-5AB31 3RT19 65-5AD31 3RT19 65-5AF31 3RT19 65-5AP31 3RT19 65-5AP31 3RT19 65-5AU31 3RT19 65-5AU31 3RT19 65-5AS31 3RT19 65-5AS31 3RT19 65-5AT31	0.65
		3RT12 6 Vacuum contactor	23 26 42 48 110 127 200 220 220 240 240 277 380 420 440 480 500 550 575 600	3RT19 66-5AB31 3RT19 66-5AD31 3RT19 66-5AF31 3RT19 66-5AP31 3RT19 66-5AP31 3RT19 66-5AU31 3RT19 66-5AU31 3RT19 66-5AS31 3RT19 66-5AS31 3RT19 66-5AS31	
	S12	3RT10 7, 3RT14 7, 3RT12 7 Vacuum contactor	23 26 42 48 110 127 200 220 220 240 240 277 380 420 440 480 500 550 575 600	3RT19 75-5AB31 3RT19 75-5AD31 3RT19 75-5AF31 3RT19 75-5AM31 3RT19 75-5AP31 3RT19 75-5AV31 3RT19 75-5AV31 3RT19 75-5AR31 3RT19 75-5AR31 3RT19 75-5AS31 3RT19 75-5AT31	1.1
ithdrawable coils					
	Solid-stat	te operating me	echanism · for DC 24 V PLC output		
RT19 55-5N	S6	3RT10 5, 3RT14 5	21 27.3 96 127 200 277	3RT19 55-5NB31 3RT19 55-5NF31 3RT19 55-5NP31	0.49
	S10	3RT10 6, 3RT14 6	21 27.3 96 127 200 277	3RT19 65-5NB31 3RT19 65-5NF31 3RT19 65-5NP31	0.65
		3RT12 6 Vacuum contactor	21 27.3 96 127 200 277	3RT19 66-5NB31 3RT19 66-5NF31 3RT19 66-5NP31	
	010	3RT10 7,	21 27.3 96 127	3RT19 75-5NB31 3RT19 75-5NF31	1.1
	S12	3RT14 7, 3RT12 7 Vacuum contactor	200 277	3RT19 75-5NP31	
	Solid-sta	3RT12 7 Vacuum contactor	200 277 echanism · for DC 24 V PLC output/PLC relay of	3RT19 75-5NP31	
	Solid-sta	3RT12 7 Vacuum contactor	200 277	3RT19 75-5NP31	1.1

\circ	10	0
2	/9	О

3RT10 6, 3RT14 6

3RT10 7, 3RT14 7

S10

S12

96 ... 127 200 ... 277

96 ... 127 200 ... 277 1.1

1.1

3RT19 65-5PF31 3RT19 65-5PP31

3RT19 75-5PF31 3RT19 75-5PP31



• Revised • 04/20/15

Contactors and Contactor Assemblies 3RT Contactors

DOMO	parts :	チヘッ つ		aanta	atara
		ior o	п		CIUIS

	For conta	ector	Design	Order No.	Weight	Pack
			Design	Order No.	approx.	1 ack
Arc chutes	Size	Туре			kg	
Arc chutes						
	S 2	3RT20 3 . 3RT20 3 .	For AC coil contactors only For UC (AC/DC) coil contactors only	3RT29 36-7A 3RT29 36-7B		1 unit
	S 3	3RT10 4 ., 3RT14 46	_	3RT19 46-7A		_
	S6	3RT10 54 3RT10 55 3RT10 56	_	3RT19 54-7A 3RT19 55-7A 3RT19 56-7A	0.72	_
	S10	3RT10 64 3RT10 65 3RT10 66	_	3RT19 64-7A 3RT19 65-7A 3RT19 66-7A	1.24	_
	S12	3RT10 75 3RT10 76	_	3RT19 75-7A 3RT19 76-7A	1.4	_
	S6 S10 S12	3RT14 56 3RT14 66 3RT14 76	_	3RT19 56-7B 3RT19 66-7B 3RT19 76-7B	0.72 1.24 1.4	_
Contacts with fix	cing parts					
	• for con	tactors with 3 n	nain contacts			
	S2	3RT20 35 3RT20 36 3RT20 37 3RT20 38	Main contacts (3 NO) for AC-3 utilization category (1 set = 3 moving and 6 fixed contacts with fixing parts)	3RT29 35-6A 3RT29 36-6A 3RT29 37-6A 3RT29 38-6A		1 set
	S 3	3RT10 44 3RT10 45 3RT10 46	_	3RT19 44-6A 3RT19 45-6A 3RT19 46-6A		_
	S6	3RT10 54 3RT10 55 3RT10 56	_	3RT19 54-6A 3RT19 55-6A 3RT19 56-6A	0.28	_
	S10	3RT10 64 3RT10 65 3RT10 66	_	3RT19 64-6A 3RT19 65-6A 3RT19 66-6A	0.48	_
	S12	3RT10 75 3RT10 76		3RT19 75-6A 3RT19 76-6A	0.9	
	S3	3RT14 46	Main contacts (3 NO) for AC-1 utilization category	3RT19 46-6D		_
	S6 S10 S12	3RT14 56 3RT14 66 3RT14 76	(1 set = 3 moving and 6 fixed contacts with fixing parts)	3RT19 56-6D 3RT19 66-6D 3RT19 76-6D	0.28 0.48 0.9	
	• for 3RT	12 vacuum con	tactors			
	S10	3RT12 64 3RT12 65 3RT12 66	3 vacuum interrupters with fixing parts	3RT19 64-6V 3RT19 65-6V 3RT19 66-6V	1.4	1 set
	S12	3RT12 75 3RT12 76		3RT19 75-6V 3RT19 76-6V	1.5	_
	• for con	tactors with 4 n	nain contacts			
	S2	3RT23 36 3RT23 37	Main contacts (4 NO contacts) for utilization category AC-1	3RT29 36-6E 3RT29 37-6E		1 set
	S3	3RT13 44 3RT13 46	(1 set = 4 moving and 8 fixed contacts with fixing parts)	3RT19 44-6E 3RT19 46-6E		-

3TB World Series Contactors

Rated control supply voltages for coils



Selection and ordering data

Coil type Rated control supply voltage U _s	Control supply voltage at	3TY6 503-0A 3TY6 523-0A 3TY6 543-0A 3TY6 566-0A	3TB50 3TB52 3TB54 3TB56	3TY7 683-0C 3TY7 693-0C	3TF68 3TF69	
Rated control supp	oly voltages (changes t	to 10th and 11th position	ns of the	Order No.)		
AC operation						
Coils for 50 Hz 50 Hz	60 Hz					
AC 24 V AC 32 V AC 36 V AC 42 V AC 48 V AC 60 V AC 110 V AC 125/127 V	AC 39 V AC 28 V AC 42 V AC 50 V AC 58 V AC 72 V AC 132 V AC 150/152 V	B0 - G0 D0 H0 E0 F0 L0		- - - - -		
AC 230/220 V AC 240 V AC 400/380 V AC 415 V AC 500 V	AC 277 V AC 288 V AC 480/460 V AC 500 V AC 600 V	P0 1) U0 V0 1) R0 S0		- - -		
AC 110 V 132 V AC 200 V 240 V AC 230 V 277 V AC 380 V 460 V AC 500 V 600 V		- - - -		F7 M7 P7 ²) Q7 S7		

Coil type Rated control supply voltage $U_{\rm s}$			3TF68 3TF69
--	--	--	----------------

Rated control supply voltages (changes to 10th and 11th positions of the Order No.)

DC operation

DC 24 V	B4	B4
DC 30 V	C4	-
DC 36 V	V4	_
DC 42 V	D4	-
DC 48 V	W4	-
DC 60 V	E4	-
DC 110 V	F4	F4
DC 125 V	G4	G4
DC 180 V	K4	_
DC 220 V	M4	M4
DC 230 V	P4	P4

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

¹⁾ Coil voltage tolerance at 220 V or 380 V: 0.85 to 1.15 x $U_{\rm s}$; lower tolerance range limit acc. to IEC 60 947.

²⁾ Lower tolerance range limit at 220 V: 0.85 x $U_{\rm s}$ acc. to IEC 60 947.





Spare parts

Coils, AC1) 0AS

Frame	Catalog No						
Size	24V AC	120V AC	208V AC	220/240V AC	277V AC	480V AC	600V AC
3TB40-44	3TY7403-0AC2	3TY7403-0AK6	3TY7403-0AM1	3TY7403-0AP6	3TY7403-0AU1	3TY7403-0AV0	3TY7403-
3TB47-48	3TY6483-0AC1	3TY6483-0AK6	3TY6483-0AM1	3TY6483-0AP6	3TY6483-0AP0	3TY6483-0AV0	3TY6483-
3TB52	_	3TY6523-0AK6	3TY6523-0AM1	3TY6523-0AP6	3TY6523-0AP0	3TY6523-0AV0	
3TB56	_	_	_	_	3TY6566-0AP0	3TY6566-0AV0	3TY6566-0AS0

Coils, DC

3TY6463-0AK6



Frame	Catalog No						
Size	12V DC	24V DC	42V DC	48V DC	110V DC	125V DC	240V DC
3TB40-43	3TY4803-0BA4	3TY4803-0BB4	3TY4803-0BD4	3TY4803-0BW4	3TY4803-0BF4	3TY4803-0BG4	3TY4803-0BQ4
3TB44	3TY6443-0BA4	3TY6443-0BB4	3TY6443-0BD4	3TY6443-0BW4	3TY6443-0BF4	3TY6443-0BG4	3TY6443-0BQ4
3TB46	_	_	3TY6463-0BD4	3TY6463-0BW4	3TY6463-0BF4	_	3TY6463-0BQ4
3TB47-48	_	3TY6483-0BB4	3TY6483-0BD4	3TY6483-0BW4	3TY6483-0BF4	3TY6483-0BG4	_
3TB50	_	3TY6503-0BB4	3TY6503-0BD4	3TY6503-0BW4	3TY6503-0BF4	3TY6503-0BG4	3TY6503-0BQ4
3TB52	_	3TY6523-0BB4	3TY6523-0BD4	_	3TY6523-0BF4	3TY6523-0BG4	_
3TB54	_	3TY6543-0BB4	3TY6543-0BD4	3TY6543-0BW4	3TY6543-0BF4	_	3TY6543-0BQ4
3TB56	_	3TY6563-0BB4	3TY6563-0BD4	_	3TY6563-0BF4	3TY6563-0BG4	3TY6563-0BQ4
3TB58	_	_	_	_	_	_	_

3TY6483-0BB4

Main Contacts	(Includes 3 Moving and	d 6 Fixed Conta	acts) ²⁾
	Frame Size	Catalog No	
	3TB40-43	Not Replaceable	
	3TB44	3TY6440-0A	
· 40	3TB46	3TY6460-0A	
· 000	3TB47	3TY6470-0A	
	3TB48	3TY6480-0A	
	3TB50	3TY6500-0A	
(0 0 0	3TB52	3TY6520-0A	
	3TB54	3TY6540-0A	
	3TB56	3TY6560-0A	
3TY6500-0A	3TB58	3TY6580-0A	

Select Complete Catalog Number From Above 1)			
Old Number	New Number		
3TY6465-0A††	3TY6463-0A††		
3TY6485-0A††	3TY6483-0A††		
3TY6505-0A††	3TY6503-0A††		
3TY6525-0A††	3TY6523-0A††		
3TY6545-0A††	3TY6543-0A††		
3TY6565-0A††	3TY6566-0A††		

Coil Voltages					
Old Number	New Number				
A8	K6				
B8	M1				
C8	P6				
D8	Ω0				
E8	SO				
F8	C1				
G8	PO				

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

1)Some old 3TB coil catalog numbers have been superceded. Cross to current catalog number from these tables. 2)Main contact kits for size 3TB47 and larger include springs. Smaller sizes do not.

3TF World Series Contactors

Spare parts



Coils, AC Type 3TF and CRL†F





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3TY7483-0AK6

	Catalog No						
Frame Size	24V AC, 60Hz 24V AC, 50Hz	120V AC, 60Hz 110V AC, 50Hz	208V AC, 60Hz 173V AC, 50Hz	240V AC, 60Hz 220V AC, 50Hz	277V AC, 60Hz 220V AC, 50Hz	460V AC, 60Hz 380V AC, 50Hz	600V AC, 60Hz 500V AC, 50Hz
3TF40-43	3TY7403-0AC2	3TY7403-0AK6	3TY7403-0AM1	3TY7403-0AP6	3TY7403-0AU1	3TY7403-0AV0	3TY7403-0AS0
3TF34-35, 3TF44-45	3TY7443-0AC2	3TY7443-0AK6	3TY7443-0AM1	3TY7443-0AP6	3TY7443-0AU1	3TY7443-0AV0	3TY7443-0AS0
3TF46-47	3TY7463-0AC2	3TY7463-0AK6	3TY7463-0AM1	3TY7463-0AP6	3TY7463-0AU1	3TY7463-0AV0	3TY7463-0AS0
3TF48-49	3TY7483-0AC2	3TY7483-0AK6	3TY7483-0AM1	3TY7483-0AP6	3TY7483-0AU1	3TY7483-0AV0	3TY7483-0AS0
3TF50-51	3TY7503-0AC2	3TY7503-0AK6	3TY7503-0AM1	3TY7503-0AP6	3TY7503-0AU1	3TY7503-0AV0	3TY7503-0AS0
3TF52-53	3TY7523-0AC2	3TY7523-0AK6	3TY7523-0AM1	3TY7523-0AP6	3TY7523-0AU1	3TY7523-0AV0	3TY7523-0AS0
3TF54-55	3TY7543-0AC2	3TY7543-0AK6	3TY7543-0AM1	3TY7543-0AP6	3TY7543-0AU1	3TY7543-0AV0	3TY7543-0AS0
3TF56	3TY7563-0AC2	3TY7563-0AK6	3TY7563-0AM1	3TY7563-0AP6	3TY7563-0AU1	3TY7563-0AV0	3TY7563-0AS0
3TF57	_	3TY7573-0CF7	_	3TY7573-0CM7	_	3TY7573-0CQ7	_
3TF68	_	3TY7683-0CF7	_	3TY7683-0CM7	_	3TY7683-0CQ7	3TY7683-0CS7
3TF69	_	3TY7693-0CF7	_	3TY7693-0CM7	_	3TY7693-0CQ7	3TY7693-0CS7

Coils, DC Type 3TF and CRLt



3TY4803-0BB4

and Chlir								
Frame	Catalog No							
Size	12V DC	24V DC	42V DC	48V DC	110V DC	125V DC	240V DC	
DC Solenoid								
3TF30-33 3TF40-43	3TY4803-0BA4	3TY4803-0BB4	3TY4803-0BD4	3TY4803-0BW4	3TY4803-0BF4	3TY4803-0BG4	3TY4803-0BQ4	
3TF34-35, 3TF44-45	3TY7443-0BA4	3TY7443-0BB4	3TY7443-0BD4	3TY7443-0BW4	3TY7443-0BF4	3TY7443-0BG4	_	
3TF46-47	_	3TY7463-0BB4	3TY7463-0BD4	3TY7463-0BW4	_	3TY7463-0BG4	3TY7463-0BQ4	
DC Economy Circ	uit (Replacement o	oils only. Does no	t include interlock	or interposing rela	ıy.)			
3TF46-47	_	3TY7463-0DB4	3TY7463-0DD4	3TY7463-0DW4	3TY7463-0DF4	3TY7463-0DG4	3TY7463-0DQ4	
3TF48-49	_	_	3TY7483-0DD4	3TY7483-0DW4	3TY7483-0DF4	3TY7483-0DG4	3TY7483-0DQ4	
3TF50-51	_	3TY7503-0DB4	3TY7503-0DD4	3TY7503-0DW4	3TY7503-0DF4	3TY7503-0DG4	3TY7503-0DQ4	
3TF52-53	_	3TY7523-0DB4	3TY7523-0DD4	3TY7523-0DW4	3TY7523-0DF4	3TY7523-0DG4	3TY7523-0DQ4	
3TF54-55	_	_	3TY7543-0DD4	3TY7543-0DW4	3TY7543-0DF4	3TY7543-0DG4	3TY7543-0DQ4	
3TF56	_	3TY7563-0DB4	3TY7563-0DD4	3TY7563-0DW4	_	3TY7563-0DG4	3TY7563-0DQ4	
3TF57	_	3TY7573-0DB4	3TY7573-0DD4	3TY7573-0DW4	3TY7573-0DF4	3TY7573-0DG4	3TY7573-0DQ4	
3TF68	_	3TY7683-0DB4	_	_	3TY7683-0DF4	_	_	

Main Contacts (Includes 3 Moving and 6 Fixed Contacts)





3TY7460-0A

Fluuca a Iviovii	ig ana o i ixca o	Unita Gto/
Frame Size	Catalog No	List Price \$
3TF30-35	Not Replaceable	
3TF40-43	Not Replaceable	
3TF44	3TY7440-0A	
3TF45	3TY7450-0A	
3TF46	3TY7460-0A	
3TF47	3TY7470-0A	
3TF48	3TY7480-0A	
3TF49	3TY7490-0A	
3TF50	3TY7500-0A	
3TF51	3TY7510-0A	
3TF52	3TY7520-0A	
3TF53	3TY7530-0A	
3TF54	3TY7540-0A	
3TF55	3TY7550-0A	
3TF56	3TY7560-0A	
3TF57	3TY7570-0A	
3TF68	3TY7680-0B1)	
3TF69	3TY7690-0B1)	





3TY7482-0A

Frame Size	Catalog No	
3TF30-35	Not Replaceable	
3TF40-43	Not Replaceable	
3TF44	3TY7442-0A	
3TF45	3TY7452-0A	
3TF46	3TY7462-0A	
3TF47	3TY7472-0A	
3TF48	3TY7482-0A	
3TF50	3TY7502-0A	
3TF51	3TY7512-0A	
3TF52	3TY7522-0A	
3TF53	3TY7532-0A	
3TF54	3TY7542-0A	
3TF55	3TY7552-0A	
3TF56	3TY7562-0A	
3TF57	3TY7572-0A	
3TF68	Not Available	
3TF69	Not Available	

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page. 1) Vacuum bottles with mounting hardware.

3TF Contactors and 3TH Control Relays



Spare parts

Auxiliary Contact Bl	ocks									
Illustration	Frame Size	Auxiliary (Contacts NC	_NO/Early Make	NC/Early Break	Auxiliary Contact Mounting Position	Position	Block Location	Obsolete Catalog No	Current Catalog
		1	-	_	_		_	Тор	_	3TX4010-2A
	3TF30 to 3TF35,	_	1	_	_		_	Top	_	3TX4001-2A
A STATE OF THE PARTY OF THE PAR	3TH3	_		1	_		_	Top	_	3TX4010-4A
A PORT	งเทง	_		_	1	000	_	Top	_	3TX4001-4A
	3TF40 to 3TF43	Not Replac	eable							
1 1 1	3TF44 to 3TF68	1	1	_	_	3 1 2 4	1	Left	3TY7561-1A	3TY7561-1AA00
1000		1	1	_	_		2	Right	3TY7561-1B	3TY7561-1AA00
17, 18		1	_	_	1	_	4	Right	3TY7561-1K	3TY7561-1EA00
	3TF46 to 3TF68	1	1	_	_	0 0 0	3	Left	3TY7561-1K	3TY7561-1KA00
3TY7561-1A	2nd Aux Contact Block	1	1	_	_	_	4	Right	3TY7561-1L	3TY75611KA00
	3TF46 to 3TF68	1	1	_	_	_	3	Left	3TY7561-1U	3TY7561-1UA00
	For Electronic Circuits	1	1	_	_		4	Right	3TY7561-1V	3TY7561-1UA00

(3					
Frame Size	Catalog No	List Price \$	Frame Size	Catalog No	
3TF42-43, 3TB42-43	24177000906		3TF44-54	3TX7466-1A	

3TX7466-1A

Туре	Frame Size	Catalog No	List Price \$
	3TB40-43	Not Replaceable	
	3TB44	_	
3TB	3TB46	_	
	3TB47	_	
	3TB48	3TY6482-0A	

Frame Size	Catalog No	
3TB50	3TY6502-0A	
3TB52	3TY6522-0A	
3TB54	3TY6542-0A	
3TB56	3TY6562-0A	
3TB58	_	

3TY7403-0AK6

Туре	Frame Size
3TH	3TH30-33 3TH40-43

0,0	1111 00110, 710							
	Frame	Catalog No						
	Size	24V AC	120V AC	208V AC	220/240V AC	277V AC	480V AC	600V AC
	3TH30-33 3TH40-43	3TY7403-0AC2	3TY7403-0AK6	3TY7403-0AM1	3TY7403-0AP6	3TY7403-0AU1	3TY7403-0AV0	3TY7403-0AS0

Coils, I	Coils, DC											
	Frame	Catalog No										
Type	Size	12V DC	24V DC	42V DC	48V DC	110V DC	125V DC	240V DC				
ЗТН	3TH30-33 3TH40-43	3TY4803-0BA4	3TY4803-0BB4	3TY4803-0BD4	3TY4803-0BW4	3TY4803-0BF4	3TY4803-0BG4	3TY4803-0BQ4				

Auxiliary Contact Blocks')												
	Frame	Auxiliary	Contacts	Normally Open/	Normally Closed/							
Type	Size	NO	NC	Early Make	Late Break	Block Location	Catalog No					
		1	_	_	_	Тор	3TX4010-2A					
3TH	3TH3	_	1	_	_	Тор	3TX4001-2A					
этп	этпэ	_	_	1	_	Тор	3TX4010-4A					
		_	_	_	1	Ton	3TX4001-4A					

Control	nelays, Typi	e sino colis, A	U										
	Frame	Catalog No	alog No										
Type	Size	24V AC	120V AC	208V AC	220/240V AC	277V AC	480V AC	600V AC					
3TH	3TH80-83	3TY7403-0AC2	3TY7403-0AK6	3TY7403-0AM1	3TY7403-0AP6	3TY7403-0AU1	3TY7403-0AV0	3TY7403-0AS0					
Coils, D	C												
	Frame	Catalog No											
Type	Size	12V AC	24V AC	42V AC	48V AC	110V AC	125V AC	240V AC					

Due to the mature nature of some product series, supply cannot be guaranteed on all versions listed on this page.

3TY4803-0BB4

1) Maximum 4 blocks per relay.

3TY4803-0BW4

3TY4803-0BF4

3TY4803-0BG4

Contactors for Switching Motors

3RT contactors, 3-pole, sizes S00 to S3



IEC 60 947, EN 60 947 (VDE 0660), UL 508

Design

The 3RT contactors are suitable for use in any climate. They are safe from touch to DIN VDE 0106 Part 100.

The 3RT contactors are available screw, spring-type, or ring lug connections.

An auxiliary contact is integrated in the basic unit of size S00 contactors. The basic units of sizes S0 to S3 only contain the main conducting paths.

All the basic units can be extended with auxiliary switch blocks. Cabinet units with 2 NO + 2 NC (terminal designations acc. to EN 50 012) are available as of size S0; the auxiliary switch block is removable.

The size S3 contactors have removable box terminals for the main conductor connections. Ring cable lugs or bars can thus also be connected.

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of 3RT contactors and 3RH contactor relays should be used to ensure good contact stability.

These auxiliary contacts are suitable for electronic circuits with currents ≥ 1 mA at a voltage of 17 V.

Short-circuit protection of contactors

For the short-circuit protection of contactors without an overload relay, see the technical data

For the short-circuit protection of contactors with an overload relay, see section 3.

Motor protection

3RU overload relays can be mounted onto the 3RT contactors for protection against overloads. The overload relays must be ordered separately (see section 3).

Surge suppression

The 3RT contactors can be retrofitted with RC elements, varistors, diodes or diode assemblies (combination of an interference suppression diode and a Zener diode for short tripping times) for suppressing opening surges in the coil.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snapon auxiliary switch block.

With all size S0 to S3 contactors, varistors and RC elements can be plugged on directly at the coil terminals, either on the top or underneath. Diode assemblies are available in two different designs with different polarities. Depending on the application, they can be attached either only on the bottom (assembly with circuitbreaker) or only on the top (assembly with overload relay).

The plug-in direction of the diodes and diode assemblies is determined by a coding device. Exceptions: 3RT29 26-1E.00 and 3RT19 36-1T.00; in these cases the plug-in direction is identified by "+" and "-".

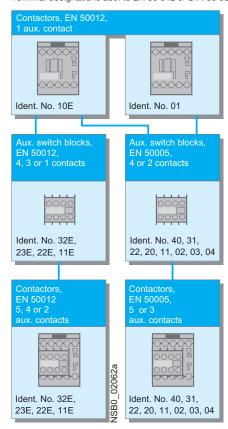
Coupling relays are supplied either without surge suppression or with a varistor or diode connected as standard, according to the design.

Note

The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (interference suppression diode 6 to 10 times; diode assemblies 2 to 6 times; varistor +2 ms to 5 ms).

3RT20 1. contactors (size S00),

Terminal designations acc. to EN 50 012 or DIN 50 005



Auxiliary switch blocks

The 3RT basic units can be extended with various auxiliary switch blocks, depending on the application:

Size S00 (3RT201)

Contactors with one NO contact as the auxiliary contact and with either screw or spring-type connections, identification number 10E, can be extended to obtain contactors with 2, 4 or 5 auxiliary contacts in accordance with EN 50 012 using auxiliary switch blocks. The identification numbers 11E, 22E, 23E and 32E on the auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks cannot be combined with contactors that have an NC contact in their basic unit, identification number 01, as these are coded.

All size S00 contactors with one auxiliary contact, identification number 10E or 01, and the contactors with 4 main contacts can be extended to obtain contactors with 3 or 5 auxiliary contacts (contactors with 4 main contacts: 2 or 4 auxiliary contacts) according to EN 50 005 using auxiliary switch blocks

with identification numbers 40 to 02. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary contacts.

Single or 2-pole auxiliary switch blocks that can be connected on either the top or the bottom facilitate quick, straightforward wiring, especially when assembling feeders. These auxiliary switch blocks are only available with screw-type terminals.

The solid-state compatible 3RH29 11-1NF. auxiliary switch blocks for size S00 contactors contain two enclosed contact elements. They are ideal for switching low voltages and currents (hard gold-plated contacts) or for use in dusty atmosphere. The contacts do not have positively-driven operation

All the above-mentioned auxiliary switch variants can be snapped into the location holes on the front of the contactors. The auxiliary switch block has a centrally positioned release lever for disassembly.



Contactors for Switching Motors

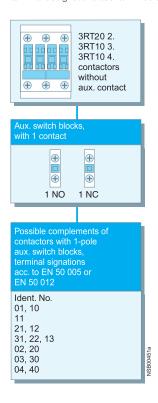
Contactors for Switching Motors

3RT1/2 contactors, 3-pole, sizes S00 to S3



3RT20 2. to 3RT10 4. contactors (sizes S0 to S3), single-pole auxiliary switch blocks,

terminal designations acc. to EN 50 005 or EN 50 012.



Sizes S0 to S3 (3RT202 to 3RT104)

An extensive range of auxiliary switch blocks is available for various applications. The contactors themselves do not have an integrated auxiliary conducting path.

The auxiliary switch variants are identical for all size S0 to S3 contactors.

One 4-pole or up to four singlepole auxiliary switch blocks (with screw or spring-type connections) can be snapped onto the front of the contactors. When the contactors are energized, the NC contacts open before the NO contacts close.

The terminal designations of the single-pole auxiliary switch blocks consist of location digits on the basic unit and function digits on the auxiliary switch blocks.

In addition, 2-pole auxiliary switch blocks (screw-type terminals) are provided for cable entries from above or below in the style of a four-connector block (feeder auxiliary switch).

If the available installation depth is restricted, 2-pole auxiliary switch blocks (screw or spring-type connections) can be mounted laterally on the left or right

The auxiliary switch blocks designed for mounting onto the front can be disassembled with the aid of a centrally positioned release lever; the laterally mountable auxiliary switch blocks can be removed easily by pressing on the fluted grips.

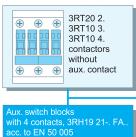
The terminal designations of the individual auxiliary switch blocks comply with EN 50 005 or EN 50 012, while those of the complete contactors with an auxiliary switch block with 2 NO + 2 NC comply with EN 50 012.

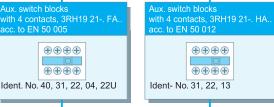
The laterally mountable auxiliary switch blocks to EN 50 012 can only be used if no 4-pole auxiliary switch blocks are snapped onto the front. If single-pole auxiliary switch blocks are used in addition, the location digits on the contactor must be noted.

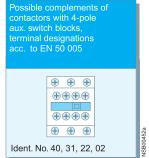
Two enclosed contact elements and two standard contact elements are available for the 3RH29 21-.FE22 solid-state compatible auxiliary switch block mountable on the front. The laterally mountable 3RH29 21-2DE11 solid-state compatible auxiliary switch block contains 2 enclosed contact elements (1 NO + 1 NC). The enclosed contact elements are ideal for switching low voltages and currents (hard goldplated contacts) or for use in a dusty atmosphere. The contacts are positively driven.

3RT20 2. to 3RT10 4. contactors (sizes S0 to S3), single-pole auxiliary switch blocks,

terminal designations acc. to EN 50 005 or EN 50 012.









Sizes S0 and S2 (3RT202 and 3RT103)

Up to four auxiliary contacts can be mounted, whereby any design of the auxiliary switch blocks is permitted. If two 2-pole, laterally mounted, auxiliary switch blocks are used, one must be mounted on the left and one on the right for the sake of symmetry.

Under certain circumstances, more auxiliary contacts are allowed for size S2 (please ask for details).

With regard to 3RT13/23 and 3RT15/25 4-pole contactors, please refer to pages 2/12 to 2/14.

Sizes S3 to S12 (3RT104 to 3RT107)

Up to eight auxiliary contacts can be mounted, whereby the following points must be noted:

- Of these eight auxiliary contacts, no more than four must be NC contacts.
- If laterally mounted auxiliary switch blocks are used, they must be symmetrical.

With regard to 3RT13 and 3RT15 4-pole contactors, please refer to pages 2/11 to 2/13.

Contactors for Switching Motors

3RT1 contactors, 3-pole, sizes S6 to S12



Overview

Design

- 3RT10 contactors for switching motors
- 3RT12 vacuum contactors for switching motors
- 3RT14 contactors for AC-1 applications

Operating mechanism

Two types of solenoid-operated mechanism are available:

- Conventional operating mechanism
- Solid-state operating mechanism (with 3 performance levels)

UC operation

The contactors can be AC (40 to 60 Hz) and DC driven.

Withdrawable coils

To allow easy coil changing, for example if the application is changed, the magnetic coil can be pulled out upwards without tools after the release mechanism has been actuated, and can be replaced by any other required coil of the same size.

Auxiliary contact complement

The contactors can be equipped with a maximum of 8 auxiliary contacts, with identical auxiliary switch blocks from S0 to S12. Of these, no more than 4 are permitted to be NC contacts.

- 3RT10 and 3RT14 contactors: auxiliary contacts mounted laterally and on front
- 3RT12 vacuum contactors: auxiliary contact mounted laterally

Contactors with conventional operating mechanism

3RT1...-.A:

The magnetic coil is switched on and off directly with the control supply voltage $U_{\rm s}$ via terminals A1/A2.

Multi-voltage range for the control supply voltage U_s : Several closely adjacent control supply voltages, available around the world, are covered by just one coil, for example UC 110-115-120-127 V or UC 220-230-240 V.

In addition, allowance is also made for a coil voltage tolerance of 0.8 times the lower rated control supply voltage ($U_{\rm s\,min}$) and 1.1 times the upper rated control supply voltage ($U_{\rm s\,max}$), within which the

contactor switches reliably and no thermal overloading occurs.

Contactors with solid-state operating mechanism

The power required for reliable switching and holding is supplied selectively to the magnetic coil by series-connected control electronics.

Features:

• Extended voltage range for the control supply voltage U_s :

Compared with the conventional operating mechanism, the solid-state operating mechanism covers an even broader range of globally available control supply voltages within one coil variant. For example, the globally available voltages 200-208-220-230-240-254-277 V are covered with the coil for UC 200 to 277 V ($U_{\rm s\,min}$ to $U_{\rm s\,max}$).

 Extended coil voltage tolerance 0.7 to 1.25 x U_s:

On account of the broad range for the rated control supply voltage and the additionally allowed coil voltage tolerance of 0.8 × $U_{\rm s\,max}$, an extended coil voltage tolerance of at least 0.7 to 1.25 × $U_{\rm s}$, within which the contactors will operate reliably, is available for the most common control supply voltages of 24, 110 and 230 V.

• Bridging short-time voltage dips:

Control voltage failures dipping to 0 V (at A1/A2) are bridged for up to approx. 25 ms, therefore preventing unintentional disconnection.

Defined ON and OFF thresholds:

As of voltages $\geq 0.8 \times U_{\rm s min}$ the electronics reliably switch the contactor on and as of \leq 0.5 \times $U_{\rm s\,min}$ it is reliably switched off. The differential travel in the switching thresholds prevents chattering of the main contacts and hence increased wear or welding when operated in weak, unstable networks. Similarly, thermal overloading of the contactor coil is prevented if the voltage applied is too low the contactor is not switched on and is operated with overexcitation.

Low control power consumption when closing and in closed state.

Electromagnetic compatibility (EMC)

The contactors with solid-state operating mechanism conform to the requirements for operation in industrial plants.

Noise immunity

- Burst (IEC 61 000-4-4): 4 kV - Surge (IEC 61 000-4-5): 4 kV
- Electrostatic discharge,
- ESD (IEC 61 000-4-2): 8/15 kV Electromagnetic field
- (IEC 61 000-4-3): 10 V/m Emitted interference
- Limiting value class A to EN 55 011

Note:

In connection with converters, the control cables should be installed separately from the load cables to the converter.

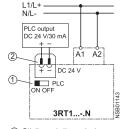
3RT1...-.N: for DC 24 V PLC output

2 control options:

 Control without an interface directly via a DC 24 V ≥ 30 mA PLC output (EN 61 131-2). Connection via a 2-pole plug-in connection; the connector, using screwless spring-force technology, is included in the scope of supply. The control supply voltage for supplying power to the solenoid operating mechanism must be connected to A1/A2.

Note:

Before start-up, the slidingdolly switch for PLC operation must be moved to the "PLC ON" position (setting ex works: "PLC OFF").

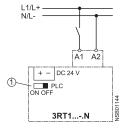


- Sliding-dolly switch, must be in PLC "ON" position
- 2 Plug-in connection, 2-pole

 Conventional control by applying the control supply voltage at A1/A2 via a switching contact.

Note:

The sliding-dolly switch must be in the "PLC OFF" position (= setting ex works).



\$ Sliding-dolly switch, must be in PLC "OFF" position

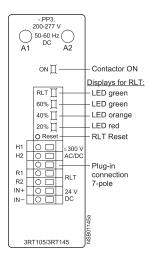
Contactors for Switching Motors

3RT1 contactors, 3-pole, sizes S6 to S12

Overview

Contactors with solid-state operating mechanism

3RT1...-.P: for DC 24 V PLC output or PLC relay output, with indication of remaining lifetime (Indication of remaining lifetime RLT: see 2/69.)



To supply power to the solenoid operating mechanism and the remaining lifetime indication, the control supply voltage U_s must be run to terminals A1/A2 of the laterally mounted electronics module. The control inputs of the contactor are brought out to a 7-pole plug-in connection; the connector, using screwless spring-force technology, is included in the scope of supply.

• The remaining lifetime RLT status signal is available at terminals R1/R2 via a floating relay contact (hard goldplated, enclosed) and can be processed for example via SIMOCODE-DP or PLC inputs or elsewhere.

Permissible current carrying capacity of relay output R1/

- I_e/AC-15/24 to 230 V: 3 A
- I DC-13/24 V: 1 A

LED indicators

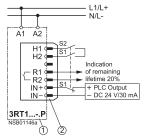
The following statuses are indicated by LEDs on the laterally mounted electronics module:

- Contactor ON (energized state):
- Green LED ("ON")

 Indication of remaining lifetime (see 2/69)

2 control options:

• Contactor control without an interface directly via a DC 24 V /≥ 30 mA PLC output (EN 61 131-2) via terminals IN+/IN-.



Electronics module of 3RT1 ...-.P contactor

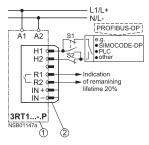
- Plug-in connection, 7-pole Changeover switch from automatic control via PLC semiconductor output to local
- S2 Local control option

Possibility of switching from automatic control to local control via terminals H1/H2, i.e. automatic control via a PLC or SIMOCODE-DP/PROFIBUS-DP can be deactivated, for example during start-up or in the event of a fault, and the contactor can be controlled manually.

- Contactor control via relay outputs, e.g. by - Pi C
- SIMOCODE-DP 3UF5 via terminals H1/H2. Contact loading:

U_s/approx. 5 mA

When operated via SIMO-CODE-DP, a communication link to PROFIBUS-DP is also provided.



Electronics module of 3RT1 .-.P contactor

Plug-in connection, 7-pole

- Changeover switch from automatic control, e.g. via SIMOCODE-DP or PLC relay output to local control
- S2 Local control option

3RT12 vacuum contactors

In contrast with the 3RT10 contactors - the main contacts operate in air under atmospheric conditions - the contact gaps of the 3RT12 vacuum contactors are contained in hermetically enclosed vacuum contact tubes. Neither arcs nor arcing gases are produced. The particular benefit of 3RT12 vacuum contactors, however, is that their electrical endurance is at least twice as long as that of 3RT10 contactors.

They are therefore particularly well suited to frequent switching in jogging/mixed operation, for example in crane control systems.

Advantages:

- Very long electrical endurance
- High short-time current-carrying capacity for heavy starting
- No open arcs, no arcing gases, i.e. no minimum clearances from earthed parts required either
- Longer maintenance intervals
- Increased plant availability

Notes on operation:

Switching motors with rated operational voltages U > 500 V:

In order to damp overvoltages and protect the motor winding insulation against multiple reignition when switching off three-phase motors, it is recommended to fit the contactors on the outgoing side (T1/T2/T3) with the 3RT19 66-1PV. surge suppression module - RC varistor - (accessory).

This additional equipment is not required for operation in circuits with converters. It might be damaged by the voltage peaks and harmonics generated.

Switching DC voltage: Vacuum contactors are basically unsuitable for switching DC voltage.

Contactor Assemblies for Switching Motors

Contactor assemblies for WYE-delta starting



Overview

The contactor assemblies for star-delta starting can be ordered as follows:

- Sizes S00-S0 as assemblies. (see pages 2/47-2/48)
- Sizes S2-S12 as components for customer assembly

Calculated horsepower ratings at 460 V AC			Size			Accessories for customer assembly	
	Operat. current I _e A	Motor current A		Line/delta contactor	WYE contactor	Time-delay relay	Installation kit A double infeed
30	50	9.5 13.8 12.1 17.2 15.5 21.5 19 27.6 24.1 34 31 43 37.9 55.2	S2-S2-S0	3RT10 34	3RT20 26	3RP15 74-1N.30	3RA19 33-2C3)
	00	48.3 65	00.00.00	3RT19 35	0DT40.04		ODA 40 00 OD 2)
50 60	80 86	62.1 77.8 69 86	S2-S2-S2	3RT10 36	3RT10 34		3RA19 33-2B ³)
	115	31 43.1 37.9 55.2 48.3 69 62.1 77.6 77.6 108.6 98.3 129.3	S3-S3-S2	3RT10 44 3RT10 45	3RT10 35	3RP15 74-1N.30	3RA19 43-2C3)
100	130	120.7 150		311110 43	311110 30		
150 190	160 195 230 280	86 160 86 195 86 230 86 280	S6-S6-S3	3RT10 54 3RT10 55 3RT10 56	3RT10 44 3RT10 45 3RT10 46	3RP15 74-1N.30	
	350 430	95 350 95 430	S10-S10-S6	3RT10 64 3RT10 65	3RT10 54 3RT10 56	3RP15 74-1N.30	
	540 610	347 540 347 610	S12-S12-S10	3RT10 75	3RT10 64	3RP15 74-1N.30	
500	690	347 690			3RT10 65		
650	850	347 850		3RT10 76	3RT10 66		

For accessories, see page 2/83. For circuit diagrams, see page 2/200.

The installation kit contains mechanical interlock; 3 connecting clips; wiring connectors on the top (connection between line contactor and delta contactor) and the bottom (connection between delta contactor and star contactor); WYE jumper.

²⁾ The installation kit contains 5 connecting clips; wiring connectors on the top (connection between line contactor and delta contactor) and the bottom (connection between delta contactor and WYE contactor); star jumper.

Contactor Assemblies for Switching Motors

Contactor assemblies for WYE-delta starting

			Overload relay, the	Overload relay, thermal		Overload relay, solid-state	
Installation kit for single infe		Baseplates	Range of overload relay, thermal [A]	Order No. overload relay, thermal	Range of overload relay, solid-state [A]	Order No. overload relay, solid-state	
3RA19 33-3D	,	3RA19 32-2E	5.5 8 7 10 9 12.5 11 16 14 20 18 25 22 32 28 40	3RU11 36-1HB0 3RU11 36-1JB0 3RU11 36-1KB0 3RU11 36-4AB0 3RU11 36-4BB0 3RU11 36-4BB0 3RU11 36-4EB0 3RU11 36-4FB0	6 25 13 50	- 3RB20 36-1QB0 3RB20 36-1UB0	
	3RT19 36-4BA31	3RA19 32-2F	36 45 40 50	3RU11 36-4GB0 3RU11 36-4HB0			
3RA19 43-3D	⁴) 3RT19 36-4BA31	3RA19 42-2E	18 25 22 32 28 40 36 45 45 63 57 75 70 90	3RU11 46-4DB0 3RU11 46-4EB0 3RU11 46-4FB0 3RU11 46-4HB0 3RU11 46-4JB0 3RU11 46-4LB0 3RU11 46-4LB0	13 50 25 100	3RB20 46-1UB0 3RB20 46-1EB0	
3RA19 53-3D	⁵) 3RT19 46-4BA31	3RA19 52-2E	-	-	50 200	3RB20 56-1FG0	

³⁾ Installation kit contains wiring connector on the bottom (connection between delta contactor and WYE contactor) and WYE jumper.

Wiring connector on top from reversing contactor assembly (note conductor cross-sections).

⁵⁾ A mechanical interlock adapter, 3RA1954-2C, is required to use the standard 3RA1954-2A mechanical interlock for the AC version of the S6-S6-S3 WYE-Delta starter. The S6-S6-S3 WYE-Delta DC version would require a special custom build spacer, which is not manufac-

tured, to allow the mechanical interlock to operate.

⁶⁾ Only use wiring connector on the top from reversing contactor assembly (note conductor cross-sections); order WYE jumper in addition.

Contactor Assemblies for Switching Motors

Contactor assemblies for WYE-delta starting



WYE-delta starting can only be used either if the motor normally operates in a Δ (delta) connection or starts softly or if the load torque during Υ starting is low and does not increase sharply. On the Υ step the motors can carry approximately 50% (class KL 16) or 30% (class KL 10) of their rated torque; the starting torque is approximately $1/_3$ of that during direct on-line starting. The starting current is approximately 2 to 2.7 times the rated motor current.

The changeover from
↑ to Δ must not be effected until the motor has run up to rated speed. Drives which require this changeover to be performed earlier are unsuitable for WYEdelta starting.

The ratings given in the above table are only applicable to motors with a starting current ratio of $I_{\rm A} \le 8.4 \times I_{\rm N}$ and using either a 3RT19 16-2G or 3RT19 26-2G solid-state time-delay auxiliary switch block with a WYE-delta function or a 3RP1574 WYE-delta time-delay relay with a dead interval of approximately 50 ms on reversing.

For the circuit diagrams for the main and control circuits, see page 2/161. The size selected for the installation kits for WYEdelta starting is determined by the line contactor.

Design

Components for customer assembly

Installation kits with wiring connectors and, if necessary, mechanical connectors are available for contactor assemblies for WYE-delta starting. Contactors, overload relays, star-delta time-delay relays and auxiliary switches for the electrical interlock – if required also feeder terminals, mechanical interlocks ¹) and baseplates – must be ordered separately.

The wiring installation kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta contactors (top) and between the delta and WYE contactors (bottom).

In the case of sizes S2 to S12 only the bottom main conducting path connection between the delta and WYE contactors is included in the wiring connector, owing to the larger conductor cross-section at the infeed.



Motor protection

Overload relays or thermistor motor protection tripping units can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Surge suppression

Sizes S00 to S3

All contactor assemblies can be fitted with RC elements, varistors or diode assemblies for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the top of the contactors (S00) or fitted onto the coil terminals on the top or bottom (S0 to S3).

Sizes S6 to S12

The contactors are fitted with varistors as standard

1) Exception:

The mechanical interlock between the delta and WYE contactors is included in the installation kit for size S00 contactor assemblies.

Contactor Assemblies for Switching Motors

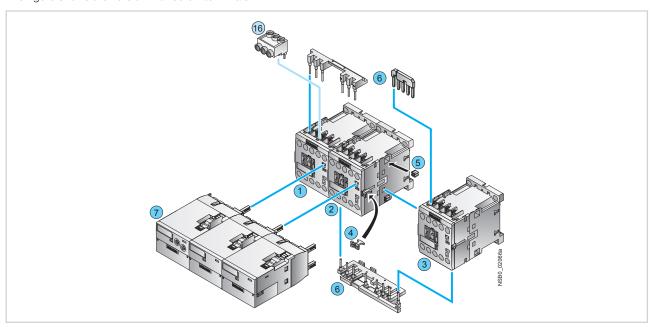


Contactor assemblies for WYE-delta starting

Selection and ordering data

Fully wired and tested contactor assemblies \cdot Size S00-S00-S00 \cdot Up to 11 kW

The figure shows the version with screw terminals



Mountable accessories				
Individual parts	Order No.	Page		
(6) Three-phase feeder terminal ³⁾	3RA29 13-3K	2/83		

Individual parts		Order No.			Page
	•	Q11 ¹⁾	Q13 ²⁾	Q12 ²⁾	
123	Contactor, 5.5 kW	3RT20 15	3RT20 15	3RT20 15	2/8
123	Contactor, 7.5 kW	3RT20 17	3RT20 17	3RT20 15	2/8
123	Contactor, 11 kW	3RT20 18	3RT20 18	3RT20 16	2/8
456	Assembly kit comprising	3RA29 13-2	2BB1		2/83
	Mechanical interloc	ck			
	4 connecting clips				
	6 Wiring modules on for connecting the				
7	Function modules for wye-delta starting	3RA28 16-0	DEW20		2/27



²⁾ Use version with 1 NC.

Note:

When the function modules for contactor assemblies for wyedelta starting are used, no other auxiliary switches are allowed to be mounted on the basic units.

³⁾ Part 6 can only be mounted with contactors with screw terminal.

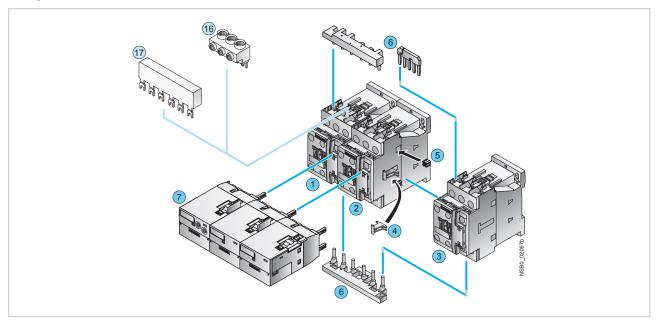
Contactor Assemblies for Switching Motors

Contactor assemblies for WYE-delta starting



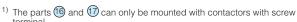
Fully wired and tested contactor assemblies \cdot Size S0-S0-S0 \cdot Up to 22 kW

The figure shows the version with screw terminals



Mountable accessories						
Individual parts	Order No.	Page				
 Three-phase feeder terminal¹⁾ Three-phase busbar¹⁾ 	3RV29 25-5AB 3RV19 15-1AB	2/83 1/8				

Fully wired and tested contactor assemblies						
Individual parts		Order No.			Page	
		Q11	Q13	Q12		
123	Contactor, 11 kW	3RT20 24	3RT20 24	3RT20 24	2/8	
123	Contactors, 15/18.5 kW	3RT20 26	3RT20 26	3RT20 24	2/8	
123	Contactor, 22 kW	3RT20 27	3RT20 27	3RT20 26	2/8	
456	Assembly kit	3RA29 23-2BB1			2/83	
	The assembly kit contains:					
	4 Mechanical interlock					
	5 Connecting clips					
	Wiring modules on the top and bottom for connecting the main current paths					
7	Function modules for wye-delta starting	3RA28 16-0	EW20		2/27	



Note:

When the function modules for contactor assemblies for wyedelta starting are used, no other auxiliary switches are allowed to be mounted on the basic units.

Contactor Assemblies for Switching Motors

Contactor assemblies for WYE-delta starting

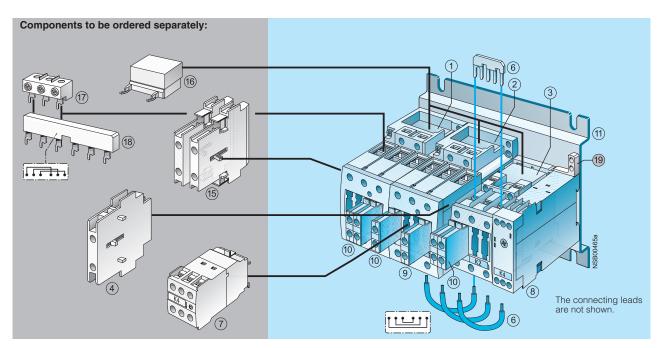
ŋ



Selection and ordering data

Size S2-S2-S0 · up to 65 A, 30 HP





Ac	cessory	Order No.	Page	Compoi	nents	Order No K1	K3	K2	Page
4	Mechanical interlock, latera depth must be adapted		2/80	123	Contactors, 50/60 A, 30 HP	3RT1034	3RT1034	3RT2026	2/8
7	K3: 1.5 mm; K2: 0 mm Solid-state time-delay auxili			8	Time-delay relay, laterally mountable	3RP1574	-1N.30		Sec. 11
15	mountable on the front Auxiliary switch block,	3RT1926-2G	2/70	9	Auxiliary switch blo NO contact	ck with one 3RH1921		ed	2/67
16	laterally mountable Surge suppressor	3RH1921-1EA 3RT1926-1	2/68 2/73	10	Auxiliary switch blo 2 units	ck for local 3RH1921			
_		3RT1936-1	2/73		3 units	3RH1921			2/67
(17)	3-phase feeder terminal	3RV1935-5A	2/83	11)	Baseplate	3RA1932			2/83
(18)	3-phase busbar	3RV1935-1A	1/8	6	Installation kit	3RA1933	-2C		2/83
19	Push-in lug ²) for time-delay relay for screw mounting	3RP1903	Sec.11		The installation kit of and the wiring jump main conducting pa	er on the b			

For overview, see page 2/110. For circuit diagrams, see page 2/200.

Not included in scope of supply of complete contactor assemblies; available as accessory.

Possible in principle.
 If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, an ordinary auxiliary switch block can only be mounted onto the side.

Contactor Assemblies for Switching Motors Contactor assemblies

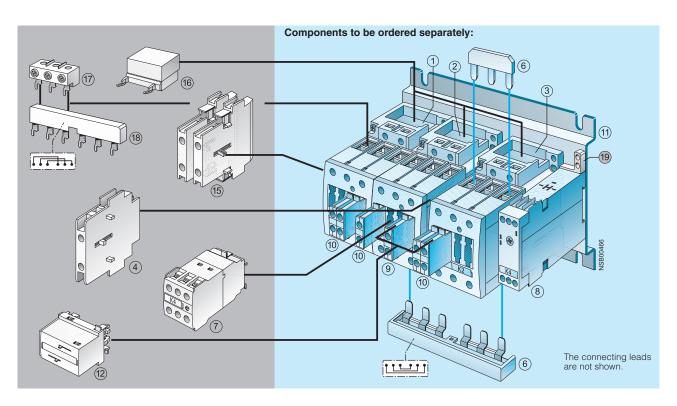
for WYE-delta starting



Selection and ordering data

Size S2-S2-S2 · up to 86 A, 60 HP





Ac	cessory	Order No.	Page	Compor	nents	Order No K1	К3	K2	Page
4 7	Mechanical interlock, latera Solid-state time-delay auxili		2/80	123	Contactors, 80 A. 50 HP	3RT10.35	3RT1035	3RT1034	2/8
a	mountable on the front	3RT1926-2G	2/70	123	Contactors,	01111000	01111000	01111001	2/0
(12)	Mechanical interlock, mountable on the front	3RA1924-1A	2/68	@	86 A, 60 HP	3RT1036	3RT1036	3RT1034	2/8
15	Auxiliary switch block, lateral	3RH1921-1EA	2/68	8	Time-delay relay, lateral	3RP1574			Sec. 11
16	Surge suppressor	3RT19 26-1 3RT19 36-1	2/73 2/73	9	Auxiliary switch bloc NO contact	3RH1921	-1CA10	ed	2/67
17)	3-phase feeder terminal	3RV1935-5A	2/83	10	Auxiliary switch bloc 2 units	ck for local 3RH1921			
(18)	3-phase busbar	3RV1935-1A	1/8		3 units	3RH1921	-1CA10		2/67
(19)	Push-in lug ²) for time-delay		0 44	1	Baseplate	3RA1932	-2F		2/83
	for screw mounting	3RP1903	Sec. 11	6	Installation kit	3RA1933	-2B		2/83
					The installation kit c the wiring jumper or conducting paths.				

For overview, see page 2/110. For circuit diagrams, see page 2/200.

¹⁾ Not included in scope of supply of complete contactor assemblies; available as accessory.

²⁾ Possible in principle. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

Contactor Assemblies for Switching Motors

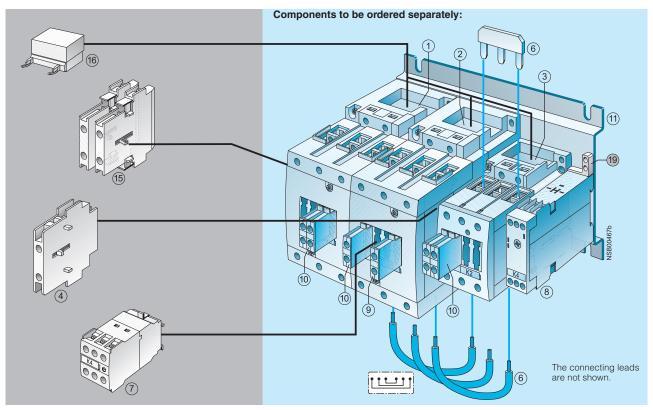
SIRIUS

Contactor assemblies for WYE-delta starting

Selection and ordering data

Size S3-S3-S2 · up to 150 A, 100 HP





Ac	cessory	Order No.	Page	Compor	nents	Order No K1	K3	K2	Page
4	Mechanical interlock, latera depth must be adapted	,		123	Contactors, 115 A. 75 HP	3RT10.44	3RT10.44	3RT1035	2/8
	K3: 0 mm; K2: 27.5 mm	3RA1924-2B	2/80	123	Contactors,	0	0	0	2/0
(7)	Solid-state time-delay auxila mountable on the front	3RT19 26-2G	2/70		150 A, 100 HP	3RT1045	3RT1045	3RT1036	2/8
(15)	Auxiliary switch block, latera	al3RH1921-1EA	2/68	8	Time-delay relay, lat	teral	3RP15 74	-1N.30	Sec. 11
(19)	Surge suppressor Push-in lug ²) for time-delay	3RT19 . 6-1	2/73	9	Auxiliary switch bloc NO contact	ck with one 3RH1921		ed	2/67
	for screw mounting	3RP1903	Sec. 11	0	Auxiliary switch bloc 2 units 3 units	ck for local 3RH1921 3RH1921	-1CA01		2/67
				11	Baseplate	3RA1942			2/83
				6	Installation kit	3RA1943			2/83
				The insta	allation kit contains th	e WYE ium	per on the	top and th	ne wir-

For overview, see page 2/110. For circuit diagrams, see page 2/200.

ing jumper on the bottom for connecting the main conducting

Not included in scope of supply of the complete contactor assemblies; available as an accessory.

Possible in principle.If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

Control Relays, Coupling Relays

3RH21 control relays, size S00 with 4 or 8 contacts



AC and DC operation

IEC 60947, EN 60947.

The 3RH2 contactor relays have screw, ring lug terminal or spring-type terminals. Four contacts are available in the basic unit.

The 3RH2 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274. The devices with ring lug terminal connection comply with degree of protection IP20 when fitted with the related terminal cover.

Contact reliability

High contact stability at low voltages and currents, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of 17 V.

Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) can be plugged onto all contactor relays from the front for damping opening surges in the coil. The plug-in direction is determined by a coding device.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Auxiliary switch blocks

The 3RH2 contactor relays can be expanded by up to four contacts by the addition of snap-on auxiliary switch blocks.

The auxiliary switch block can easily be snapped onto the front of the contactors. The auxiliary switch block has a centrally positioned release lever for disassembly.

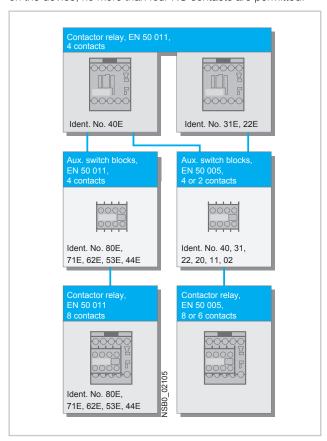
The contactor relays with 4 contacts according to EN 50011, with the identification number 40E, can be extended with 80E to 44E auxiliary switch blocks to obtain contactor relays with 8 contacts according to EN 50011. The identification numbers 80E to 44E on the auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks (3RH29 11–1GA..) cannot be combined with contactor relays with identification numbers 31E and 22E; they are coded.

All contactor relays with 4 contacts according to EN 50011, identification numbers 40E to 22E, can be extended with auxiliary switch blocks 40 to 02 to obtain contactor relays with 6 or 8 contacts in accordance with EN 50005. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary switch blocks.

In addition, fully mounted 3RH22 8-pole contactor relays are available; the mounted 4-pole auxiliary switch block in the 2nd tier is not removable. The terminal designations are according to EN 50011.

These versions are built according to special Swiss regulations SUVA and are distinguished externally by a red labeling plate.

Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted.



3RH24 latched control relays, size S00

Application

AC and DC operation

IEC 60 947, EN 60 947 (VDE 0660) The terminal designations comply with EN 50 011.

The relay coil and the coil of the release solenoid are both designed for continuous duty.

The number of auxiliary contacts can be extended by means of auxiliary switch blocks (up to 4 poles).

RC elements, varistors, diodes or diode assemblies can be plugged onto both coils from the front for damping opening surges.

The control relay can also be switched on and released manually.



3TF68 and 3TF69 vacuum contactors, 3-pole

Design

EN 60 947-4-1 (VDE 0660 Part 102).

The 3TF contactors are suitable for use in any climate. They are safe from touch according to DIN VDE 0106 Part 100. Terminal covers (see accessories) may have to be fitted onto the connecting bars, depending on the configuration with other devices.

Main contacts

Contact erosion indication with 3TF68/69 vacuum contactors

The contact erosion of the vacuum interrupters can be monitored in the closed position by means of three white double slides on the contactor base.

The vacuum interrupter must be replaced if the distance indicated by one of the double slides is less than 0.5 mm while the contactor is in the closed position.

It is advisable to replace all three interrupters in order to ensure maximum reliability.

Auxiliary contacts

The terminal designations comply with EN 50 012.

When the contactors are energized, the NC contacts open before the NO contacts close.

Contact reliability

The auxiliary contacts are extremely reliable and as such are suitable for electronic circuits

- with currents ≥ 1 mA,
- at voltages greater than 17 V.

Surge suppression

Control circuit

Protection of the coil circuits against surges:

AC operation

 fitted with varistors as standard.

DC operation

Retrofitting options:

varistors.

Electromagnetic compatibility (EMC)

3TF68/69... **C** contactors for AC operation are equipped with an electronically controlled solencid mechanism with a high level of immunity to interference (see table opposite).

Noto:

In operation in installations where it is not possible to observe the emitted interference limits, e.g. as an output contactor in static frequency changers, use of 3TF68/69...Q contactors (NS E catalogue, available in German) is recommended, without a main conductor path circuit (for further information refer also to the description below).

Contactor Type	Rated control supply voltage $U_{\rm s}$	Overvoltage type (IEC 60 801)	Severity to IEC 60 801	Surge strength
3TF68 44C, 3TF69 44C	110 V 132 V	Burst Surge	3 4	2 kV 6 kV
	200 V 276 V	Burst Surge	4 4	4 kV 5 kV
	380 V 600 V	Burst Surge	4 4	4 kV 6 kV

Circuit of the main conducting paths

An integrated RC varistor circuit in the main conducting paths of the contactors damps the rate of rise of switching overvoltages to uncritical values. Multiple restriking of the switching arcs is thereby prevented.

The operator of an installation can thus assume that the danger to the motor winding arising from switching overvoltages with a high rate of rise is ruled out.

The contactors can therefore be used without reservation for all AC switching applications, including three-phase motors with the demanding AC-4 utilization category.

Important note

The surge suppression circuit is not necessary when 3TF68/69 contactors are used in circuits with e.g. d.c. choppers, frequency converters or variable-speed drives.

It might be damaged by the voltage peaks and harmonics generated. This may also cause phase-to-phase short-circuits in the contactors

Remedy: Order the special contactor design without surge suppression. In this case the Order No. must be supplemented with "-Z" and the order code "A02". No additional charge is made.

Short-circuit protection of contactors

For assembling fuseless load feeders, please select a circuitbreaker/contactor combination according to the brochure entitled "Verbraucherabzweige in sicherungsloser Bauweise", Order No. E20001-P285-A726 (available in German only).

Accessories for 3RT / 3RH Contactors

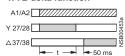
Solid-state, time-delay auxiliary switch box

The timer module, which is available in "ON-delay" and "OFF-delay" designs, allows time-delayed functions up to 100 s (3 distinct delay ranges).

It contains a relay with one NO contact and one NC contact; the relay is switched either after an ON-delay or after an OFF-delay.

The timer module with a WYE-DELTA function is equipped with one delayed and one instantaneous NO contact, with an interval time of 50 ms between the two (see diagram). The delay time of the NO contact can be set between 1.5 s and 30 s.

WYE-delta function



The contactor on which the solid-state, time-delay auxiliary switch block is mounted operates without a delay.

Size S00 (3RT201)

The solid-state, time-delay auxiliary switch block is fitted onto the front of the contactor. The timer module is supplied with power directly by plug-in contacts via the coil terminals of the contactor, in parallel with A1/A2. The time function is activated by closing the contactor on which the auxiliary switch block is mounted. The OFF-delay variant operates without an auxiliary power supply. Minimum ON period: 200 ms.

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

The solid-state, time-delay auxiliary switch block cannot be mounted on size S00 coupling relays.

Sizes S0 to S12 (3RT202 to 3RT107)

The solid-state, time-delay auxiliary switch block is fitted onto the front of the contactor.

The timer module is supplied with power via two terminals (A1/A2); the time delay of the auxiliary switch block can be activated either by a parallel link to any contactor coil or by any power source.

The OFF-delay variant operates without an auxiliary power supply. Minimum ON period: 200 ms.

A single-pole auxiliary switch block can be snapped onto the front of the contactor in addition to the timer module.

The timer module has no integrated components for damping opening surges.

Solid-state time-delay block with semiconductor output

The timer module, which is available in "ON-delay" and "OFF-delay" with auxiliary power supply designs, allows time-delayed functions up to 100 s (3 distinct delay ranges). Contactors fitted with a time-delay block close or open after a delay according to the set time

The ON-delay variant of the time-delay relay is connected in series with the contactor coil; terminal A1 of this coil must not be connected.

With the OFF-delay variant of the time-delay relay, the contactor coil is contacted directly via the relay; terminals A1 and A2 of the coil must not be connected

The time-delay relays are suitable for both AC and DC operation.

Size S00 (3RT201)

The variant for size S00 contactors is fitted onto the front of the contactor (with the supply voltage switched off) and then slid into its latched position; at the same time, the time-delay relay is connected by means of plugin contacts to coil terminals A1 and A2 of the contactor. Any contactor coil terminals which are not required are sealed off by means of covers on the enclosure of the time-delay block, to prevent them from being connected inadvertently (for circuit diagrams, see page 2/149)

A varistor is integrated in the timer module for damping opening surges in the contactor coil

The solid-state, time-delay block cannot be mounted on size S00 coupling relays.

Sizes S0 to S3 (3RT202 to 3RT107)

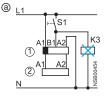
The time-delay block for size S0 to S3 contactors is plugged into coil terminals A1 and A2 on top of each contactor; the time-delay relay is connected both electrically and mechanically by means of pins.

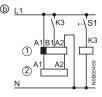
A varistor is integrated in the timer module for damping opening surges in the contactor coil

Configuration note

Activation of loads parallel to the start input is not permitted with AC operation (see ⓐ).

The 3RT19 16-2D .../3RT19 26-2D... time-delay blocks with an OFF delay have a voltage-carrying start input B1. This means that if there is a parallel load on terminal B1, activation can be simulated with AC voltage. In this case, the additional load (e. g. contactor K3) must be wired as shown in ①.





Time-delay block Contactor

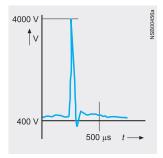
2/118

Accessories for 3RT / 3RH Contactors

3-phase EMC interference suppression module



A so-called backr-e.m.f. (electromotive force) is produced when motors or various inductive loads are turned off. Voltage peaks of up to 4 000 V may occur as a result, with a frequency spectrum from 1 kHz to 10 MHz and a rate of voltage variation from 0.1 to 20 V/ns.



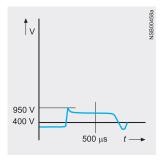
The connection between the main conducting path and the EMC interference suppression module enables contact arcing, which is responsible for contact erosion and the majority of clicking noises, to be reduced; this in turn is conducive to an electromagnetically compatible design.

Since the EMC interference suppression module achieves a significant reduction in radio-frequency components and the voltage level in three phases, the contact endurance is also improved considerably. This makes an important contribution towards enhancing the reliability and availability of the system as a whole.

There is no need for fine graduations within each performance class, as smaller motors inherently have a higher inductance, so that one solution for all fixed-speed drives up to 7.5 HP is adequate.

930 V 400 V

SIEMENS



for size S00 contactor

The advantages of the <u>RC circuit</u> lie mainly in the reduction in the rate of rise and in its RF damping ability. The selected values ensure effective interference suppression over a wide range.

500 μs

The <u>varistor circuit</u> is able to absorb high energy levels and is also suitable for frequencies from 10 to 400 Hz (variablespeed drives). There is no limiting below the knee-point voltage, however.

Two electrical variants are available:

OFF-delay device for size S00 to S3 contactors

AC and DC operation

IEC 60 947, EN 60 947

For screwing and snapping onto 35 mm standard mounting rail. The OFF-delay devices have screw connections.

Application

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies the necessary power for a seriesconnected, DC-operated contactor during a voltage dip to ensure that the

contactor does not open. The 3RT19 16/3RT29 16 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays of the SIRIUS series.

Principle of operation

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version for DC operation only). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the contactor coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF delay only applies in the event of failure of the mains voltage.

Operation

In the case of the versions for rated control supply voltages of 110 V and 230 V, either AC voltage or DC voltage can be applied on the line side, where as the variant for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output in accordance with the input voltage that is applied.

The mean value of the OFF delay is approximately 1.5 times the specified minimum time.

2/119

Accessories for 3RT Contactors

Interface for mounting on size S0 to S3 contactors



Application

DC operation

IEC 60 947 and EN 60 947

The interface is suitable for use in any climate. It is safe from touch to DIN VDE 0106 Part 100. The terminal designations conform to EN 50 005.

Functions

Design

System-compatible operation with DC 24 V, coil voltage tolerance 17 V to 30 V.

Low power consumption in conformity with the technical data of the electronic systems. A light-emitting diode indicates the circuit state.

Surge suppression

The 3RH29 24-1GP11 interface has an integrated surge suppressor (varistor) for the contactor coil being switched.

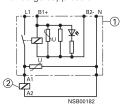
Mounting

The 3RH29 24-1GP11 interface is mounted directly on the contactor coil.

Terminal diagram

3RH19/29 24-1GP1

with surge suppression

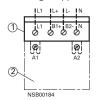


1)Interface 2)Contactor

Connection example

3RH19/29 24-1GP1

with surge suppression



1 Interface 2 Contactor

Contactor Assemblies for Switching Motors



3RT2 contactors

More information

Contactors	Type Size Width	mm	3RT2 S00 and S0 45
Rated data of the auxiliary contac	ts		
According to IEC 60947-5-1/EN 60947-5 The data apply to integrated auxiliary cor auxiliary switch blocks for contactor sizes	ntacts and contacts in the		
Rated insulation voltage \emph{U}_{i} (pollution de	egree 3)	V	690
Conventional thermal current I_{th} = Rated operational current I_e /AC-12		А	10
AC load			
Rated operational current I_e /AC-15/AC-	14		
$ullet$ For rated operational voltage U_{e}	24 V 110 V 125 V 220 V 230 V 380 V 400 V 500 V 660 V	A A A A A A A A	10 ¹⁾ 10 ¹⁾ 10 ¹⁾ 10 ¹⁾ 10 ¹⁾ 3 3 2 1 1
DC load			
Rated operational current I _e /DC-12			
• For rated operational voltage $U_{\rm e}$	24 V 60 V 110 V 125 V 220 V	A A A A	6 6 3 2
	440 V 600 V	A A	0.3 0.15
Rated operational current I _o /DC-13	000 V	/ \	0.10
• For rated operational voltage U_e	24 V 60 V 110 V 125 V 220 V 440 V	A A A A	6 2 1 0.9 0.3
Contact reliability at 17 V, 1 mA	600 V	A	0.1 Frequency of contact faults <10 ⁻⁸ i. e. <1 fault per 100 million operating
acc. to EN 60947-5-4			cycles

Endurance of the auxiliary contacts

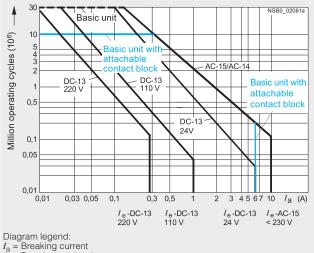
It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The contact endurance is mainly dependent on the breaking current.

- The characteristic curves apply to:

 Integrated auxiliary contacts on 3RT20

 Auxiliary switch blocks 3RH 29 11, 3RH29 21 for contactors size S00



 I_a = Breaking current I_e = Rated operational current

¹⁾ Integrated auxiliary contacts in size S0, auxiliary switches for snapping onto the front and for mounting onto the side in size S00 and S0: $I_{\rm e}=6$ Å at AC-14/AC-15.

Contactors for Switching Motors

3RT2 contactors



Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The rated operational current $I_{\rm e}$ complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200,000 operating cycles.

If a shorter endurance is sufficient, the rated operational current $I_{\rm e}/{\rm AC}$ -4 can be increased. $I_{\rm e}$

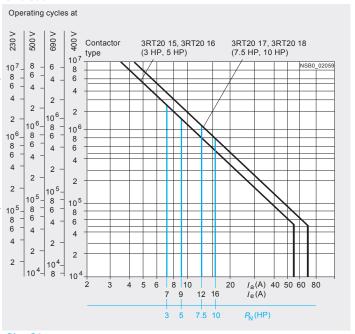
If the contacts are used for mixed operation, i. e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100} \left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_{\rm a}=I_{\rm e}$) in operating cycles
- B Contact endurance for inching ($I_{\rm a}$ = multiple of $I_{\rm e}$) in operating cycles
- C Inching operations as a percentage of total switching operations

Size S00



Size S0

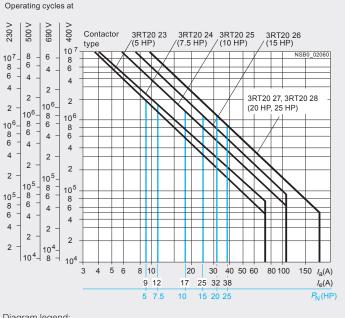


Diagram legend:

P_N= Rated power for squirrel-cage motors at 460 V

 I_a = Breaking current

 $\vec{I_e}$ = Rated operational current

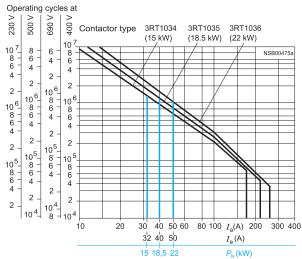


3RT1 contactors

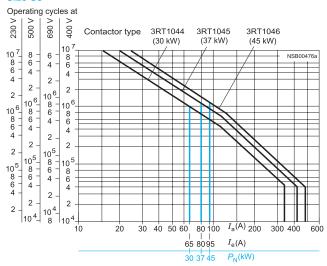
Technical data

Endurance of the main contacts

Size S2

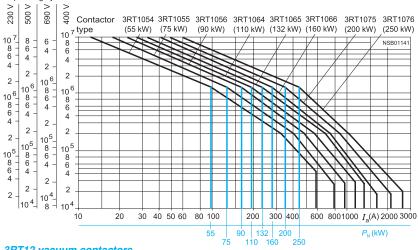


Size S3



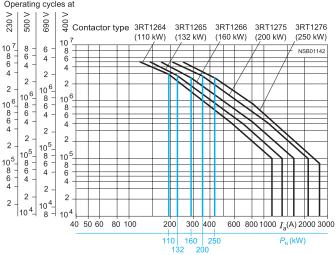
Sizes S6 to S12

Operating cycles at



3RT12 vacuum contactors Sizes S10 and S12

Operating cycles at



Legend:

P_N = Ratings of three-phase motors with

squirrel-cage rotor at 400 V

Ia = Breaking current

= Rated operational current

Contactors for Switching Motors





3RT2 contactors

Contactors	Type			3RT20 15	3RT20 16	3RT20 17	3RT20 18		
	Size			S00	S00	S00	S00		
	Width		mm	45	45	45	45		
® and ® rated data	· · · · · · · · · · · · · · · · · · ·								
			V AC	600					
Rated insulation voltage	- 0								
Uninterrupted current, at 40 °C	Open and enclosed		А	20					
Maximum horsepower ratings (and approved values)									
 Rated power for induction motors 		At 200 V		1.5	2	3	3		
at 60 Hz		230 V		2	3 5	3	5		
		460 V 575 V		3 5	7.5	7.5 10	10 10		
Short-circuit protection ¹⁾		At 600 V		5	5	5	5		
(contactor or overload relay)	Fuse CLASS J ²⁾	At 000 V	A	40	40	40	40		
(,,,	 Circuit breakers with overlo 		Α	50	50	50	50		
	protection according to UL	. 489							
 Combination motor controllers type E according to UL 508 				3)	3)	3)	3)		
NEMA/EEMAC ratings									
NEMA/EEMAC size							0		
Uninterrupted current	- Open		Α				18		
·	- Enclosed		Α				18		
• Rated power for induction motors		At 200 V					3		
at 60 Hz		230 V					5		
		460 V 575 V					10 10		
Overload relays	• Type	070 V	пр	3RU21 1	/ 3RB30 1		10		
Overload relays	Setting range		Α	0.11 16	,				
	3 4 3				,				
Contactors	Туре			3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
	Size			S0	S0	S0	S0	S0	S0
	Width		mm	45	45	45	45	45	45
® and ® rated data									
Rated insulation voltage			V AC	600				600	
Uninterrupted current, at 40 °C	Open and enclosed		A	35				42	
Maximum horsepower ratings (a and b approved values)									
Rated power for induction motors		At 200 V	hn	2	3	5	7.5	10	10
at 60 Hz		230 V		3	3	5	7.5	10	10
dt 60 1 12		460 V		5	7.5	10	15	20	25
		575 V	hp	7.5	10	15	20	25	25
Short-circuit protection ¹⁾		At 600 V		5	5	5	5	5	5
(contactor or overload relay)	Fuse CLASS J ²⁾ Circuit brookers with available		A A	45 70	45 70	45 70	70 100	110 100	110 100
	 Circuit breakers with overloprotection according to UL 		А	70	70	70	100	100	100
Combination motor controllers type E according to UL 508	p								
type L according to OL 300	- At 480 V		Tuno	3RV20 2					
	- At 400 V		Type A	3NVZUZ					
			kA	3)					
	- At 600 V		Type	3RV20 2					
			A						
			kA	3)					
NEMA/EEMAC ratings									
NEMA/EEMAC size								1	
Uninterrupted current	- Open		A					27	
	- Enclosed		Α					27	
 Rated power for induction motors at 60 Hz 		At 200 V						7.5	
ลเ ชบ ฅ๔		230 V 460 V						7.5 15	
		575 V						20	
Overload relays	• Type		-	3RU21 2	/ 3RB30 2				
•									
	Setting range		Α	1.8 40	/ 0.1 40				

For more information about short-circuit values,
 e. g. for protection against short-circuit currents, see UL reports
 (http://support.automation.siemens.com) for the individual devices.

²⁾ Values for RK5 fuses on request.

³⁾ Values on request.

Contactors for Switching Motors **3RT10 contactors**

Technical data

® and ® ratings of the conta	ctors										
Contactor	Size Type			S2 3RT10 33/34	S2 3RT10	35	S2 3RT10 36	S3 3RT10 44	S3 3RT10	45	S3 3RT10 46
Rated insulation voltage			AC V	600				600			
Continuous current, at 40 °C	Free air and end	closed	А	45	55		50	90	105		
Maximum horsepower ratings	Ratings single phase motors at 50/60 Hz	at 115 V at 230 V	HP HP	2 5	3 7½		3 10	5 15	7½ 15		10 -
(© and ®- approved values)											
Ratings of three-phase motors at 50/60 Hz		at 200 V 230 V 460 V 575 V	HP HP HP	7½/10 10 20/25 25/30	10 15 30 40		15 15 40 50	20 25 50 60	25 30 60 75		30 30 75 100
Short-circuit protection	Fuse or circuit-b acc. to UL 489	oreaker	kA A A	5 125 125	5 150 150		5 200 200	5 250 250	10 300 300		10 350 400
NEMA/EEMAC ratings	NEMA/EEMAC S	SIZE		-			2	_			3
Conventional thermal current	Free air Enclosed		A A	_			45 45	Ξ			90 90
Ratings of three-phase motors at 60 Hz		at 200 V 230 V 460 V 575 V	HP HP HP hp	- - -			10 15 25 25	- - -			25 30 50 50
Overload relay	Type Setting range		А	3RU11 3 5.5 50				3RU11 4 18 100			
Contactor Size				S00 - S0 Screw and Spring conne Integrated or snap- on aux. switch block		Latera	v and g connection ally mountable witch block	S2 - S12 Screw and Spring conn Single pole a 4-pole Snap- aux. switch b	nd on	Latera	v and g connection ally mountable switch block
® and ® ratings of the auxila	ry contacts										
Rated Voltage			AC	600		600		600		600	
Switching Capacity Uninterrupted current	At 240 VAC		А	A 600, P 300		A 300	O, Q 300	A 600, P 300)	A 30	0, Q 300

Circuit-breaker acc. to UL 489

Free air

Туре

Enclosed

NEMA/EEMAC SIZE

Α

HP HP HP

ΗP

at 200 V 230 V 460 V 575 V 900

3RB20 66

900

600

540

6

Contactors for Switching Motors

3RT10 contactors



Contactor	Size Type		S6 3RT10 54	S6 3RT10 55	S6 3RT10 56	S10 3RT10 64	S10 3RT10 65	S10 3RT10 66
and ratings of the conta	**		01111001	011110 00	01111000	011110 01	011110 00	011110 00
Rated insulation voltage		AC V	600			600		
Continuous current, at 40 °C	Free air and enclose	ed A	140	195	195	250	330	330
Maximum horsepower ratings	Ratings at single 230 phase motors at 50/60 Hz	115 V O V HP	25	30	30			
(6 and 0 -approved values)								
Ratings of three-phase motors at 50/60 Hz	2	200 V HP 230 V HP 460 V HP 575 V HP	40 50 100 125	50 60 125 150	60 75 150 200	60 75 150 200	75 100 200 250	100 125 250 300
Short-circuit protection	CLASS RK5 fuse Circuit-breaker	kA A	10 450	10 500	10 500	10 700	18 800	18 800
	acc. to UL 489	А	350	450	500	500	700	800
NEMA/EEMAC ratings Conventional thermal current Ratings	NEMA/EEMAC SIZE Free air Enclosed	A A A 200 V HP	- - -	4 150 135 40	- - -	- - -	- - -	5 300 270 75
of three-phase motors at 60 Hz	2	230 V HP 460 V HP 575 V HP	- - -	50 100 100	- - -	- - -	- - -	100 200 200
Overload relay	Туре		3RB20 56			3RB20 66		
Contactor	Size		S12	S12				
Contactor	Туре		3RT10 75	3RT10 76				
Rated insulation voltage		AC V	600					
Continuous current, at 40 °C	Free air and enclose	ed A	400	540				
Maximum horsepower ratings (\$\mathbb{G}\$ and \$\mathbb{M}\$-approved values)								
Ratings of three-phase motors at 50/60 Hz	2	200 V HP 230 V HP 460 V HP 575 V HP	125 150 300 400	150 200 400 500				
Short-circuit protection	CLASS RK5 fuse	kA A	18 1000	30 1200				

NEMA/EEMAC ratings

Ratings of three-phase motors at 60 Hz

Overload relay

Conventional thermal current



Contactors for Switching Motors 3RT12 vacuum contactors

3RT contactors for resistive loads

Technical data

Contactor	Size Type		S10 3RT12 64	S10 3RT12 65	S10 3RT12 66	S12 3RT12 75	S12 3RT12 76
® and ® ratings of the conta	actors						
Rated insulation voltage		AC V	600			600	
Continuous current, at 40 °C	Free air and enclosed	А	330			540	
Maximum horsepower ratings (@ and @-approved values)							
Ratings of three-phase motors at 50/60 Hz	at 200 V 230 V 460 V 575 V	HP HP HP HP	60 75 150 200	75 100 200 250	100 125 250 300	125 150 300 400	150 200 400 500
Short-circuit protection	CLASS RK5 fuse Circuit-breaker acc. to UL 489	kA A	10 700 500	18 800 700	18 800 900	18 1200 1000	30 1200 1200
NEMA/EEMAC ratings	NEMA/EEMAC SIZE		_		5	_	6
Conventional thermal current	Free air Enclosed	A A	_				
Ratings of three-phase motors at 60 Hz	at 200 V 230 V 460 V 575 V	HP HP HP HP	- - -			- - -	
Overload relay	Туре		3RB20 66			3RB20 66	
Contactor	Size Type		S3 3RT14 46	S6 3RT14 56	S10 3RT14 66	S12 3RT14 76	
Rated insulation voltage		AC V	600				
Maximum UL resistive load ratir	ngs	А	110	210	360	580	

Contactor	Size Type	S00 3RT23 15	S00 3RT23 16	S00 3RT23 17	S0 3RT23 24	S0 3RT23 25	S0 3RT23 26	S0 3RT23 27	S2 3RT13 36	S3 3RT13 44	S3 3RT13 46
Rated insulation voltage	AC V	600									
Maximum UL resistive load ratings	А	16	18	20	30	30	35	42	60	100	110

Contactors for Switching Motors

3RT2. 1. contactors



Туре	_	3RT20 15, 3RT20 16	3RT20 17, 3RT20 18
Size		S00	S00
Dimensions $(W \times H \times D)^{1}$	mm mm	45 x 57.5 x 73 / 45 x 70 x 73	
With mounted auxiliary switch block	mm	45 x 57.5 x 116 / 45 x 70 x 121	
With mounted function block	mm	45 x 57.5 x 142 / 45 x 70 x 142	
General data			
Permissible mounting positions	AC and DC		
The contactors are designed for operation on a	operation	360° 22,5° 22,5° ଛ	
vertical mounting surface.			
		(
Upright mounting position	AC and DC	Special design requi	red
	operation		the Order No. must be
		changed to -1AA0.	Additional charge.
		NSB0_00477a	
Mechanical endurance			
Basic unit	Oper-	30 million	
	ating		
Basic unit with snap-on auxiliary switch block	cycles Oper-	10 million	
Sacre with shap on auxiliary switch block	ating	10 Trillion	
	cycles	5 111	
Solid-state compatible auxiliary switch block	Operat. cycles	5 million	
Electrical endurance	-,	2)	
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	690	
Rated impulse withstand voltage $U_{\rm imp}$	kV	6	
Protective separation between the coil and the main contacts acc. to EN 60947-1, Appendix N	V	400	
Mirror contacts			
A mirror contact is an auxiliary NC contact that cannot be closed			
simultaneously with a NO main contact. • 3RT20 1., 3RT23 1. (removable auxiliary switch block)		Voc. this applies to both the basis up	it as well as to between the basic unit
• Sh 120 1., Sh 125 1. (Terriovable auxiliary switch block)			ck acc. to EN 60947-4-1, Appendix F
• 3RT20 1., 3RT23 1. (permanently mounted auxiliary switch block	k)	Yes, acc. to EN 60947-4-1, Appendix	(F
3RH29 19NF solid-state compatible auxiliary switch blocks h	ave no		
mirror contacts. Ambient temperature			
During operation	°C	-25 +60	
During storage	°C	-55 +80	
Degree of protection acc. to EN 60947-1, Appendix C		IP20, coil assembly IP40	
Touch protection acc.to EN 50274		Finger-safe	
Shock resistance rectangular pulse			
AC operation	g/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
DC operation	g/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
Shock resistance sine pulse			
AC operation	g/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
DC operation	g/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
Conductor cross-sections		3)	
Short-circuit protection for contactors without overload	id relays		
		For short-circuit protection for contact see Section 3: Overload Relays	tors with overload relays
		For short-circuit protection for fuseles	ss load feeders
Main circuit		see Section 4: Combination Starters	
Fuse links, operational class gG :			
NH 3NA, DIAZED 5SB, NEOZED 5SE acc. to IEC 60947-4-1/EN 60	947-4-1		
- Type of coordination "1"	A	35	50
 Type of coordination "2" Weld-free⁴⁾ 	A A	20 10	25 10
Miniature circuit breakers (up to 230 V) with C characteristic	A	10	10
Short-circuit current 1 kA, type of coordination "1"			
Auxiliary circuit • Fuse links, operational class gG : DIAZED 5SB, NEOZED 5SE	А	10	
(weld-free protection for $I_k \ge 1 \text{ kA}$)	^	10	
Miniature circuit breakers up to 230 V with C characteristic	Α	6	
Short-circuit current $I_k < 400 \text{ A}$		Ear condustor gross sections and page	
II Discounting for the decreasing a second contract of I among the formation of the second contract of the second	1 2	N E	

¹⁾ Dimensions for devices with screw terminals / spring-type terminals.

²⁾ For endurance of the main contacts see page 2/122.

For conductor cross-sections see page 2/130 .
 Test conditions according to IEC 60947-4-1.

Contactors for Switching Motors



3RT2. 1. contactors

Contactors	Type Size Width	mm	3RT20 15, 3RT S00 45	20 16	3RT20 17, 3F S00 45	RT20 18
Control						
Solenoid coil operating range						
AC operation	50 H.		0.8 1.1 x U _s			
• DC operation	60 H. 20 to 50 °C 3° Up to 60 °C		0.85 1.1 x <i>U</i> 0.8 1.1 x <i>U</i> _s 0.85 1.1 x <i>U</i>	•		
Power consumption of the solenoid	<u> </u>	,	0.65 1.1 x U	8		
AC operation, 50/60 Hz.	- Closing	VA	27/24.3		37/33	
standard version	- P.f.		0.8/0.75		0.8/0.75	
	- Closed - P.f.	VA	4.2/3.3 0.25/0.25		5.7/4.4 0.25/0.25	
• AC operation, 50 Hz,	- Closing	VA	26.4		36	
USA/Canada	P.f. for closingClosed	VA	0.81 4.4		0.8 5.9	
	- P.f. for closed	• • • • • • • • • • • • • • • • • • • •	0.24		0.24	
AC operation, 60 Hz, USA/Canada	ClosingP.f. for closing	VA	31.7 0.81		43 0.8	
OSA/Cariada	- Closed	VA	4.8		6.5	
	- P.f. for closed		0.25		0.25	
DC operation	Closing = Closed	W	4		4	
Permissible residual current of the e	, ,		0 4 (000)	,,,,,,1)	4 4 (000	
	AC operationDC operation		<3 mA x (230 \ <10 mA x (24 \		<4 mA x (230	V/U _S)*/
Operating times ²⁾	DC operation		< 10 IIIA X (24)	7/O _S)		
Total break time = Opening delay + An	cina time					
AC operation	- Closing delay	ms	9 35		8 33	
at 0.8 1.1 x U _s	- Opening delay	ms	3.5 14		4 15	
 DC operation at 0.85 1.1 x U_s 	Closing delayOpening delay	ms ms	30 100 7 13		30 100 7 13	
Arcing time	, ,	ms	10 15		10 15	
Operating times for 1.0 x $U_s^{(2)}$						
AC operation	Closing delayOpening delay	ms ms	9.5 24 4 14		9 22 4.5 15	
DC operation	Closing delayOpening delay	ms ms	35 50 7 12		35 50 7 12	
The 3RT29 16-1GA00 additional load for higher residual currents.	, , ,	2) - i (The OFF-delay of ncreased if the c	ontactor coils are a on diode 6 to 10 tim	d the ON-delay ttenuated again	
Contactors	Type Size		3RT20 15 S00	3RT20 16 S00	3RT20 17 S00	3RT20 18 S00
Main circuit						
AC capacity Utilization category AC-1						
Switching resistive loads						
 Rated operational current I_e 	At 40 °C up to 690 V At 60 °C up to 690 V	A A	18 16	22 20	22 20	22 20
• Rated power for AC loads ¹⁾	230 V	kW	6.3	7.5	7.5	7.5
P.f.= 0.95 (at 60 °C)	400 V 500 V	kW kW	11 13.8	13 17	13 17	13 17
	690 V	kW	19	22	22	22
Minimum conductor cross-section	At 40 °C	mm_2^2	2.5	2.5	2.5	2.5
for loads with I _e	At 60 °C	mm ²	2.5	2.5	2.5	2.5
Utilization category AC-3	Up to 400 V	Λ	7	9	12	16
Rated operational currents I _e	440 V 500 V	A A A	7 6	9 7.7	11 9.2	15 12.4
- Data discoveration 1911	690 V	A	4.9	6.7	6.7	8.8
 Rated power for slipring or squirrel- cage motors at 50 and 60 Hz 	At 200 V 230 V	HP HP	1.5 2 3	2 3 5	3	3 5
	460 V 575 V	HP HP	5	7.5	7.5 10	10 10
Thermal load canacity	10 s current ²)	٨	56	72	96	128

56

10 s current²⁾

72

96

128

Thermal load capacity

¹⁾ Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

²⁾ According to IEC 60947-4-1. For rated values for various start-up conditions see Section 3 --> "Overload Relays".

Contactors for Switching Motors

3RT2. 1. contactors



	Type Size Width	mm	3RT20 15 S00 45	3RT20 16 S00 45	3RT20 17 S00 45	3RT20 18 S00 45
Main circuit	THOU !					.0
AC capacity						
Power loss per conducting path	At I _P /AC-3	W	0.42	0.7	1.24	2.2
Utilization category AC-4 (for $I_a = 6 \times I_e$) ¹⁾						
Rated operational current I _e	Up to 400 V	Α	6.5	8.5	8.5	11.5
 Rated power for squirrel-cage motors with 50 Hz and 60 Hz 	Up to 400 V	kW	3	4	4	5.5
 The following applies to a contact endurance cycles: 	of about 200000 operating					
- Rated operational currents $I_{\rm e}$	Up to 400 V 690 V	A A	2.6 1.8	4.1 3.3	4.1 3.3	5.5 4.4
- Rated power for squirrel-cage motors with	At 230 V	kW	0.67	1.1	1.1	1.5
50 Hz and 60 Hz	400 V	kW	1.15	2	2	2.5
	500 V 690 V	kW kW	1.45 1.15	2 2.5	2 2.5	3 3.5
Switching frequency	030 V	1 / V V	1.10	2.0	2.0	0.0
Switching frequency z in operating cycles/hou	ır					
 Contactors without overload relays 	No-load switching	h ⁻¹	10000			
,	frequency AČ					
Dependence of the switching frequency z'on the operational current I' and operational voltage U:	No-load switching frequency DC	h ⁻¹	10000			
$z' = z \cdot (I_{\Theta}/I') \cdot (400 \text{ V}/U')^{1.5} \cdot 1/\text{h}$	Rated operation AC-1 (AC/DC)	h ⁻¹	1000			
,	AC-2 (AC/DC)	h ⁻¹ h ⁻¹	750 750			
• Contactors with overland releva (manning)	AC-3 (AC/DC) AC-4 (AC/DC)	n ' h ⁻¹	750 250			
Contactors with overload relays (mean value) The data and a graph to ODTOS.	,	h ⁻¹	15			
The data only apply to 3RT25 16 and 3RT25 rated operational voltage of 400 V.	17 (2 NO + 2 NC) up to a					
Contactors	Type Size		3RT20 15 S00	3RT20 16 S00	3RT20 17 S00	3RT20 18 S00
		mm	45	45	45	45
Conductor cross-sections						
Main conductors and auxiliary conductors (1 or 2 conductors can be connected)			Screw ter	minals		
• Solid		mm ²	\sim	: 2 x (0.75 2.5)	1) according to IE	C 60947
			max. 2 x (0.5	4)	_	,
Finely stranded with end sleeve		mm ²	2 x (0.5 1.5) ¹⁾	; 2 x (0.75 2.5)	1)	
AWG cables, solid or stranded Tagginal assessment		AWG		2 x (18 14) ¹⁾ ; 2		`
Terminal screw Tightening torque		Nm	M3 (for standard 0.8 1.2 (7 1		e 2 and Pozidriv 2)
 Tightening torque Main conductors, auxiliary conductors and of 	coil terminals	INIII				
(1 or 2 conductors can be connected)						
Operating devices Calid		mm	3.0 x 0.5; 3.5 x (J.5		
Solid Finely stranded with end sleeve		mm ² mm ²	2 x (0.5 4) 2 x (0.5 2.5)			
Finely stranded without end sleeve		mm ²	2 x (0.5 2.5)			
		AWG	1 x (20 12)			
 AWG cables, solid or stranded 						
Auxiliary conductors for front and laterally m	ounted auxiliary switches					
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected)	ounted auxiliary switches	mm	3.0 x 0.5; 3.5 x 0	0.5		
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid	ounted auxiliary switches	mm ²	2 x (0.5 2.5)	0.5		
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve	ounted auxiliary switches	mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5)	0.5		
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve	ounted auxiliary switches	mm ² mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5) 2 x (0.5 1.5)	0.5		
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded	ounted auxiliary switches	mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5) 2 x (0.5 1.5) 2 x (20 14)		lion.	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors	ounted auxiliary switches	mm ² mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5) 2 x (0.5 1.5) 2 x (20 14)	0.5 terminal connec	tion	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw	ounted auxiliary switches	mm ² mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5) 2 x (0.5 1.5) 2 x (20 14)		tion	
AWG cables, solid or stranded Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw Operating devices		mm ² mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5) 2 x (0.5 1.5) 2 x (20 14)		tion	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw Operating devices Tightening torque		mm ² mm ² mm ² AWG	2 × (0.5 2.5) 2 × (0.5 1.5) 2 × (0.5 1.5) 2 × (20 14) Ring lug 1 M3, Pozidriv 2 Ø 5 6 0.8 1.2		tion	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw		mm² mm² mm² AWG	2 × (0.5 2.5) 2 × (0.5 1.5) 2 × (0.5 1.5) 2 × (20 14) Ring lug 1 M3, Pozidriv 2 Ø 5 6 0.8 1.2 d ₂ = min. 3.2		tion	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw Operating devices Tightening torque Usable ring terminal lugs - DIN 46234 without insulation sleeve - DIN 46225 without insulation sleeve		mm² mm² mm² AWG	2 × (0.5 2.5) 2 × (0.5 1.5) 2 × (0.5 1.5) 2 × (20 14) Ring lug 1 M3, Pozidriv 2 Ø 5 6 0.8 1.2		tion	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw Operating devices Tightening torque Usable ring terminal lugs - DIN 46234 without insulation sleeve - DIN 46237 with insulation sleeve	d ₃ - d ₃ - d ₂ - d ₂ - d ₂ - d ₂ - d ₃ - d ₂ - d ₃ - d	mm² mm² mm² AWG	2 × (0.5 2.5) 2 × (0.5 1.5) 2 × (0.5 1.5) 2 × (20 14) Ring lug 1 M3, Pozidriv 2 Ø 5 6 0.8 1.2 d ₂ = min. 3.2		tion	
Auxiliary conductors for front and laterally m (1 or 2 conductors can be connected) Operating devices Solid Finely stranded with end sleeve Finely stranded without end sleeve AWG cables, solid or stranded Main conductors and auxiliary conductors Terminal screw Operating devices Tightening torque Usable ring terminal lugs - DIN 46234 without insulation sleeve - DIN 46225 without insulation sleeve		mm² mm² mm² AWG	2 × (0.5 2.5) 2 × (0.5 1.5) 2 × (0.5 1.5) 2 × (20 14) Ring lug 1 M3, Pozidriv 2 Ø 5 6 0.8 1.2 d ₂ = min. 3.2		tion	

For tool for opening the spring-type terminals (see Accessories on page 2/79).

Maximum external diameter of the conductor insulation: 3.6 mm.

An "insulation stop" must be used for conductor cross-sections $\leq 1 \text{ mm}^2$ (see Accessories on page 2/79).

1) If two different conductor cross-sections are connected to one clamping

point, both cross-sections must lie in the range specified.

Contactors for Switching Motors



3RT2. 2. contactors

Туре		3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
Size		S0	S0	S0	S0	S0	S0
Dimensions (W x H x D) for AC operation ¹⁾	mm	45 x 85 x 97	7 / 45 x 101.5	5 x 97			
With mounted auxiliary switch block	mm	45 x 85 x 14	41 / 45 x 101	.5 x 144			
With mounted function block		45 x 85 x 16	66 / 45 x 101	.5 x 166			
Dimensions (W x H x D) for DC operation ¹⁾	mm	45 x 85 x 10	07 / 45 x 101	.5 x 107			
With mounted auxiliary switch block	mm	45 x 85 x 15	51 / 45 x 101	.5 x 154			
With mounted function block		45 x 85 x 17	76 / 45 x 101	.5 x 176			
General data							
Permissible mounting positions		360°	22,5° 22,5° 😹				
The contactors are designed for operation on a		300	ZZ,5 ZZ,5 ® ★				
vertical mounting surface.		1 ++++					
			¥ = 12				
Upright mounting position							
opright moduling position							
A.O I.D		-timini					
AC and D o	peration	NSB0_00477a	sion required	d, also applie	s to		
			K.40. coupli		3 10		
Mechanical endurance							
Basic unit	Oper-	10 million					
	ating cycles						
Basic unit with snap-on auxiliary switch block	Oper-	10 million					
,	ating						
	cycles	- W					
Solid-state compatible auxiliary switch block	Operat.	5 million					
Electrical endurance	.,	2)					
Rated insulation voltage U _i (pollution degree 3)	V	690					
Rated impulse withstand voltage U _{imp}	kV	6					
Protective separation between the coil and the main contacts	V	400					
(acc. to EN 60947-1, Appendix N)							
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed							
simultaneously with a NO main contact.							
• 3RT20 2., 3RT23 2. (removable auxiliary switch block)		Yes, acc. to	EN 60947-4	-1, Appendix	(F		
• 3RT20 2., 3RT23 2. (permanently mounted auxiliary switch block)		Yes, acc. to	EN 60947-4	-1, Appendix	(F		
Permissible ambient temperature							
During operation	°C	-25 +60					
During storage	°C	-55 +80					
Degree of protection acc. to EN 60947-1, Appendix C		IP20, coil assembly IP20					
Touch protection acc.to EN 50274		Finger-safe					
Shock resistance rectangular pulse							
AC operation	g/ms	7.5/5 and 4	.7/10		8.3/5 and 5	5.310	
DC operation	g/ms	>10/5 and 7	7.5/10		>10/5 and	7.5/10	
Shock resistance sine pulse							
AC operation	g/ms	11.8/5 and			13.5/5 and		
DC operation	g/ms	>15/5 and :	>10/10		>15/5 and	>10/10	
Conductor cross-sections		3)					
Short-circuit protection for contactors without overload re	lays						
Main circuit				on for contac ent> Overlo		erload relays	
 Fuse links, operational class gG: Type NH 3NA, DIAZED 5SB, NEOZED 5SE 		For short-ci	rcuit protecti	on for fusele		ers	
acc. to IEC 60947-4-1/ EN 60947-4-1		see "Motor :	Starters".				
- Type of coordination "1" - Type of coordination "2"	A A	63 25			100 35	125 50	
- Type of Coordination 2 - Weld-free ⁴⁾	A	10			16	16	
Miniature circuit breakers with C characteristic	А	25			32	40	
(short-circuit current 3 kA, type of coordination "1")							
Auxiliary circuit		10					
 Fuse links, operational class gG: DIAZED 5SB, NEOZED 5SE (weld-free protection for I_k≥1 kA) 	А	10					
Miniature circuit breaker with C characteristic	А	10					
(short-circuit current $I_{\rm k}$ < 400 A)							
1) Dimensions for devices with screw terminals / spring-type terminals.		3) For conduc	ctor cross-se	ctions page	2/134.		

2/131

4) Test conditions according to IEC 60947-4-1.

2) For endurance of the main contacts see page 2/122.

Contactors for Switching Motors

3RT20.2. contactors



Contactors	Туре		3RT20 23 3RT20 25	3RT20 26 3RT20 28	3RT20 2. NB3	3RT20 2. NF3	3RT20 2. NP3
	Size		S0	S0	S0	S0	S0
	Width	mm	45	45	45	45	45
Control							
Solenoid coil operating range	AC/DC		0.8 1.1 x	$U_{\rm S}$	0.7 1.3 x	$U_{\rm s}$	
Power consumption of the solenoid co	pils (when coil is cold and $1.0 \times U_{\rm S}$)						
AC operation, 50 Hz, standard version	- Closing - P.f. - Closed - P.f.	VA VA	65 0.82 7.6 0.25	77 0.82 9.8 0.25	6.5 0.98 1.26 0.25	13.6 0.98 1.91 0.25	16.1 0.98 3.41 0.25
AC operation, 50/60 Hz, standard version	- Closing - P.f. - Closed - P.f.	VA VA	68/67 0.72/0.74 7.9/6.5 0.25/0.28	81/79 0.72/0.74 10.5/8.5 0.25/0.28	6.5/5.7 0.98/0.96 1.26/1.30 0.78/0.8	13.6/13.2 0.98/0.99 1.91/1.90 0.61/0.61	16.1/15.9 0.99/0.99 3.41/3.58 0.36/0.45
AC operation, 50 Hz, USA/Canada	- Closing - P.f. - Closed - P.f.	VA VA	65 0.82 7.6 0.25	77 0.82 9.8 0.28	 	 	
AC operation, 60 Hz, USA/Canada	- Closing - P.f. - Closed - P.f.	VA VA	73 0.76 7.2 0.28	87 0.76 9.4 0.28	 	 	
DC operation	Closing/closed	W	5.9/5.9	5.9/5.9	6.7/0.8	13.2/1.56	15/1.83
Permissible residual current of the ele	ctronics (with 0 signal)						
	AC operation	mA	< 6 mA x (230 V/U _s)	< 7 mA x (23	30 V/ <i>U</i> _s)		
	 DC operation 	mA	< 16 mA x (24 V/U _s)			
Operating times for 0.8 1.1 x $U_{\rm S}^{\ 1)}$							
Total break time = Opening delay + Arcir	ng time						
AC operation	Closing delayOpening delay	ms ms	9 38 4 16	8 40 4 16	60 80 30 45	50 70 35 45	60 80 35 45
DC operation	Closing delayOpening delay	ms ms	50 170 15 17.5	50 170 15 17.5	60 75 30 45	50 70 35 45	50 75 40 50
Arcing time		ms	10	10	10	10	10
Operating times for 1.0 x $U_{\rm S}^{-1)}$							
• AC operation	Closing delayOpening delay	ms ms	10 18 4 16	10 17 4 16	65 80 30 45	50 70 35 45	60 80 30 50
• DC operation	Closing delayOpening delay	ms ms	55 80 16 17	55 80 16 17	60 80 30 45	56 70 35 45	60 80 30 50

¹⁾ The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

Contactors for Switching Motors



3RT20 2. contactors

	Type Size		3RT20 23 S0	3RT20 24 S0	3RT20 25 S0	3RT20 26 S0	3RT20 27 S0	3RT20 28 S0
	Width	mm	45	45	45	45	45	45
Main circuit								
AC capacity								
Utilization category AC-1, switching resistive loads								
• Rated operational current $I_{\rm e}$	At 40 $^{\circ}$ C up to 690 V At 60 $^{\circ}$ C up to 690 V	A A	40 35			50 42		
• Rated power for AC loads ¹⁾ P.f. = 0.95 (at 60 °C)	230 V 400 V 500 V	kW kW kW	13.3 23 29			16 28 35		
	690 V	kW	40			48		
 Minimum conductor cross- section for loads with I_e 	At 40 °C At 60 °C	mm ² mm ²	10 10			10 10		
Utilization category AC-3								
• Rated operational currents I_e	Up to 400 V 440 V 500 V 690 V	A A A	9 9 6.8 6.7	12 12 12.4 9	17 17 17 13	25 22 18 13	32 32 32 21	38 35 32 21
Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V 460 V 575 V	HP HP HP	3 5 7.5	3 7.5 10	5 10 15	7.5 15 20	10 20 25	10 25 25
Thermal load capacity	10 s current ²⁾	Α	80	110	150	200	260	300
Power loss per conducting path	at I _e /AC-3	W	0.4	0.5	0.9	1.6	2.7	3.8
Utilization category AC-4 (for $I_a = 6$	$6 \times I_{\Theta}$							
 Rated operational current I_e 	Up to 400 V	Α	8.5	12.5	15.5	15.5	22	
 Rated power for squirrel-cage motors with 50 and 60 Hz 	At 400 V	kW	4	5.5	7.5	7.5	11	
• The following applies to a contact about 200000 operating cycles:	endurance of							
- Rated operational currents $I_{\rm e}$	Up to 400 V 690 V	A A	4.1 3.3	5.5 5.5	7.7 7.7	9 9	12 12	
Rated power for squirrel-cage motors with 50 and 60 Hz	At 110 V At 230 V 400 V 500 V 690 V	kW kW kW kW	0.5 1.1 2 2 2.5	0.73 1.5 2.6 3.3 4.6	1 2 3.5 4.6 6	1.2 2.5 4.4 5.6 7.7	1.6 3.4 6 7.5 10.3	

Switching frequency

Switching frequency z in c	operating cyc	les/hour
----------------------------	---------------	----------

Switching frequency z in operating	ng cycles/nour			
 Contactors without overload relays 	No-load switching frequency AC	h ⁻¹	5000	
Dependence of the switching fre-	No-load switching frequency DC	h ⁻¹	1500	
quency z' on the operational current I' and operational voltage U : $z' = z \cdot (I_{e}/I') \cdot (400 \text{ V/U'})^{1.5} \cdot 1/\text{h}$	AC-1 (AC/DC) AC-2 (AC/DC) AC-3 (AC/DC) AC-4 (AC/DC)	h ⁻¹ h ⁻¹ h ⁻¹ h ⁻¹	1000 1000 750 1000 750 300 250	
Contactors with overload relays	(mean value)	h ⁻¹	15	

¹⁾ Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into

²⁾ According to IEC 60947-4-1. For rated values for various start-up conditions see Section 3 --> "Overload Relays"

Contactors for Switching Motors

3RT20 2. contactors



Contactors	Туре		3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
	Size		S0	S0	S0	S0	S0	S0
	Width	mm	45	45	45	45	45	45
Conductor cross-sections (1 or 2 conduct	ors connectable)							
Main conductors			Screv	v terminals				
Conductor cross-section								
• Solid		mm²	2 x (1 2.5) ¹⁾ ; 2 x (2.5 .	10) ¹⁾ acco	rding to IEC	60947	
 Finely stranded with end sleeve 		mm²	2 x (1 2.5) ¹⁾ ; 2 x (2.5 .	6) ¹⁾ ; 1 x 10)		
 AWG cables, solid or stranded 		AWG	2 x (16 12	2); 2 x (14	8)			
Terminal screws			M4 (Pozidri					
- Tightening torque		Nm	2 2.5 (18	22 lb.ln)				
Auxiliary conductors Solid		mm ²	2 v (0 E 1	E)1), 2 v (0 :	75 251) 0	ccording to I	EC 60047	
		mm ²		.5) ⁷ , 2 x (0.1 .5) ¹⁾ ; 2 x (0.1		ccording to i	EC 00947	
Finely stranded with end sleeve Solid or stranded AWC (2.4)		mm- AWG			/5 2.5) ^{.,} 14) ¹⁾ ; 1 x 1	0		
Solid or stranded AWG (2 x) Toggeties I a group and a group		AWG		o)''; 2 x (18 .	14) ''; T X I	2		
Terminal screws Tightening torque		Nm	M3 0.8 1.2 (7	' 10.3 lb.ir	1)			
Main conductors			⊙ Sprin	g-type term	inals			
• Operating devices				E v O E				
Operating devices		mm	3.0 x 0.5; 3.					
Solid Finally extranded with and alleged		mm ²	2 x (1 10))				
Finely stranded with end sleeve		mm ²	2 x (1 6)					
Finely stranded without end sleeve		mm ²	2 x (1 6)					
AWG cables, solid or stranded		AWG	2 x (18 8))				
Auxiliary conductors			3.0 x 0.5; 3.	5 v 0 5				
Operating devicesSolid		mm ²						
Finely stranded with end sleeve		mm ²	2 x (0.5 2 2 x (0.5 1					
Finely stranded with end sleeve Finely stranded without end sleeve		mm ²	2 x (0.5 1	*				
AWG cables, solid or stranded		AWG	2 x (20 1	*				
Main conductors		AWG			connection	1		
Terminal screw		mm	M4, Pozidri	/ size 2				
Operating devices		mm	Ø 5 6					
Tightening torque		Nm	2 2.5					
 Usable ring lug terminals DIN 46234 without insulation sleeve 	- d ₃	mm	$d_2 = \min. 4.$					
- DIN 46234 Without insulation sleeve	d ₂	mm	$d_3 = \text{max. } 1$	2.2				
- DIN 46237 with insulation sleeve								
 - JIS C2805 Type R without insulation sleeve - JIS C2805 Type RAV with insulation sleeve 	{(- -)}							
- JIS C2805 Type RAP with insulation sleeve	\							
	1: 1: 1: ½							
	12,1274							
Auxiliary conductors								
Terminal screw			M3, Pozidriv	/ size 2				
Operating devices		mm	Ø 5 6					
Tightening torque		Nm	0.8 1.2					
Usable ring terminal lugs		mm	$d_2 = \min. 3.$	2				
		mm	$d_3 = max. 7$.5				
1) If two different conductor cross-sections are conf	nected to one clampin	g						
point, both cross-sections must lie in the range s	pecifiea.							

Contactors Size			S00	S0			
			Screw or spring-type terminals	Screw or spring-type terminals	Screw or spring-type terminals		
			Integrated or snap-on auxiliary switch block	1- and 4-pole snap-on auxiliary switch block	Laterally mountable auxiliary switch block		
® and ® rated data of	the auxiliary contacts						
Rated voltage		V AC	600	600	600		
Switching capacity			A 600, Q 600	A 600, Q 600	A 300, Q 300		
Uninterrupted current	 At 240 V AC 	Α	10	10	10		

Contactors for Switching Motors



3RT10.3. contactors

Technical data

Contactor	Size Type		S2 3RT10 34	S2 3RT10 35	S2 3RT10 36
General data					
Permissible mounting posit The contactors are designed on a vertical mounting surfac	for operation	C operation	360° 22.5		ation and forward to 22.5°: olerance 0.85 1.1 \times $U_{\rm s}$
Upright mounting position:	AC and DO	C operation	Special design requ Positions 13 to 16 of Additional charge.	ired. the Order No. must b	e changed to -1AA0 .
Mechanical endurance	Basic units Basic unit with snap-on auxiliary switch Solid-state compatible aux. switch bloc		10 million 10 million 5 million		
Electrical endurance			See page 2/123.		
Rated insulation voltage U _i	(pollution degree 3)	V	690		
Rated impulse withstand vo	oltage <i>U</i> _{imp}	kV	6		
Safe isolation between coil a (acc. to DIN VDE 0106 Part 1		V	400		
Positively driven operation There is positively driven ope NO contacts cannot be close	Positively driven operation 3RT10 3. There is positively driven operation if the NC and NO contacts cannot be closed at the same time (removable aux. sw			contacts and auxiliary blocks acc. to ZH 1/45 996/DC)	NC contacts and within 7, IEC 60 947-4-1,
		3RT10 3., 3RT13 3. nt aux. switch block)	in accordance with	Swiss regulations (SUV	'A) on request.
Permissible ambient tempe		operation °C en stored °C	–25 +60 –55 +80		
Degree of protection acc. to	IEC 60 947-1 and DIN 40 050		IP 20 (terminal comp	partment IP 00), coil sy	stem IP 40
Shock resistance	Rectangular pulse AC and DC operation	on <i>g</i> /ms	10/5 and 5/10		
	Sine pulse AC and DC operation	g/ms	15/5 and 8/10		
Conductor cross-sections			See page 2/138.		
	of contactors without overload re	lays	Section 3. For short-circuit protoverload and short-breaker).	tection of weld-free co- circuit protection only	ith overload relays, see ntactors, see Section 4. with 3RV10 circuit-
Main circuit Fuse links, utilization categor NH Type 3NA, DIAZED Type – acc. to IEC 60 947-4-1/EN 6	5SB, NEOZED Type 5SE		125 63		160 80
Auxiliary circuit Fuse links, utilization categor DIAZED Type 5SB, NEOZED	y gL/gG Type 5SE (weld-free protection at $I_k \ge 1$ k	A (A)	10		
**	ith C-characteristic (short-circuit current	·	10		

Type of coordination "2": No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2/135

According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
 Type of coordination "1":
 Destruction of the contactor and the overload relayis permissible. The contactor and/or overload relayis permissible. The contactor and/or overload is proposed. load relay must be replaced if necessary.

Contactors for Switching Motors

3RT10.3. contactors



Technical data						
Contactor	Size Type			S2 3RT10 34	S2 3RT10 35	S2 3RT10 36
Control circuit						
Coil voltage tolerance		AC/DC		0.8 1.1 × <i>U</i> _s		
Power consumption of	the coils (with coil in cold s	state and $1.0 \times U_s$)		Standard design		
AC operation			Hz	50 50/60	50 50/60	
	Closing p.f.		VA	104 127 /113 0.78 0.73/ 0	3 145 170 /15 0.69 0.79 0.76/	
	Closed		VA	9.7 11.3 / 9	9.5 12.5 15 / 1	1.8
	p.f.			0.42 0.41/ 0		0.38
			Hz	50 60	50 60	
	Closing		VA	108 120	150 166	
	p.f. Closed		VA	0.76 0.7 9.6 10.1	0.77 0.71 12.5 12.6	
	p.f.		V٨	0.42 0.42	0.35 0.37	
DC operation	closing = closed		W	13.3	13.3	
Permissible residual cu	rrent of the electronics					<u> </u>
(with 0 signal)	AC operation					
	DC operation			$< 38 \text{ mA} \times \left(\frac{24 \text{ V}}{U_{\text{S}}}\right)$	$<$ 38 mA \times $\left(\frac{24 \text{ V}}{U_{\text{S}}}\right)$	
Operating times at 0.8 Break-time = opening times						
AC operation	closing time opening time		ms ms	11 30 7 10	10 24 7 10	
DC operation	closing time opening time		ms ms	50 95 20 30	60 100 20 25	
Arcing time			ms	10	10	
Operating times at 1.0 x	<i>U</i> _s ¹)					
AC operation	closing time opening time		ms ms	13 22 7 10	12 20 7 10	
DC operation	closing time opening time		ms ms	60 75 20 30	70 85 20 25	
Main circuit	oponing time		1110	20 00	20 20	
Load ratings with AC	2					
AC-1 utilization categor	y, switching resistive load	I				
Rated operational curren	ts $I_{ m e}$	at 40 °C up to 690 V	A	50	60	55
Ratings		at 60 °C up to 690 V at 230 V	A kW	45 18	55 22	50 20
of three-phase loads 2)		400 V	kW	31	38	35
p.f. = 0.95 (at 60 °C)		500 V 690 V	kW kW	39 54	46 66	43 60
Minimum conductor cros	s-section with $I_{\rm eload}$	at 40°C	mm ²	16	16	16
		60°C	mm ²	10	16	10
AC-2 and AC-3 utilization	n categories					
Rated operational curren	_	up to 400 V	A	32	40	50
		500 V 690 V	A A	32 20	40 24	50 24
Ratings of slipring or squ		at 230 V	kW	7.5	11	15
motors at 50 Hz and 60 H	1Z	400 V 500 V	kW kW	15 18.5	18.5 22	22 30
		690 V	kW	18.5	22	22
Thermal loading capaci	-	10 s current 3)	A	320	400	400
Power loss per conduct	ing patn	at I _e /AC-3	W	1.8	2.6	5

The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms, diode assemblies 2 to 6 times).

Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

³⁾ Acc. to VDE 0660 Part 102.
For rated values for various starting conditions, see Section 3.



3RT10.3. contactors

Task		data
ı ecn	nical	data

Contactor	Size Type			S2 3RT10 34		S2 3RT10 3	15	S2 3RT10 :	36	
Main circuit	турс			011110 04		011110		011110	,	
Load ratings with	AC									
AC-4 utilization cate	egory (at $I_a = 6 \times I_e$)									
Rated operational cu	rrent I _e	up to 400 V	Α	29		35		41	41	
Ratings of squirrel-ca at 50 Hz and 60 Hz	ige motors	at 400 V	kW	15		18.5		22		
	rance of approx. 200 000 op	= :		45.0		40.5				
Rated operational cu	rrents I _e	up to 400 V 690 V	A A	15.6 15.6		18.5 18.5		24 24		
Ratings of squirrel-ca at 50 Hz and 60 Hz	ge motors	at 230 V 400 V 500 V 690 V	kW kW kW kW	4.7 8.2 9.8 13		5.4 9.5 11.8 15.5		7.3 12.6 15.8 21.8		
AC-5a utilization cat	egory, switching gas disc path at 230 V	harge lamps								
, ,	Rating per lamp	Rated operational current per lamp (A)								
	uncorrected L 18 W	0.37	Units	122		149		135		
	L 36 W L 58 W	0.43 0.67	Units Units	105 67		128 82		116 75		
	lead-lag L 18 W	0.11	Units	409		500		454		
	L 36 W L 58 W	0.21 0.32	Units Units	214 141		262 172		238 156		
Switching gas disch per main conducting	arge lamps with correction path at 230 V	n, electronic ballast								
Rating per lamp	Capacitor (µF)	Rated operational current per lamp (A)								
Parallel correction L 18 W	4.5	0.11	Units	78		98		123		
L 36 W L 58 W	4 . 5 7	0 . 21 0.32	Units Units	78 50		98 63		123 79		
With electronic ballas single lamp	t,									
L 18 W	6.8	0.10	Units	224		280		350		
L 36 W L 58 W	6.8 10	0.18 0.27	Units Units	124 83		155 104		194 129		
With electronic ballas	t,									
twin lamp L 18 W	10	0.18	Units	124		155		194		
L 36 W L 58 W	10 22	0.35 0.52	Units Units	64 43		80 54		100 67		
AC-5b utilization cat per main conducting	tegory, switching incandes path at 230/220 V	scent lamps	kW	5.8		7.3		9.1		
AC-6a utilization cat with inrush	egory, switching three-ph	ase transformers	n	30	20	30	20	30	20	
Rated operational cu	rrent I _e	up to 400 V	A	20.7	31	24 . 3	36 . 5	28.8	43.2	
Ratings of three-phas	se transformers	at 230 V	kVA	8.2	12.3	9.7	14.5	11.5	17.2	
with an inrush of n = 3 The ratings must be r		400 V 500 V	kVA kVA	14.3 17.9	21.5 26.8	16 . 8 21	25.3 31.6	20 24.9	29.9 37.4	
for other inrush factor		690 V	kVA	23.9	23.9	28.7	28.7	28.7	28.7	
$P_{x} = P_{n30} \cdot \frac{30}{x}$										
	tegory, switching low-indu d-dielectric) three-phase ca 40 °C									
Rated operational cu		up to 400 V	Α	29		36		36		
Ratings of single cap		at 230 V	kvar	12		15 25		15 25		
parallel capacitors 20	: (minimum inductance betw) µH)	525 V	kvar kvar	20 25		25 33		25 33		
at 50 Hz, 60 Hz and		690 V	kvar	20		25		25		

Contactors for Switching Motors

3RT10.3. contactors



Technical data					
	Size Iype		S2 3RT10 34	S2 3RT10 35	S2 3RT10 36
Main circuit					
Load ratings with DC					
DC-1 utilization category, switching resistive load (L/Rated operational current I	•				
	Number of conducting paths connected in series up to 24 V	А	1 2 3 45 45 45	1 2 3 55 55 55	1 2 3 50 50 50
	60 V	Α	20 45 45	23 45 45	23 45 45
	110 V 220 V	A A	4.5 45 45 1 5 45	4.5 45 45 1 5 45	4.5 45 45 1 5 45
	440 V 600 V	A A	0.4 1 2.9 0.25 0.8 1.4	0.4 1 2.9 0.25 0.8 1.4	0.4 1 2.9 0.25 0.8 1.4
DC-3 and DC-5 utilization cashunt and series motors (L					
Rated operational current I	e (at 60 °C)				
	Number of conducting paths connected in series		1 2 3	1 2 3	1 2 3
	up to 24 V 60 V	A A	35 45 45 6 45 45	35 55 55 6 45 55	35 50 50 6 45 50
	110 V	A	2.5 25 45	2.5 25 55	2.5 25 50
	220 V 440 V	A A	1 5 25 0.1 0.27 0.6	1 5 25 0.1 0.27 0.6	1 5 25 0.1 0.27 0.6
	600 V	А	0.06 0.16 0.35	0.06 0.16 0.35	0.06 0.16 0.35
Operating frequency					
Operating frequency z in op	perating cycles per hour		AC DC	AC DC	AC DC
Contactors without overload	relays No-load operating frequency	1/h	5000 1500	5000 1500	5000 1500
Dependence of the operating		1/h	AC/DC 1200	AC/DC 1200	AC/DC 1000
operational current I' and the	for AC-2	1/h	750	600	400
$Z' = Z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} \text{ 1/h}$	for AC-3 for AC-4	1/h 1/h	1000 250	1000 300	800 300
Contactors with overload rela	ays (mean value)	1/h	15	15	15
Contactor	Size Type		S2 3RT10 3.		
Conductor cross-sectio	ns				
Screw connections (1 or 2 conductor	Main conductor: With box terminal		Front terminal connected	Back terminal connected	Both terminals connected
connections possible)	Finely stranded with end sleeve	mm²	0.75 25	0.75 25	max. 2 × 16
	Finely stranded without end sleeve Stranded	mm² mm²	0.75 25 0.75 35 0.75 16 6 × 9 × 0.8	0.75 25 0.75 35	max. 2 × 16 max. 2 × 25
	Solid Ribbon cable (qty. × width × thickness)	mm² mm	0.75 16 6×9×0.8	0.75 16 6×9×0.8	max. 2 × 25 max. 2 × 16 2 × (6 × 9 × 0.8)
	AWG conductor connections, solid or stranded	AWG	18 2	18 2	2 × (18 2)
	Terminal screwsTightening torque	Nm	M 6 (Pozidriv size 2) 3 4.5 (27 40 lb.ir	า)	
	Auxiliary conductor:		,	,	
	Solid	mm²		0.75 2.5) acc. to IEC	60 947;
	Finely stranded with end sleeve	mm²	max. $2 \times (0.75 \dots 4)$ $2 \times (0.5 \dots 1.5); 2 \times (0.5 \dots 1.5)$	0.75 2.5)	
	AWG conductor connections, solid or stranded	AWG	2 × (20 16); 2 × (18	·	
	Terminal screwsTightening torque	Nm	M 3 0.8 1.2 (7 10.3 lk	o.in)	
Cage Clamp connections (1 or 2 conductor	Auxiliary conductor:				
connections possible)	Solid	mm ²	2 × (0.25 2.5)		
	Finely stranded with end sleeve	mm ²	2 × (0.25 1.5)		
	Finely stranded without end sleeve AWG conductor connections, solid or stranded	mm² AWG	2 × (0.25 2.5) 2 × (24 14)		
	ATTA CONTROLLO CONTROLLONS, SUNG OF STANGED	AWG	۵ ۸ (۲ ۱۰۰ ۱۹)		

- For tool for opening the Cage Clamp connection, see on accessories page 2/79
 An "insulation stop" must be used for conductor cross-sections ≤1 mm2, see accessories on page 2/79.
 Max. outer diameter of conductor insulation: 3.6 mm.
 For information about Cage Clamp connections, see Appendix page 19/17.

Contactors for Switching Motors



Technical data

3RT10.4. contactors

Contactor	Size Type			S3 3RT10 44	S3 3RT10 45	S3 3RT10 46
General data						
Permissible mounti The contactors are d on a vertical mountin	lesigned for operation	AC and DC operation		360° 2	√ 🖈 🙊 inclinati	operation and forward on up to 22.5°: coil voltage ce 0.85 1.1 x $U_{\rm s}$
Upright mounting pos	sition:	AC and DC operation		Special design re		t be changed to -1AA0 .
				Additional charge		be changed to - IAAU.
Mechanical endurance	Basic units Basic unit with snap-on a Solid-state compatible a		Oper. cycles	10 million 10 million 5 million		
Electrical enduranc	е			See page 2/123.		
Rated insulation vo	Itage <i>U</i> _i (pollution degree 3)		V	1000		
Rated impulse with	stand voltage U _{imp}		kV	6		
	een coil and main contacts 06 Part 101 and A1 [draft 2/89])		V	690		
There is positively driven operation if the NC and NO contacts cannot be closed at the same time 3RT10		3RT10 4., 3RT13 4. (removable aux. sw 3RT10 4., 3RT13 4. (permanent aux. sw	itch block), 3RT144.	the auxiliary switch Annex H (draft 17	h blocks acc. to ZH 1/	

°C

g/ms

–25 ... +60

-55 ... +80

250

125

63

6.8/5 and 4/10

10.6/5 and 6.2/10

in operation

when stored

AC and DC operation

AC and DC operation

Type of coord. "1" 1)

Short-circuit protection of contactors without overload relays	

Rectangular pulse Sine pulse

See page 2/142.

For short-circuit protection of contactors with overload relays, see Section 3.

IP 20 (terminal compartment IP 00), coil system IP 40

250

160

100

For short-circuit protection of fuseless load feeders, see Section 4.

Main circuit
Fuse links, utilization category gL/gG
NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE
- acc. to IEC 60 947-4/
EN 60 947-4-4 (VDE 0660 Part 102)

Degree of protection acc. to IEC 60 947-1 and DIN 40 050

Permissible ambient temperature

Shock resistance

Conductor cross-sections

Type of coord. "2" 1) A Weld-free 2) A A Auxiliary circuit Fuse links, utilization category gL/gG A DIAZED Type 5SB, NEOZED Type 5SE (weld-free protection at $I_k \ge 1$ kA)

or miniature circuit-breaker with C-characteristic (short-circuit current $I_{\rm k} <$ 400 A) A

10

¹⁾ According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102): Type of coordination "1":

Contactors for Switching Motors

3RT10.4. contactors



Contactor	Cina			CO	CO	60
Contactor	Size Type			S3 3RT10 44	S3 3RT10 45	S3 3RT10 46
Control circuit						
Coil voltage tolerance	•	AC/DC		0.8 to 1.1 \times $U_{\rm s}$		
Power consumption of	of the coils (with coil in cold s	state and 1.0 × U _s)		Standard design		
AC operation			Hz	50 50/60	50 50/60	
	Closing		VA	218 247 /211 0.61 0.62/ 0		
	p.f. Closed		VA	21 25 / 18	22 27	
	p.f.			0.26 0.27/ 0		/ 0.31
				For USA and Can		
	01 .		Hz	50 60	50 60	
	Closing p.f.		VA	218 232 0.61 0.55	270 300 0.68 0.52	
	Closed p.f.		VA	21 20 0.26 0.28	22 21 0.27 0.29	
DC operation	closing = closed		W	15	15	
<u> </u>	current of the electronics					
with 0 signal)				(230 V)	
	AC operation		mA	$< 25 \text{ mA} \times \left(\frac{265 \text{ V}}{U_{\text{S}}}\right)$		
	DC operation		mA	$< 25 \text{ mA} \times \left(\frac{230 \text{ V}}{U_s}\right)$ $< 43 \text{ mA} \times \left(\frac{24 \text{ V}}{U_s}\right)$		
				(Us))	
Operating times at 0.8 Break-time = opening						
AC operation	closing time		ms	16 57	17 90	
	opening time		ms	10 19	10 25	
OC operation	closing time opening time		ms ms	90 230 14 20	90 230 14 20	
Arcing time	opermig unio		ms	10 15	10 15	
Operating times at 1.	0 × <i>U</i> _s 1)					
AC operation	closing time		ms	18 34	18 30	
DC operation	opening time closing time		ms ms	11 18 100 120	11 23 100 120	
o operation	opening time		ms	16 20	16 20	
Main circuit						
Load ratings with	4 <i>C</i>					
_	ory, switching resistive load					
Rated operational curr	ents $I_{ m e}$	at 40 °C up to 690 V 1000 V	A A	100 50	120 60	120 70
		at 60 °C up to 690 V	Α	90	100	100
Ratings		1000 V at 230 V	A kW	40 34	50 38	60 38
of three-phase loads 2)		400 V	kW	59	66	66
o.f. = 0.95 (at 60 °C)		500 V 690 V	kW kW	74 102	82 114	82 114
		1000 V	kW	66	82	98
Minimum conductor cr	oss-section with $I_{\rm e\;load}$	at 40 °C 60 °C	mm² mm²	35 35	50 35	50 35
AC-2 and AC-3 utiliza	tion categories					
Rated operational curr	-	up to 400 V	Α	65	80	95
		500 V 690 V	A A	65 47	80 58	95 58
		1000 V	A	25	30	30
Ratings of slipring or s		at 230 V	kW	18.5	22	22
motors at 50 Hz and 6	J MZ	400 V 500 V	kW kW	30 37	37 45	45 55
		690 V	kW	55 30	55 37	55 37
Thermal loading capa	noitu.	1000 V 10 s current ³)	kW A	600	760	760

The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms, diode assem-

²⁾ Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

³⁾ Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.



3RT10.4. contactors

		data

Contactor	Size Type			S3 3RT10 44	S3 3RT10 45	S3 3RT10 46
Main circuit						
Load ratings with	AC					
AC-4 utilization cate	· · · · · · · · · · · · · · · · · ·					
Rated operational cur	rent I _e	up to 400 V	Α	55	66	80
Ratings of squirrel-ca at 50 Hz and 60 Hz	ge motors	at 400 V	kW	30	37	45
• For a contact endur	ance of approx. 200 000 opera	ating cycles:				
Rated operational cur	rents $I_{ m e}$	up to 400 V 690 V 1000 V	A A A	28 28 20	34 34 23	42 42 23
Ratings of squirrel-ca at 50 Hz and 60 Hz	ge motors	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	8.7 15.1 18.4 25.4 22	10.4 17.9 22.4 30.9 30	12 22 27 38 30
AC-5a utilization cat per main conducting	egory, switching gas dischar	rge lamps				
por main conducting	Rating per lamp	Rated operational current per lamp (A)				
	uncorrected L 18 W	0.37	Units	243	270	
	L 16 W L 36 W L 58 W	0.37 0.43 0.67	Units Units	209 134	232 149	
	lead-lag	0.11	l leite	818	909	
	L 18 W L 36 W L 58 W	0.11 0.21 0.32	Units Units Units	428 281	476 312	
Switching gas disch per main conducting	arge lamps with correction, opath at 230 V	electronic ballast				
Rating per lamp Parallel correction	Capacitor (μF)	Rated operational current per lamp (A)				
L 18 W	4.5	0.11	Units	160	197	234
L 36 W L 58 W	4.5 7	0.21 0.32	Units Units	160 103	197 127	234 150
With electronic ballas single lamp		0.32	Offics	103	121	150
L 18 W	6.8	0.10	Units	455	560	665
L 36 W L 58 W	6.8 10	0.18 0.27	Units Units	253 168	311 207	369 246
With electronic ballas twin lamp		0.27	O.m.o	.00	20.	2.0
L 18 W	10	0.18	Units	253	311	369
L 36 W L 58 W	10 22	0.35 0.52	Units Units	130 88	160 108	190 128
AC-5b utilization cat per main conducting	egory, switching incandesce path at 230/220 V	ent lamps	kW	9	14.6	17.3
AC-6a utilization cat with inrush	egory, switching three-phase	e transformers	n	30 20	30 20	30 20
Rated operational cur	rent I _e	up to 400 V 690 V	A A	42.3 63.5 42.3 47	56.3 80 56.3 58	56.3 84.4 56.3 58
Ratings of three-phas with an inrush of n = 3 The ratings must be r for other inrush factor	30 or 20. e-calculated	at 230 V 400 V 500 V 690 V	kVA kVA kVA kVA	16.8 25.3 29.3 43.9 36.6 54.9 50.3 56.2	22.4 31.9 39 55.4 48.7 69.3 67.3 69.3	22.4 33.6 39 58 48.7 73.1 67.3 69.3
$P_x = P_{n30} \cdot \frac{30}{x}$						
	egory, switching low-inducta I-dielectric) three-phase capa 40 °C					
Rated operational cur		up to 400 V	Α	57	72	
	acitors (minimum inductance betwee uH) at 50 Hz, 60 Hz and	525 V	kvar kvar kvar	24 40 50	29 50 65	
		690 V	kvar	40	50	

Contactors for Switching Motors

3RT10.4. contactors



Technical data					
Contactor	Size Type		S3 3RT10 44	S3 3RT10 45	S3 3RT10 46
Main circuit					
Load ratings with DC					
DC-1 utilization category, switching resistive load (L Rated operational current	•				
	Number of conducting paths connected in series		1 2 3	1 2 3	1 2 3
	up to 24 V 60 V 110 V	A A A	90 90 90 23 90 90 4.5 90 90	100 100 100 60 100 100 9 100 100	100 100 100 60 100 100 9 100 100
	220 V 440 V 600 V	A A A	1 5 70 0.4 1 2.9 0.26 0.8 1.4	2 10 80 0.6 1.8 1.8 0.4 1 1	2 10 80
DC-3 and DC-5 utilization shunt and series motors (categories, L/R ≤ 15 ms)		0.20 0.0 1.1	0.1	0.1 1 2.0
Rated operational current	I _e (at 60 °C) Number of conducting paths connected in series		1 2 3	1 2 3	1 2 3
	up to 24 V	Α	40 90 90	40 100 100	40 100 100
	60 V 110 V	A A	6 90 90 2.5 90 90	6.5 100 100 2.5 100 100	6.5 100 100 2.5 100 100
	220 V	A	1 7 35	1 7 35	1 7 35
	440 V 600 V	A A	0.15 0.42 0.8 0.06 0.16 0.35	0.15 0.42 0.8 0.06 0.16 0.38	
Operating frequency					
Operating frequency z in a Contactors without overload		1/h	AC DC 5000 1000	AC DC 5000 1000	AC DC 5000 1000
Dependence of the operational current I' and the		1/h	AC/DC 1000	AC/DC 900	AC/DC 900
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} \text{ 1/h}$	for AC-2 for AC-3 for AC-4	1/h 1/h 1/h	400 1000 300	400 1000 300	350 850 250
Contactors with overload re		1/h	15	15	15
Contactor	Size Type		S3 3RT10 4.		
Conductor cross-section	ons				
Screw connections (1 or 2 conductor connections possible)	Main conductor: With box terminal	mm²	Front terminal connected	Back terminal connected 2.5 50	Both terminals connected
. ,	Finely stranded with end sleeve Finely stranded without end sleeve Solid	mm² mm²	2.5 35 4 50 2.5 16	40 FO [= 1]	max. 2×35 max. 2×35 max. 2×16
	Stranded	mm²	4 70	10 70	max. 2 × 50
	Ribbon cable (qty. × width × thickness) AWG conductor connections, solid and stranded	mm AWG	6×9×0.8	6×9×0.8 10 2/0	$2 \times (6 \times 9 \times 0.8)$ $2 \times (10 1/0)$
	Terminal screwsTightening torque	Nm	M 6 (hexagon socke 4 6 (36 53 lb.in)		
Connection for drilled copper bars	max. width	mm	10	If bars larger than 12 nected, a 3RT19 46-4 comply with the phas	EA1 terminal cover is to
Without box terminal With cable lugs (1 or 2 conductor connections possible)	Finely stranded with cable lug Stranded with cable lug AWG conductor connections, solid or stranded	mm² mm²	10 50¹) 10 70¹) 7 1/0	If conductors larger t nected, a 3RT19 46-4	han 25 mm² are con- 4EA1 terminal cover is th the phase clearance.
zzimostono poddibio)	Auxiliary conductor:				
	Solid	mm ²	$2 \times (0.5 \dots 1.5); 2 \times (0.75 \dots 4)$	0.75 2.5) acc. to IEC	60 947;
	Finely stranded with end sleeve AWG conductor connections, solid or stranded – Terminal screws	mm² AWG	2 × (0.5 1.5); 2 × (2 × (20 16); 2 × (1 M 3	,	
O Ol	 Tightening torque 	Nm	0.8 1.2 (7 10.3	b.in)	
Cage Clamp connections (1 or 2 conductor connections possible)	Auxiliary conductor: Solid Finely stranded with end sleeve	mm² mm²	2 × (0.25 2.5) 2 × (0.25 1.5)		
	Finely stranded without end sleeve AWG conductor connections, solid or stranded	mm² AWG	2 × (0.25 2.5) 2 × (24 14)		

For tool for opening the Cage Clamp connection, see on accessories page 2/79
An "insulation stop" must be used for conductor cross-sections ≤1 mm2, see accessories on page 2/79.
Max. outer diameter of conductor insulation: 3.6 mm.
For information about Cage Clamp connections, see Appendix page 19/17.

1) Only crimping cable lugs acc. to DIN 46 234

Contactors for Switching Motors



3RT10.5. contactors

	l data

Contactor	Size Type			S6 3RT10 54	S6 3RT10 55	S6 3RT10 56	
General data							
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.				90° 22.5°, 22.5° 90° 30088 100088			
Mechanical endurance			Oper. cycles	10 million			
Electrical endurance				See page 2/123			
Rated insulation voltage U _i (p	oollution degree 3)		V	1000			
Rated impulse withstand volt	age U _{imp}		kV	8			
Safe isolation between coil, auxiliary contacts and main contacts V (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89])				690			
Positively driven operation There is positively driven operation if the NC and NO contacts cannot be closed at the same time				Yes, between main contacts and auxiliary NC contacts and within the auxiliary switch blocks acc. to ZH 1/457, IEC 60 947-4-1, Annex H (draft 17B/996/DC)			
Permissible ambient tempera	Permissible ambient temperature in operation when stored			-25 +60/+55 with AS-Interface -55 +80			
Degree of protection acc. to I	EC 60 947-1 and DIN 40 (050		IP 00/open type, coil system IP 20			
Shock resistance	Rectangular pulse Sine pulse		g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10			
Conductor cross-sections				See page 2/145			
Electromagnetic compatibility	y (EMC)			See page 2/106			
Short-circuit protection of	f contactors without	overload relays		See Part 4.			
Main circuit Fuse links, utilization category NH Type 3NA, DIAZED Type 58 – acc. to IEC 60 947-4-1/EN 60	SB, NEOZED Type 5SE	Type of coord. "1" 1) Type of coord. "2" 1) Weld-free 2)	A A A	355 315 80	355 315 160		
Auxiliary circuit Fuse links, utilization category gL/gG (weld-free protection at $I_k \ge 1$ kA) DIAZED Type 5SB, NEOZED Type 5SE or miniature circuit-breaker with C-characteristic ($I_k < 400$ A)			A	10			

Contactor	Size Type			S6 3RT10 5.			
Control circuit							
Coil voltage tolerance		AC/DC (UC)		$0.8 \times U_{\rm s min} \dots 1.$	$1 \times U_{\rm s max}$		
Power consumption of solen	oid mechanism			Conventional op	. mechanism	Solid-state op. n	nechanism
(with coil in cold state and rate	d range $U_{\rm s\ min}$ $U_{\rm s\ max}$)			$U_{\rm s min}$	$U_{\rm smax}$	$U_{\rm smin}$	U _{s max}
AC operation	Closing p.f. Closed p.f.		VA VA	250 0.9 4.8 0.8	300 0.9 5.8 0.8	190 0.8 3.5 0.5	280 0.8 4.4 0.4
DC operation	Closing Closed		W	300 4.3	360 5.2	250 2.3	320 2.8
PLC control input (EN 61 131	-2/Type 2)			DC 24 V/≤ 30 m/	4		
Operating times (Break-time = opening time + a	arcing time)			Conventional op	. mechanism	Solid-state op. n Operation via A1/A2	nechanism PLC input
– at 0.8 × $U_{\rm smin}$ 1.1 × $U_{\rm smax}$	closing time opening time		ms ms	20 95 40 60		95 135 80 90	35 75 80 90
- at $U_{\rm smin}$ $U_{\rm smax}$	closing time opening time		ms ms	25 50 40 60		100 120 80 90	40 60 80 90
Arcing time		1	ms	10 15		10 15	10 15

¹⁾ According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102): Type of coordination "1": Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2": No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

²⁾ Test conditions acc. to IEC 60 947-4-1.

Contactors for Switching Motors

3RT10.5. contactors



Technical data								
Contactor Size Type			S6 3RT10	54	S6 3RT1	0 55	S6 3RT10) 56
Main circuit								
Load ratings with AC								
AC-1 utilization category, switching resistive lo	ad							
Rated operational currents $I_{\rm e}$	at 40 °C up to 690 V at 60 °C up to 690 V at 60 °C up to 1000 V	A A A	160 140 80		185 160 90		215 185 100	
Ratings of three-phase loads 1) p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	53 92 115 159 131		60 105 131 181 148		70 121 152 210 165	
Minimum conductor cross-section with $I_{\rm e\;load}$	at 40 °C 60 °C	mm² mm²	70 50		95 70		95 95	
AC-2 and AC-3 utilization categories								
Rated operational currents $I_{\rm e}$	up to 500 V 690 V 1000 V	A A A	115 115 53		150 150 65		185 170 65	
Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	37 64 81		50 84 105		61 104 132	
	690 V 1000 V	kW kW	113 75		146 90		167 90	
Thermal loading capacity	10 s current 2)	Α	1100		1300		1480	
Power loss per conducting path	at I _e /AC-3/500 V	W	7		9		13	
AC-4 utilization category (at $I_{\rm a}$ = 6 × $I_{\rm e}$) Rated operational current $I_{\rm e}$	up to 400 V	А	97		132		160	
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 400 V	kW	55		75		90	
• For a contact endurance of approx. 200 000 ope	erating cycles:							
Rated operational currents $I_{\rm e}$	up to 500 V 690 V 1000 V	A A A	54 48 34		68 57 38		81 65 42	
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	16 29 37		20 38 47		25 45 57	
	690 V 1000 V	kW kW	48 49		55 55		65 60	
AC-6a utilization category, switching three-pha	se transformers	n	30	20	30	20	30	20
Rated operational current $I_{\rm e}$	up to 690 V	Α	90	115	99	148	99	148
Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x:	at 230 V 400 V 500 V 690 V	kVA kVA kVA kVA	35 62 77 107	45 79 99 137	39 68 85 118	58 102 128 176	39 68 85 118	58 102 128 176
$P_x = P_{n30} \cdot \frac{30}{x}$	1000 V	kVA	80	80	98	98	117	117
AC-6b utilization category, switching low-induc (low-loss, metallized-dielectric) three-phase call Ambient temperature 40 °C								
Rated operational currents $I_{\rm e}$	up to 500 V	Α	105		125		145	
Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and	at 230 V 400 V 500 V 690 V	kvar kvar kvar kvar	42 72 90 72		50 86 108 86		58 100 125 100	

Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

Acc. to VDE 0660 Part 102.
 For rated values for various starting conditions, see Section 3.



Tec	hni	ical	data

- recillical data									
Contactor	Size Type			S6 3RT10	54		S6 3RT10 55	S6 3RT10 56	
Main circuit									
Load ratings wit	th DC								
_	e load (L/R ≤ 1 ms)								
Hated operational	current I _e (at 60 °C)	le e de la compansa d			0	0			
	Number of conducting pat			1	2	3			
		up to 24 V 60 V 110 V	A A A	160 160 18	160 160 160	160 160 160			
		220 V 440 V 600 V	A A A	3.4 0.8 0.5	20 3.2 1.6	160 1.4 0.75			
	lization categories, notors (L/R ≤ 15 ms)								
Rated operational	current I _e (at 60 °C)								
	Number of conducting pat	hs connected in series		1	2	3			
		up to 24 V 60 V 110 V	A A A	160 7.5 2.5	160 160 160	160 160 160			
		220 V 440 V 600 V	A A A	0.6 0.17 0.12		11.5			
Operating frequ	iency								
Operating frequen	icy z in operating cycles per hour								
Contactors without		No-load operating frequency	1/h	2000			2000		
operational current	e operating frequency z' on the I' and the operational voltage U':	for AC-1 for AC-2 for AC-3 for AC-4	1/h 1/h 1/h 1/h	800 400 1000 130			800 300 750 130		
$z' = z \cdot \frac{I_{e}}{I'} \cdot \left(\frac{400 \text{V}}{U'}\right)$	1/h	101 710 4	1,111	100			.00		
Contactors with ove	erload relays (mean value)		1/h	60			60		
Contactor	Size Type	'		S6 3RT10 5	5.				

_					
Cond	IIICI	or ci	നടട-	sect	ions
o o i i o		U. U.	~~~	-	

_		
Screw	connections	ì

ons							
Main conductor: with 3RT19 55-4G box terminal (75 HP)		Front terminal connected	Back terminal connected	Both terminals connected			
finely stranded with end sleeve Finely stranded without end sleeve Stranded AWG conductor connections, solid/stranded	mm² mm² mm²	16 70 16 70 6 2/0	16 70 16 70 6 2/0	max. 1×50, 1×70 max. 1×50, 1×70 max. 2×70 max. 2×1/0			
Ribbon cable (qty. x width x thickness)	mm mm	min. $3 \times 9 \times 0.8$ max. $6 \times 15.5 \times 0.8$	min. $3 \times 9 \times 0.8$ max. $6 \times 15.5 \times 0.8$	max. $2 \times (6 \times 15,5 \times 0.8)$			
with 3RT19 56-4G box terminal							
Finely stranded with end sleeve Finely stranded without end sleeve Stranded AWG conductor connections, solid/stranded	mm² mm² mm²	16 120 16 120 16 120 6 250 kcmil	16 120 16 120 16 120 6 250 kcmil	max. 1 × 95, 1 × 120 max. 1 × 95, 1 × 120 max. 2 × 120 max. 2 × 3/0			
Ribbon cable (qty. \times width \times thickness)	mm mm	min. $3 \times 9 \times 0.8$ max. $10 \times 15.5 \times 0.8$	min. $3 \times 9 \times 0.8$ max. $10 \times 15.5 \times 0.8$	max. $2 \times (10 \times 15.5 \times 0.8)$			
Terminal screwsTightening torque	Nm	M 10 (hexagon sock 10 12 (90 110 lb	et, A/F4)	. (
Without box terminal/busbar connection							
Finely stranded with cable lug n Stranded with cable lug n		16 95 25 120 If cable lugs acc. to DIN 46 235 are come as of a conductor cross-section of 95 mm 3RT19 56-4EA1 terminal cover is necess comply with the phase clearance.					
AWG conductor connections, solid or stranded	AWG	4 250 kcmil	compry with the price	o ologianoo.			
Connecting bar (max. width)	mm	17					
Terminal screwsTightening torque	Nm	M 8 × 25 (A/F 13) 10 14 (89 124 lk	o.in)				
Auxiliary conductor:							
Solid		$2 \times (0.5 \dots 1.5)$; $2 \times (0.75 \dots 2.5)$ acc. to IEC 60 947; max. $2 \times (0.75 \dots 4)$					
Finely stranded with end sleeve	mm²	2 × (0.5 1.5); 2 × ((0.75 2.5)				
AWG conductor connections, solid or stranded – Terminal screws	AWG	2 × (18 14) M 3 (PZ 2)					
 Tightening torque 	Nm	0.8 1.2 (7 10.3	b.in)				

Contactors for Switching Motors

3RT10.6. contactors



Technical data										
Contactor	Size Type			S10 3RT10 64	S10 3RT10 65	S1 3R	0 T10 66			
General data										
Permissible mounting positio The contactors are designed fo on a vertical mounting surface.				90° 1111 90°	5°,22.5°					
Mechanical endurance			Oper. cycles	10 million						
Electrical endurance				See page 2/123						
Rated insulation voltage <i>U</i> _i (p	ollution degree 3)		V	1000						
Rated impulse withstand voltage $U_{\rm imp}$			kV	8						
Safe isolation between coil, au (acc. to DIN VDE 0106 Part 101		n contacts	V	690						
Positively driven operation There is positively driven opera NO contacts cannot be closed					tch blocks acc. t		ntacts and within 60 947-4-1, Annex			
Permissible ambient tempera	ture	in operation when stored	°C °C	-25 +60/+55 -55 +80	with AS-Interface	е				
Degree of protection acc. to IE		050		IP 00/open type,		20				
Shock resistance	Rectangular pulse Sine pulse		g/ms g/ms	8.5/5 and 4.2/1 13.4/5 and 6.5/1						
Conductor cross-sections				See page 2/148						
Electromagnetic compatibility	(EMC)			See page 2/106						
Short-circuit protection										
Main circuit Fuse links, utilization category (NH Type 3NA, DIAZED Type 5S – acc. to IEC 60 947-4-1/EN 60	SB, NEOZED Type 5SE	Type of coord. "1" 1) Type of coord. "2" 1) Weld-free 2)	A A A	500 400 250						
Auxiliary circuit Fuse links, utilization category (weld-free protection at $I_k \ge 1$ k. DIAZED Type 5SB, NEOZED Ty or miniature circuit-breaker with	A) pe 5SE	00 A)	А	10						
Contactor	Size Type			S10 3RT106.						
Control circuit										
Coil voltage tolerance		AC/DC (UC)		0.8 × <i>U</i> _{s min} 1.	$1 \times U_{\rm s max}$					
Power consumption of soleno	oid mechanism			Conventional op	. mechanism	Solid-state op.	mechanism			
(with coil in cold state and rated AC operation	closing p.f.		VA	U _{s min} 490 0.9	590 0.9	<i>U</i> _{s min} 400 0.8	U _{s max} 530 0.8			
DC an aration	closed p.f.		VA W	5.6 0.9 540	6.7 0.9 650	4 0.5 440	5 0.4			
DC operation	closing closed		W	6.1	7.4	3.2	580 3.8			
PLC control input (EN 61 131-	2/Type 2)			DC 24 V /≤ 30 m	nA .					
Operating times (Break-time = opening time + a	urcing time)			Conventional op	. mechanism	Solid-state op. Operation via A1/A2	mechanism PLC input			
– at 0.8 × $U_{\rm smin}$ 1.1 × $U_{\rm smax}$	closing time opening time		ms ms	30 95 40 80		105 145 80 100	45 80 80 100			
- at $U_{\rm smin}$ $U_{\rm smax}$	closing time opening time		ms ms	35 50 50 80		110 130 80 100	50 65 80 100			
Arcing time			ms	10 15		10 15	10 15			

According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
 Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2": No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) Test conditions acc. to IEC 60 947-4-1.



3RT10.6. contactors

Technical data

Contactor Size Type			S10 3RT10	64	S10 3RT10) 65	S10 3RT10) 66
Main circuit								
Load ratings with AC								
AC-1 utilization category, switching resistive loa	d							
Rated operational currents I_{e}	at 40 °C up to 690 V at 60 °C up to 690 V at 60 °C up to 1000 V	A A A	275 250 100		330 300 150			
Ratings of three-phase loads 1) p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	94 164 205 283 164		113 197 246 340 246			
Minimum conductor cross-section with $I_{\rm eload}$	at 40 °C 60 °C	mm² mm²	150 120		185 185			
AC-2 and AC-3 utilization categories								
Rated operational currents $I_{\rm e}$	up to 500 V 690 V 1000 V	A A A	225 225 68		265 265 95		300 280 95	
Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	73 128 160		85 151 189		97 171 215	
	690 V 1000 V	kW kW	223 90		265 132		280 132	
Thermal loading capacity Power loss per conducting path	10 s current ²) at I _e /AC-3/500 V	A W	1800 17		2400 18		2400 22	
AC-4 utilization category (at $I_a = 6 \times I_e$)								
Rated operational current $I_{\rm e}$	up to 400 V	Α	195		230		280	
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 400 V	kW	110		132		160	
• For a contact endurance of approx. 200 000 oper	ating cycles:							
Rated operational currents I_{e}	up to 500 V 690 V 1000 V	A A A	96 85 42		117 105 57		125 115 57	
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	30 54 67		37 66 82		40 71 87	
	690 V 1000 V	kW kW	82 59		102 80		112 80	
AC-6a utilization category, switching three-phase with inrush	e transformers	n	30	20	30	20	30	20
Rated operational current $I_{\rm e}$	up to 690 V	Α	151	227	182	265	182	273
Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x:	at 230 V 400 V 500 V 690 V	kVA kVA kVA	60 105 130 180	90 157 196 271	72 126 158 217	105 183 229 317	72 126 158 217	109 189 236 326
$P_{x} = P_{n30} \cdot \frac{30}{x}$	1000 V	kVA	117	117	164	164	164	164
AC-6b utilization category, switching low-inducta (low-loss, metallized-dielectric) three-phase cap Ambient temperature 40 °C								
Rated operational currents $I_{\rm e}$	up to 500 V	Α	183		220			
Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and	at 230 V 400 V 500 V 690 V	kvar kvar kvar kvar	73 127 159 127		88 152 191 152			

Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

²⁾ Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

Contactors for Switching Motors

3RT10.6. contactors



Contactor	Size		S10	S10	S10
	Туре		3RT10 64	3RT10 65	3RT10 66
Main circuit Load ratings with DC					
DC-1 utilization category,					
switching resistive load (I	•				
Rated operational current	Number of conducting paths connected in series		1 2 3	1 2 3	
	up to 24 V	Α	200 200 200	300 300 300	
	60 V 110 V	A A	200 200 200 18 200 200	300 300 300 33 300 300	
	220 V 440 V	A A	3.4 20 200 0.8 3.2 11.5	3.8 300 300 0.9 4 11	
	600 V	A	0.5 1.6 4		.2
DC-3 and DC-5 utilization shunt and series motors (
Rated operational current	•				
	Number of conducting paths connected in series		1 2 3	1 2 3	
	up to 24 V 60 V	A A	200 200 200 7.5 200 200	300 300 300 11 300 300	
	110 V 220 V	A A	2.5 200 200 0.6 2.5 200	3 300 300 0.6 2.5 300	
	440 V	Α	0.17 0.65 1.4	0.18 0.65 1	.4
Operating frequency	600 V	A	0.12 0.37 0.75	5 0.125 0.37 0	.75
Operating frequency z in o	operating cycles per hour				
Contactors without overload		1/h	2000	2000	2000
Dependence of the operation	frequency and frequency z'on the for AC-1	1/h	750	800	750
operational current I' and the	ne operational voltage U': for AC-2 for AC-3	1/h 1/h	250 500	300 700	250 500
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} 1/h$	for AC-4	1/h	130	130	130
Contactors with overload re	elays (mean value)	1/h	60	60	60
Contactor	Size Type		S10 3RT10 6.		
Conductor cross-secti	ons				
Screw connections	Main conductor: with 3RT19 66-4G box terminal		Front terminal connected	Back terminal connected	Both terminals connected
	Finely stranded with end sleeve	mm²	70 240	120 185	min. 2 × 50,
	Finely stranded without end sleeve	mm²	70 240	120 185	max. 2 × 185 min. 2 × 50,
	Stranded	mm²	70 240 95 300	120 240	max. 2 × 185 min. 2 × 70,
	AWG conductor connections, solid or	AWG	3/0 600 kcmil	250 500 kcmil	max. 2 × 240 min. 2 × 2/0,
	stranded				max. 2 × 500 kcmil
	Ribbon cable (qty. × width × thickness)	mm mm	min. 6 × 9 × 0.8 max. 20 × 24 × 0.5 M 12 (hexagon	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0.5$	max. 2 × (20 × 24 × 0.5
	- Terminal screws	Nima	sokket, A/F 5)	Ib in)	
	- Tightening torque	Nm	20 22 (180 195	ווו.מו)	
	Without box terminal/busbar connection Finely stranded with cable lug	mm²	50 240	If cable lugs acc. to	DIN 46 234 are con-
	Stranded with cable lug	mm ²	70 240	nected, as of a con	ductor cross-section of o DIN 46 235 as of a con-
				ductor cross-section	n of 185 mm ² a 3RT19 66- r is necessary to comply
	NWO 1	A1	0/0 500 : "	with the phase clea	
	AWG conductor connections, solid or stranded Connecting bar (max. width)	AWG mm	2/0 500 kcmil 25		
	Terminal screws Tightening torque	Nm	M 10 × 30 (A/F 17) 14 24 (124 210 lb.in)		
				,	
Auxiliary conductor: Solid		mm²	2 × (0.5 1.5); 2 × (0.75 2.5) acc. to IEC		EC 60 947;
	Finely stranded with end sleeve	mm ²	max. 2 × (0.75 4) 2 × (0.5 1.5); 2 ×	(0.75 2.5)	
	Finely stranded with end sleeve AWG conductor connections, solid or stranded - Terminal screws - Tightening torque	mm² AWG Nm			

SIRIUS

Contactors and Contactor Assemblies Contactors for Switching Motors

3RT10.7. contactors

Technical data

Contactor	Size Type			S12 3RT10 75		S12 3RT10 76	
General data							
Permissible mounting positio The contactors are designed fo on a vertical mounting surface.				90° ++++ 90°	2.5°, 22.5°		
Mechanical endurance			Oper. cycles	10 million			
Electrical endurance				See page 2/123			
Rated insulation voltage <i>U</i> _i (p	ollution degree 3)		V	1000			
Rated impulse withstand volt	age <i>U</i> _{imp}		kV	8			
Safe isolation between coil, au (acc. to DIN VDE 0106 Part 101		n contacts	V	690			
Positively driven operation There is positively driven opera NO contacts cannot be closed					nain contacts and litch blocks acc. to 17B/996/DC)		
Permissible ambient tempera	ture	in operation when stored	°C °C	-25 +60/+55 -55 +80	with AS-Interface		
Degree of protection acc. to IEC 60 947-1 and DIN 40 050				IP 00/open type	, coil system IP 20	0	
Shock resistance	Rectangular pulse Sine pulse		g/ms g/ms	8.5/5 and 4.2/1 13.4/5 and 6.5/1			
Conductor cross-sections				See page 2/151			
Electromagnetic compatibility (EMC)				See page 2/106			
Short-circuit protection							
Main circuit Fuse links, utilization category (NH Type 3NA, DIAZED Type 5S – to IEC 60 947-4/EN 60 947-4-	SB, NEOZED Type 5SE	Type of coord. "1" 1) Type of coord. "2" 1) Weld-free 2)	A A A	630 500 250		630 500 315	
Auxiliary circuit Fuse links, utilization category ((weld-free protection at I₂ ≥ 1 k DIAZED Type 5SB, NEOZED Ty or miniature circuit-breaker with	A) rpe 5SE	00 A)	А	10			
Control circuit							
Coil voltage tolerance		AC/DC (UC)		$0.8 \times U_{\rm s min} \dots 1.$	$1 \times U_{\rm s max}$		
Power consumption of soleno (with coil in cold state and rated AC operation			VA VA	Conventional op $U_{\rm smin}$ 700 0.9 7.6 0.9	0. mechanism $U_{\rm s max}$ 830 0.9 9.2 0.9	Solid-state op. r <i>U</i> _{s min} 560 0.8 5.4 0.8	mechanism U _{s max} 750 0.8 7 0.8
DC operation	closing closed		W W	770 8.5	920 10	600	800
PLC control input (EN 61 131-	-2/Type 2)			DC 24 V/≤ 30 m	A		
Operating times (Break-time = opening time + a	arcing time)			Conventional op	o. mechanism	Solid-state op. r Operation via A1/A2	nechanism PLC input
- at 0.8 \times $U_{\rm s min}$ 1.1 \times $U_{\rm s max}$	closing time opening time		ms ms	45 100 60 100		120 150 80 100	60 90 80 100
– at $U_{\rm smin}\ldotsU_{\rm smax}$	closing time opening time		ms ms	50 70 70 100		125 150 80 100	65 80 80 100
Arcing time			ms	10 15		10 15	10 15

According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
 Type of coordination "1":
 Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2": No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

²⁾ Test conditions acc. to IEC 60 947-4-1.

Contactors for Switching Motors

3RT10.7. contactors



Technical data						
Contactor Size Type			S12 3RT10 75		S12 3RT10 76	
Main circuit						
Load ratings with AC						
AC-1 utilization category, switching resistive load	at 40 °C to COO V	۸	430		010	
Rated operational currents I_{e}	at 40 °C up to 690 V at 60 °C up to 690 V at 60 °C up to 1000 V	A A A	400 200		610 550 ³) 200	
Ratings of three-phase loads 1) p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	151 263 329 454 329		208 362 452 624 329	
Minimum conductor cross-section with $I_{\rm e\;load}$	at 40 °C 60 °C	mm² mm²	2 × 150 240		2 × 185 2 × 185	
AC-2 and AC-3 utilization categories						
Rated operational currents I_{e}	up to 500 V 690 V 1 000 V	A A A	400 400 180		500 ⁴) 450 180	
Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	132 231 291		164 291 363	
	690 V 1 000 V	kW kW	400 250		453 250	
Thermal loading capacity	10 s current ²)	Α	3200		4000	
Power loss per conducting path	at I _e /AC-3/500 V	W	35		55	
AC-4 utilization category (at $I_a = 6 \times I_e$) Rated operational current I_e	up to 400 V	А	350		430	
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 400 V	kW	200		250	
• For a contact endurance of approx. 200 000 operating	g cycles:					
Rated operational currents $I_{\rm e}$	up to 500 V 690 V 1 000 V	A A A	150 135 80		175 150 80	
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	48 85 105		56 98 123	
	690 V 1 000 V	kW kW	133 113		148 113	
AC-6a utilization category, switching three-phase tra	nsformers		20	00	20	00
with inrush Rated operational current <i>I</i> _e	up to 690 V	n A	30 251	20 377	30 270	20 404
Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x:	at 230 V 400 V 500 V 690 V	kVA kVA kVA kVA	100 173 217 300	150 261 326 450	107 187 234 323	161 280 350 483
$P_x = P_{n30} \cdot \frac{30}{x}$	1000 V	kVA	311	311	311	311
AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacite Ambient temperature 40 °C	ors					
Rated operational currents I _e	up to 500 V	Α	287		407	
Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and	at 230 V 400 V 500 V 690 V	kvar kvar kvar kvar	114 199 248 199		162 282 352 282	

Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

²⁾ Acc. to VDE 0660 Part 102. For rated values for various starting conditions, see Section 3.

 ³⁾ Ambient temperature 50 °C for 3RT10 76-.N contactor
 4) Ambient temperature 55 °C for 3RT10 76-.N contactor

Contactors for Switching Motors



3RT10.7. contactors

Technical data						
Contactor	Size Type		S12 3RT10 75		S12 3RT10	76
Main circuit						
Load ratings with DC						
DC-1 utilization category switching resistive load Rated operational curre	(L/R ≤ 1 ms)					
riated operational curre	Number of conducting paths connected in series		1 2	3		
	up to 24 V	Α	400 400	400		
	60 V 110 V	A A	330 400 33 400	400 400		
	220 V	A	3.8 400	400		
	440 V 600 V	A A	0.9 4 0.6 2	11 5.2		
DC-3 and DC-5 utilizatio						
shunt and series motors Rated operational curre	•					
nated operational curre	Number of conducting paths connected in series		1 2	3		
	up to 24 V	A	400 400	400		
	60 V 110 V	A A	11 400 3 400	400 400		
	220 V	A	0.6 2.5	400		
	440 V 600 V	A A	0.18 0.65 0.125 0.37			
Operating frequency						
	n operating cycles per hour	4 /1-	2000		0000	
Contactors without overlo	ad relays No-load operating frequency	1/h	2000		2000	
Dependence of the operating frequency z' on the operational current I' and the operational voltage U' : for AC-2		1/h 1/h	700 200		500 170	
for AC-3		1/h	500		420	
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} 1/h$ for AC-4		1/h	130		130	
Contactors with overload		1/h	60		60	
Contactors with overload	relays (mean value)	1/11	00		00	
Contactor	Size		S12			
	Туре		3RT10 7.			
Conductor cross-sec Screw connections	Main conductor:		Front terminal	Back termi	nal	Both terminals
Screw connections	with 3RT19 66-4G box terminal		connected	connected	IIai	connected
	Finely stranded with end sleeve	mm ²	70 240	120 185		min. 2 × 50, max. 2 × 185
	Finely stranded without end sleeve	mm²	70 240	120 185	00480	min. 2 × 50. 長 -
	Stranded	mm ²	95 300	120 240	S S S	min. 2 × 70,
	AWG conductor connections, solid or stranded	AWG	3/0 600 kcmil	250 500	kcmil	max. 2 × 240 min. 2 × 2/0, max. 2 × 500 kcmil
	Ribbon cable (qty. \times width \times thickness)	mm mm	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0$.	min. 6 × 9 max. 20 ×		max. $2 \times (20 \times 24 \times 0.5)$
	- Terminal screws	111111	M 12 (hexagon	111ax. 20 X	∠+ ∧ ∪.3	max. 2 x (20 x 24 x 0.3
	Tightening torque	Nm	socket, A/F 5) 20 22 (180 19	95 lb.in)		
	Without box terminal/busbar connection					
	Finely stranded with cable lug Stranded with cable lug	mm² mm²	50 240 70 240	nected, as 240 mm ² a ductor cros 4EA1 termi	of a cond nd acc. to ss-section inal cover	DIN 46 234 are conductor cross-section of DIN 46 235 as of a cond of 185 mm² a 3RT19 66-ris necessary to comply
	AWG conductor connections, solid or stranded	AWG	2/0 500 kcmil	with the ph	ase clear	ance.
	Connecting bar (max. width) – Terminal screws	mm	25 M 10 × 30 (A/F 17)		
	- Tightening torque	Nm	14 24 (124 2			
	Auxiliary conductor: Solid	mm²	2 × (0.5 1.5); 2 max 2 × (0.75		acc. to IE	EC 60 947;
	Finely stranded with end sleeve	mm ²	max. 2 × (0.75 4) 2 × (0.5 1.5); 2 × (0.75 2.5)			

AWG conductor connections, solid or stranded AWG – Terminal screws – Tightening torque Nm

2 × (18 ... 14) M 3 (PZ 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)

Contactors for Switching Motors

3RT12.6. vacuum contactors



Technical data							
Contactor	Size Type			S10 3RT12 64	S10 3RT12 65		S10 BRT12 66
General data							
Permissible mounting positio The contactors are designed fo on a vertical mounting surface.				22,5°,22,5° 22,5°	22,5° 0981300 		
Mechanical endurance			Oper. cycles	10 million			
Electrical endurance				See page 2/123			
Rated insulation voltage U_i (p	ollution degree 3)		V	1000			
Rated impulse withstand volta	age <i>U</i> _{imp}		kV	8			
Safe isolation between coil, au (acc. to DIN VDE 0106 Part 101		n contacts	V	690			
Positively driven operation There is positively driven opera NO contacts cannot be closed				the auxiliary swi Annex H (draft 1	tch blocks acc. to 7B/996/DC)	o ZH 1/457, IE	contacts and within C 60 947-4-1,
Permissible ambient tempera	ture	in operation when stored	°C °C	-25 +60/+55 -55 +80	with AS-Interface	9	
Degree of protection acc. to IE	EC 60 947-1 and DIN 40	050		IP 00/open type,	, coil system IP 2	.0	
Shock resistance	Rectangular pulse Sine pulse		g/ms g/ms	8.5/5 and 4.2/1 13.4/5 and 6.5/1			
Conductor cross-sections				See page 2/154			
Electromagnetic compatibility (EMC)			See page 2/106				
Short-circuit protection							
Main circuit Fuse links, utilization category gL/gG NH Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE – to IEC 60 947-4/EN 60 947-4-4 (VDE 0660Part 102) Type of coord. "1" 1 Type of coord. "2" 1) Weld-free 2)			A A A	500 500 400			
Auxiliary circuit Fuse links, utilization category ((weld-free protection at $I_k \ge 1$ k. DIAZED Type 5SB, NEOŽED Ty or miniature circuit-breaker with	A) pe 5SE	0 A)	А	10			
Control circuit							
Coil voltage tolerance		AC/DC (UC)		$0.8 \times U_{\rm s min} \dots 1.$	$1 \times U_{\text{s max}}$		
Power consumption of soleno				Conventional op	. mechanism		p. mechanism
(with coil in cold state and rated	d range $U_{\text{s min}} \dots U_{\text{s max}}$)			U _{s min}	U _{s max}	U _{s min}	$U_{\rm s\ max}$
AC operation	closing p.f. closed p.f.		VA VA	530 0.9 6.1 0.9	630 0.9 7.4 0.9	420 0.8 4.3 0.8	570 0.8 5.6 0.8
DC operation	closing closed		W	580 6.8	700 8.2	460 3.4	630 4.2
PLC control input (EN 61 131-	2/Type 2)			DC 24 V/≤ 30 m/	A		
Operating times (Break-time = opening time + a	,			Conventional op	. mechanism	Operation vi A1/A2	PLC input
- at 0.8 × $U_{\rm s min}$ 1.1 × $U_{\rm s max}$	closing time opening time		ms ms	30 95 40 80		105 145 80 100	45 80 80 100
- at $U_{\text{s min}} \dots U_{\text{s max}}$	closing time opening time		ms ms	35 50 50 80		110 130 80 100	50 65 80 100
Arcing time ms 10 15				10 15	10 15		

According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
 Type of coordination "1":
 Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2": No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated. 2) Test conditions acc. to IEC 60 947-4-1.



3RT12.6. vacuum contactors

Technical data

Contactor Size Type			S10 3RT12	64	S10 3RT12 65	S10 3RT12 66
Main circuit						
Load ratings with AC						
AC-1 utilization category, switching resistive load						
Rated operational currents $I_{\rm e}$	at 40 °C up to 1000 V at 60 °C up to 1000 V	A A	330 300			
Ratings of three-phase loads 1) p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	113 197 246 340 492			
Minimum conductor cross-section with $I_{\rm e\ load}$	at 40 °C 60 °C	mm² mm²	185 185			
AC-2 and AC-3 utilization categories						
Rated operational currents $I_{\rm e}$	up to 1000 V	Α	225		265	300
Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V	kW kW kW	73 128 160		85 151 189	97 171 215
	690 V 1000 V	kW kW	223 320		265 378	288 428
Thermal loading capacity Power loss per conducting path	10 s current 2) at I_e /AC-3	A W	1800 9		2120 12	2400 14
AC-4 utilization category (at $I_a = 6 \times I_e$)	-					
Rated operational current $I_{\rm e}$	up to 690 V	Α	195		230	280
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 400 V	kW	110		132	160
• For a contact endurance of approx. 400 000 operating	cycles:					
Rated operational currents I_{e}	up to 690 V 1000 V	A A	97 68		115 81	140 98
Ratings of squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	30 55 68 94 95		37 65 81 112 114	45 79 98 138 140
AC-6a utilization category, switching three-phase trai					114	140
with inrush Rated operational current I_e	up to 690 V	n A	30 185	20 278		
Ratings of three-phase transformers with an inrush of n = 30 or 20. The ratings must be re-calculated for other inrush factors x:	at 230 V 400 V 500 V 690 V 1000 V	kVA kVA kVA kVA kVA	74 128 160 221 320	111 193 241 332 482		
$P_x = P_{n30} \cdot \frac{30}{x}$	1000 V	NVA	520	402		
AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacito Ambient temperature 40 °C						
Rated operational currents $I_{ m e}$	up to 500 V	Α	220			
Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz and	at 230 V 400 V 500 V 690 V	kvar kvar kvar kvar	88 152 191 152			
Operating frequency						
Operating frequency z in operating cycles per hour						
Contactors without overload relays	No-load operating frequency	1/h	2000		2000	
Dependence of the operating frequency z' on the operational current I' and the operational voltage U' :	for AC-1 for AC-2 for AC-3 for AC-4	1/h 1/h 1/h 1/h	800 300 750 250		750 250 750 250	
$Z' = Z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} \frac{1}{\text{h}}$	101 AO-4	1/11	200		200	
Contactors with overload relays (mean value)		1/h	60		60	

Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

Acc. to VDE 0660 Part 102.
For rated values for various starting conditions, see Section 3.

Contactors for Switching Motors

3RT12.6. vacuum contactors



Technical data								
Contactor	Size Type		S10 3RT12 6.					
Conductor cross-section	ons							
Screw connections	Main conductor: with 3RT19 66-4G box terminal		Front terminal connected	Back terminal connected	Both terminals connected			
	Finely stranded with end sleeve	mm ²	70 240	120 185	min. 2 × 50,			
	Finely stranded without end sleeve	mm²	70 240	120 185	max. 2 × 185 min. 2 × 50, max. 2 × 185 min. 2 × 70,			
	Stranded	mm²	95 300	120 240	min. 2 × 70, max. 2 × 240			
	AWG conductor connections, solid or stranded	AWG	3/0 600 kcmil	250 500 kcmil	min. $2 \times 2/0$, max. 1×500 kcmil			
	Ribbon cable (qty. × width × thickness)	mm mm	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0.5$	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0.5$	max. 2 × (20 × 24 ×			
	- Terminal screws		M 12 (hexagon socket, A/F 5)		0.5)			
	 Tightening torque 	- Tightening torque Nm		20 22 (180 195 lb.in)				
	Without box terminal/busbar connection							
	Finely stranded with cable lug Stranded with cable lug	mm² 50 240 If cable lugs acc. to DIN 46 23 nected, as of a conductor cros 240 mm² and acc. to DIN 46 23 ductor cross-section of 185 mm 4EA1 terminal cover is necessary with the phase clearance.		ductor cross-section of DIN 46 235 as of a con- n of 185 mm ² a 3RT19 66- is necessary to comply				
	AWG conductor connections, solid or stranded	AWG	2/0 500 kcmil					
	Connecting bar (max. width) - Terminal screws - Tightening torque	mm Nm	25 M 10 × 30 (A/F 17) 14 24 (124 210	lb.in)				
	Auxiliary conductor:		,	,				
	Solid	mm²		0.75 2.5) acc. to IE0	C 60 947;			
	Finely stranded with end sleeve	mm ²	max. 2 × (0.75 4) 2 × (0.5 1.5); 2 × (0.75 2.5)				
	AWG conductor connections, solid or stranded – Terminal screws	AWG	2 × (18 14) M 3 (PZ 2)					
	 Tightening torque 	Nm	0.8 1.2 (7 10.3 lb.in)					

Contactors for Switching Motors



3RT12.7. contactors

Technical	data

Contactor	Size Type			\$12 \$12 3RT12 75 \$3RT12 76			
General data							
Permissible mounting positio The contactors are designed fo on a vertical mounting surface.				22,5°, 22,5° 22,5°	22,5° 09801320		
Mechanical endurance			Oper. cycles	10 million			
Electrical endurance				See page 2/123			
Rated insulation voltage U _i (p	ollution degree 3)		V	1000			
Rated impulse withstand volta	age <i>U</i> _{imp}		kV	8			
Safe isolation between coil, au (acc. to DIN VDE 0106 Part 101		n contacts	V	690			
Positively driven operation There is positively driven opera NO contacts cannot be closed					nain contacts and titch blocks acc. to 17B/996/DC)		
Permissible ambient tempera	ture	in operation when stored	°C °C	-25 +60/+55 -55 +80	with AS-Interface	•	
Degree of protection acc. to IEC 60 947-1 and DIN 40 050				IP 00/open type	, coil system IP 2	0	
Shock resistance	Rectangular pulse		<i>g</i> /ms	8.5/5 and 4.2/1			
Candinatas assas acations	Sine pulse g/m Conductor cross-sections			13.4/5 and 6.5/	10		
Electromagnetic compatibility (EMC)				See page 2/106			
Short-circuit protection	(Lino)			See page 2/106			
Main circuit							
Fuse links, utilization category on NH Type 3NA, DIAZED Type 5S to 1EC 60 947-4/EN 60 947-4-	SB, NEOZED Type 5SE	Type of coord. "1" 1) Type of coord. "2" 1) Weld-free 2)	A A A	800 800 500			
Auxiliary circuit Fuse links, utilization category ((weld-free protection at I _k ≥ 1 k DIAZED Type SSB, NEOZED Ty or miniature circuit-breaker with	A) pe 5SE	00 A)	А	10			
Control circuit							
Coil voltage tolerance		AC/DC (UC)		0.8 × U _{s min} 1.	$1 \times U_{\rm s max}$		
Power consumption of soleno	oid mechanism			Conventional op	o. mechanism	Solid-state op.	mechanism
(with coil in cold state and rated	d range $U_{\rm smin}$ $U_{\rm smax}$)			U _{s min}	U _{s max}	$U_{\rm s\;min}$	U _{s max}
AC operation	closing p.f.		VA	700 0.9	830 0.9	560 0.8	750 0.8
	closed p.f.		VA	7.6 0.9	9.2 0.9	5.4 0.8	7 0.8
DC operation	closing closed		W W	770 8.5	920 10	600 4	800 5
PLC control input (EN 61 131-	2/Type 2)			DC 24 V/≤ 30 m	Α		
Operating times (Break-time = opening time + a	rcing time)			Conventional op	o. mechanism	Solid-state op. Operation via A1/A2	mechanism PLC input
– at 0.8 × $U_{\rm s min}$ 1.1 × $U_{\rm s max}$	closing time opening time		ms ms	45 100 60 100		120 150 80 100	60 90 80 100
- at $U_{\rm smin}$ $U_{\rm smax}$	closing time opening time		ms ms	50 70 70 100		125 150 80 100	65 80 80 100
Arcing time			ms	10 15		10 15	10 15

According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2": No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated. 2) Test conditions acc. to IEC 60 947-4-1.

Contactors for Switching Motors

3RT12.7. vacuum contactors



Size	Technical data							
AC-1 utilization category, switching resistive load AC-1 utilization category AC-2 utilization category AC-2 utilization categories AC-2 utilization categories AC-2 utilization categories AC-2 utilization category (at ℓ a 6 x ℓ b 1 up to 100 v k l k l k l l l l l l l l l l l l l l	Contactor							
AC-1 utilization category, witching resistive load Al 0°C up to 1000 V A 610 Al 60°C up to 1000 V A 600 Al 60°C up to 1000 V Al 60°C up	Main circuit							
Raided operational currents I	Load ratings with	AC						
Raining of three-phase loads	-							
### AC-2 and AC-3 utilization categories Rated operational currents I, Ratings of eligring or squired-cage ### AC-2 and AC-3 utilization category Rated operational currents I, Ratings of eligring or squired-cage ### AC-2 and EO Hz ### AC-3 utilization category ### AC-4 utilization category utilization category ### AC-5 utilization category ### AC-6 utilization category #### AC-6 utilization category ##### AC-6 utilization category #### AC-6 utilization category ##### AC-6 utilization c		e loads 1)	at 230 V 400 V 500 V 690 V	kW kW kW	208 362 452 624			
Related operational currents I_ up to 1000 V A 400 500	Minimum conductor c	ross-section with $I_{\mathrm{e}\mathrm{load}}$						
Ratings of slipring or squirrel-cage	AC-2 and AC-3 utiliza	ation categories						
March Mar	Rated operational curr	rents $I_{ m e}$	up to 1000 V	Α	400		500	
Thermal loading capacity 10 s current? A 3200 4000 Power loss per conducting path at I_L/A C-3 W 21 32 32 32 32 32 32 32 32 32 32 32 32 32			400 V	kW	231		291	
Power loss per conducting path at $I_{\nu}/AC-3$ W 21 32 AC-4 utilization category (at $I_{\nu}=6 \times I_{\nu}$) Ratings of squirrel-cage motors at 50 Hz and 60 Hz at 400 V kW 200 250 • For a contact endurance of approx. 400 000 operating cycles: Rated operational current I_{ν} up to 680 V A 175 Ratings of squirrel-cage motors at 50 Hz and 60 Hz 400 V kW 200 250 • For a contact endurance of approx. 400 000 operating cycles: Rated operational currents I_{ν} 150 V A 123 151 Ratings of squirrel-cage motors at 230 V kW 56 70 at 50 Hz and 60 Hz 400 V kW 98 122 153 • 660 V kW 124 153 • 660 V kW 125 212 • AC-6a utilization category, switching three-phase transformers with inrush n 1 30 20 Rated operational current I_{ν} 19 to 690 V A 279 419 Ratings of three-phase transformers at 230 V kVA 111 167 with an inrush of 1 = 30 or 20. • For a contact endurance of approx. 400 000 v kVA 241 383 250 • The ratings must be re-calculated 500 V kVA 241 383 250 • AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors Ambient temperature 40 ° C • Rating of original capacitors at 230 V kVA 241 383 250 • For a contact endurance of properating cycles per hour Contactors without overload relays No-load operating frequency I_{ν} 100 V kVA 282 250 • Dependence of the operating requency I_{ν} 100 V kVA 282 250 • Dependence of the operating requency I_{ν} 100 V kVA 282 250 • I_{ν} 2000 I_{ν} 100 V kVA 282 250 • I_{ν} 2000 I_{ν} 100 V kVA 282 250 • I_{ν} 2000 $I_$								
Rated operational current I_a up to 690 V A 350	• .	•	,					
Rated operational current I_a up to 690 V A 350	AC-4 utilization categ	gory (at $I_a = 6 \times I_e$)						
• For a contact endurance of approx. 400000 operating cycles: Rated operational currents I_0 up to 600° A 175 151 151 Ratings of squirrel-cage motors at 200 kW 56 70 at 50 Hz and 60° Hz 400 kW 98 122 500 kW 124 153 680 kW 172 212 175 153 680 kW 172 212 175 153 153 154 155 155 155 155 155 155 155 155 155			up to 690 V	Α	350		430	
Rated operational currents I_0	Ratings of squirrel-cag	ge motors at 50 Hz and 60 Hz	at 400 V	kW	200		250	
Ratings of squirrel-cage motors $\begin{array}{c} 1000 \ V \ A \\ 123 \ V \ W \\ 56 \ 70 \\ 0 \ at 50 \ Hz \ and 60 \ Hz \\ & 400 \ V \ KW \\ 183 \ & 122 \\ 153 \ & 680 \ V \ KW \\ 172 \ & 212 \\ 1000 \ V \ KW \\ 183 \ & 217 \\ \hline \\ \textbf{AC-6a utilization category, switching three-phase transformers} \\ \text{with inrush} \qquad \qquad$	For a contact endura	ance of approx. 400 000 operating	g cycles:					
at 50Hz and 60Hz 400 V kW 98 122 153 690 V kW 172 212 217 AC-6a utilization category, switching three-phase transformers with inrush Rated operational current I_e 400 V kVA 183 20 Ratings of three-phase transformers at 230 V kVA 111 1 167 with an inrush of $n=30$ or 20 The ratings must be re-calculated 500 V kVA 193 290 The ratings must be re-calculated 500 V kVA 193 290 The ratings must be re-calculated 500 V kVA 241 363 690 V kVA 32 501 $P_x = P_{n30} \cdot \frac{30}{x}$ AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors Ambient temperature 40° Ratings of single capacitors 6μ H 500 V kVar 282 between parallel capacitors 6μ H 500 V kVar 282 Derating frequency Operating frequency Dependence of the operating grequency z on the operational voltage U : for AC-2 1/h 250 $z' = z \cdot \frac{I_p}{I^p} \cdot \left(\frac{400\text{V}}{U^r}\right)^{1.5} 1/h$ 700 700	Rated operational curr	rents I _e						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		ge motors	400 V 500 V	kW kW	98 124		122 153	
AC-6a utilization category, switching three-phase transformers with inrush Rated operational current I_e up to 690 V A 279 419 Ratings of three-phase transformers at 230 V kVA 111 167 with an inrush of $n=30$ or 20 . 400 V kVA 193 290 The ratings must be re-calculated 500 V kVA 241 383 for of other inrush factors x : 690 V kVA 332 501 $P_x = P_{n30} \cdot \frac{30}{x}$ 1000 V kVA 452 726 $P_x = P_{n30} \cdot \frac{30}{x}$ 276 $P_x = P_{n30} \cdot \frac{30}{x}$ 276 $P_x = P_{n30} \cdot \frac{30}{x}$ 276 $P_x = P_{n30} \cdot \frac{30}{x}$ 280 $P_x = P_{n30} \cdot \frac{30}{x}$ 290 $P_x = P_{n30} \cdot \frac{30}{x}$ 300 V kVA 452 726 $P_x = P_{n30} \cdot \frac{30}{x}$ 31000 V kVA 452 726								
Rated operational current I_e up to 690 V A 279 419 Ratings of three-phase transformers at 230 V kVA 111 167 with an inrush of $n=30$ or 20. 400 V kVA 291 363 for other inrush factors x : 690 V kVA 241 363 for other inrush factors x : 690 V kVA 482 726 $P_x = P_{n,30} \cdot \frac{30}{2}$ AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors Ambient temperature 40° C Ratings of single capacitors at 230 V kvar 282 between parallel capacitors 6 μ H) 500 V kvar 282 Operating frequency Operating frequency Dependence of the operating frequency z' on the operational current I' and the operational voltage U' : for AC-2 1/h 750 $z' = z \cdot \frac{I_e}{I_r} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5}$ 1/h		egory, switching three-phase tra	ansformers	n	30	20		
with an inrush of $n=30$ or 20 . 400 V kVA 193 290 The ratings must be re-calculated 500 V kVA 332 501 $P_x = P_{n30} \cdot \frac{30}{x}$ 400 V kVA 332 501 $P_x = P_{n30} \cdot \frac{30}{x}$ 400 V kVA 332 501 $P_x = P_{n30} \cdot \frac{30}{x}$ 400 V kVA 482 726 AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors Ambient temperature 40° C Ratings of single capacitors at 230 V kvar 282 between parallel capacitors 6 μ H) 500 V kvar 352 at 50 Hz, 60 Hz and 690 V kvar 282 Deprating frequency Operating frequency z in operating cycles per hour Contactors without overload relays Dependence of the operating frequency z on the operational current I' and the operational voltage U' : for AC-1 1/h 250 I' h 2		rent $I_{ m e}$	up to 690 V					
The ratings must be re-calculated for other inrush factors x: $ \begin{array}{c} 500 \text{ V} & \text{kVA} \\ 690 \text{ V} & \text{kVA} \\ 332 \\ 1000 \text{ V} & \text{kVA} \\ 482 \\ \end{array} \begin{array}{c} 3363 \\ 501 \\ 726 \\ \end{array} $	Ratings of three-phase	e transformers		kVA	111			
for other inrush factors x : $P_x = P_{n30} \cdot \frac{30}{x}$ AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors Ambient temperature $40^{\circ}\mathrm{C}$ Rated operational currents I_e Ratings of single capacitors or of capacitor banks (minimum inductance between parallel capacitors 6μ) between parallel capacitors 6μ) Soo $10^{\circ}\mathrm{C}$ Parating frequency Operating frequency Operating frequency \mathbf{z} in operating cycles per hour Contactors without overload relays No-load operating frequency \mathbf{z} in operating frequency \mathbf{z} on the operational current \mathbf{z} and the operational voltage \mathbf{z} or \mathbf{z} and \mathbf{z}								
$P_x = P_{n30} \cdot \frac{30}{\text{X}}$ $AC-6b \ \text{utilization category, switching low-inductance} \ \text{(low-loss, metallized-dielectric) three-phase capacitors} \ Ambient temperature 40^{\circ}\text{C} Rated \ \text{operational currents} \ I_e \qquad \text{up to } 500 \text{V} \qquad A \qquad 407 Ratings \ \text{of single capacitors} \qquad \text{at } 230 \text{V} \qquad \text{kvar} \qquad 162 \ \text{or of capacitor banks (minimum inductance} \qquad 400 \text{V} \qquad \text{kvar} \qquad 282 \ \text{between parallel capacitors } 6 \text{µH}) \qquad 500 \text{V} \qquad \text{kvar} \qquad 352 \ \text{at } 50 \text{Hz}, \ 60 \text{Hz} \ \text{and} \qquad 690 \text{V} \qquad \text{kvar} \qquad 282 \ \text{Dependency} Operating \ \textit{frequency} Operating \ \textit{frequency} \ \textit{z} \ \text{in operating cycles per hour} Contactors \ \text{without overload relays} \qquad No-load \ \text{operating} \qquad 1/h \qquad 2000 \ \text{frequency} Operating \ \textit{frequency} \ \textit{z} \ \text{in operational current} \ \textit{I'} \ \text{and the operational voltage} \ \textit{U}: \qquad \text{for } AC-2 1/h \qquad 250 \ \text{for } AC-3 1/h \qquad 750 \ \text{for } AC-4 1/h \qquad 250 \ \text{for } AC-4 \ \text{for } AC-4 1/h \qquad 250 \ \text{for } AC-4 $			690 V	kVA	332	501		
(low-loss, metallized-dielectric) three-phase capacitors Ambient temperature $40^{\circ}\mathrm{C}$ Rated operational currents I_{e} up to $500^{\circ}\mathrm{V}$ A 407 Ratings of single capacitors at $230^{\circ}\mathrm{V}$ kvar 162 or of capacitor banks (minimum inductance $400^{\circ}\mathrm{V}$ kvar 282 between parallel capacitors $6^{\circ}\mathrm{H}\mathrm{J}$ $500^{\circ}\mathrm{V}$ kvar 352 at $50^{\circ}\mathrm{Hz}$, $60^{\circ}\mathrm{Hz}$ and $690^{\circ}\mathrm{V}$ kvar 282 **Operating frequency** **Operatin	$P_x = P_{n30} \cdot \frac{30}{x}$		1000 V	kVA	482	726		
Rated operational currents I_e up to 500 V A 407 Ratings of single capacitors at 230 V kvar 162 or of capacitor banks (minimum inductance 400 V kvar 282 between parallel capacitors 6 µH) 500 V kvar 352 at 50 Hz, 60 Hz and 690 V kvar 282 Operating frequency Operating frequency z in operating cycles per hour Contactors without overload relays No-load operating frequency z on the operational current I' and the operational voltage U' : for AC-1 1/h 250 $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5}$ 1/h	(low-loss, metallized-	-dielectric) three-phase capacit						
Ratings of single capacitors or of capacitor banks (minimum inductance 400 V $400 \text$	'		un to 500 V	А	407			
or of capacitor banks (minimum inductance between parallel capacitors 6 μ H) at 50 Hz, 60 Hz and 690 V banks (minimum inductance between parallel capacitors 6 μ H) at 50 Nz, 60 Hz and 690 V banks (as 150 Hz, 60 Hz and 690 V banks) as 282 Operating frequency Operating frequency Operating frequency z in operating cycles per hour Contactors without overload relays No-load operating frequency z on the operational current z on the operational current z and the operational voltage z for AC-1 1/h 250 for AC-3 1/h 750 $z' = z \cdot \frac{I_{e}}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5}$ 1/h		ů .	•					
Operating frequency z in operating cycles per hour Contactors without overload relays No-load operating frequency No-load operating frequency I/h 2000 Dependence of the operating frequency z ' on the operational current I ' and the operational voltage U ': $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5}$ 1/h 1/h 2000 for AC-1 1/h 700 for AC-2 1/h 250 for AC-3 1/h 750 for AC-4 1/h 250	or of capacitor banks between parallel capa	(minimum inductance	400 V 500 V	kvar kvar	282 352			
Contactors without overload relays No-load operating frequency Dependence of the operating frequency z' on the operational current I' and the operational voltage U' : $z' = z \cdot \frac{I_{\theta}}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} \frac{1}{h}$ No-load operating $1/h$ for AC-1 for AC-1 $1/h$ for AC-2 $1/h$ 250 for AC-3 $1/h$ 750 for AC-4 $1/h$ 250	Operating frequen	су						
Dependence of the operating frequency z' on the operational current I' and the operational voltage U' : $z' = z \cdot \frac{I_{\theta}}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} 1/h$ 700 6 for AC-1 1/h 6 for AC-2 1/h 750 6 for AC-3 1/h 750 6 for AC-4 1/h 750 250				1/h	2000			
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5} 1/h$ for AC-4 1/h 250			for AC-1 for AC-2	1/h	250			
Contactors with overload relays (mean value) 1/h 60	$Z' = Z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{ V}}{U'}\right)^{1.5}$	1/h						
	Contactors with overlo	oad relays (mean value)		1/h	60			

Industrial furnaces and electric heaters with resistance heating, for example (higher current input allowed for during heating up).

Acc. to VDE 0660 Part 102.
 For rated values for various starting conditions, see Section 3.

Contactors for Switching Motors



3RT12.7. vacuum contactors

Technical data

Contactor	Size		S12				
	Туре		3RT12 7.				
Conductor cross-sections							
Screw connections	Main conductor: with 3RT19 66-4G box terminal		Front terminal connected	Back terminal connected	Both terminals connected		
	Finely stranded with end sleeve	mm²	70 240	120 185	min. 2 × 50, max. 2 × 185		
	Finely stranded without end sleeve	mm²	70 240	120 185	max. 2 × 185 min. 2 × 70, max. 2 × 70,		
	Stranded	mm²	95 300	120 240	min. 2 × 70, max. 2 × 240		
	AWG conductor connections, solid or stranded	AWG	3/0 600 kcmil	250 500 kcmil	min. $2 \times 2/0$, max. 2×500 kcmil		
	Ribbon cable (qty. \times width \times thickness)	mm	min. $6 \times 9 \times 0.8$	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0.5$	may 0 (00 04 0 F)		
	- Terminal screws	mm	max. 20 × 24 × 0.5 M 12 (hexagon socket, A/F 5)	Max. 20 x 24 x 0.5	max. $2 \times (20 \times 24 \times 0.5)$		
	- Tightening torque Nm Without box terminal/busbar connection		20 22 (180 195 lb.in)				
	Finely stranded with cable lug Stranded with cable lug	mm² mm²	50 240 70 240	If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross-section of 240 mm² and acc. to DIN 46 235 as of a conductor cross-section of 185 mm² a 3RT19 6 4EA1 terminal cover is necessary to comply with the phase clearance.			
	AWG conductor connections, solid or stranded	AWG	2/0 500 kcmil				
	Connecting bar (max. width) – Terminal screws – Tightening torque	mm Nm	25 M 10 × 30 (A/F 17) 14 24 (124 210	lb.in)			
	Auxiliary conductor:						
	Solid	mm²	2 × (0.5 1.5); 2 × (max. 2 × (0.75 4)	(0.75 2.5) acc. to IE	C 60 947;		
	Finely stranded with end sleeve	mm²	2 × (0.5 1.5); 2 × ((0.75 2.5)			
	AWG conductor connections, solid or stranded – Terminal screws	AWG	2 × (18 14) M 3 (PZ 2)	U- 3-A			
	– Tightening torque	Nm	0.8 1.2 (7 10.3	ib.in)			

2/157

Contactors for Switching Motors

3RT14 contactors, 3-pole, for switching resistive loads (AC-1)



Technical data Contactor Size S3 3RT14 46 Type **General data** Permissible mounting position AC and DC operation 360 22.5° 22.5 For DC operation and forward The contactors are designed for operation inclination up to 22.5° on a vertical mounting surface. coil voltage tolerance 0.85 ... 1.1 \times Upright mounting position: Special design required. Positions 13 ... 16 of the Order No. must be changed to **-1AA0**. AC operation Additional charge. DC operation Mechanical endurance Oper. 10 million cycles **Electrical endurance** Oper. 0.5 million AC-1 utilization category at I. cycles Rated insulation voltage U_i (pollution degree 3) V 1000 Rated impulse withstand voltage U_{imp} k۷ 6 ٧ 690 Safe isolation between coil and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89]) Permissible ambient temperature °C in operation ... +60 when stored °С Degree of protection acc. to IEC 60 947-1 and DIN 40 050 IP 20 (terminal compartment IP 00), coil system IP 40 Shock resistance 6.8/5 and 4/10 Rectangular pulse AC and DC operation g/ms g/ms 10.6/5 and 6.2/10 Sine pulse AC and DC operation Conductor cross-sections Short-circuit protection of contactors without overload relays Fuse links, utilization category gL/gG NH, Type 3NA Type of coord. "1"2) Α 250 Fuse links, utilization category gR SITOR, Type 3NE 250 Type of coord. "2" 2) **Auxiliary circuit** Fuse links, utilization category gL/gG (weld-free protection at $I_{\rm k} \ge$ 1 kA) DIAZED Type 5SB, NEOZED Type 5SE Α 10 or miniature circuit-breaker with C-characteristic (Ik < 400 A) Α 10 **Control circuit** Coil voltage tolerance 0.8 ... 1.1 × U_s **Power consumption of the coils** (with coil in cold state and $1.0 \times U_s$) Standard design For USA and Canada 50 50/60 50 60 AC operation Hz 270 270 VA 298 300 98 /274 0.7 / 0.62 closing 0.68 0.52 0.68 p.f. VΑ 22 27 / 20 22 21 closed 0.29 0.27 0.29/ 0.31 0.27 DC operation closing = closed W 15 Operating times at 0.8 ... $1.1 \times U_s^{-1}$ Break-time = opening time + arcing time AC operation closing time ms 17 ... 90 opening time ms 10 ... 25 DC operation closing time 90 ... 230 ms opening time 14 ... 20 Arcing time 10 ... 15 ms Operating times at $1.0 \times U_s^{-1}$ AC operation 18 ... 30 11 ... 23 closina time ms opening time ms DC operation closing time 100 ... 120 ms

- The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks: varistor +2 ms to 5 ms, diode assemblies 2 to 6 times.
- According to excerpt from IEC 60 947-4-1 (VDE 0660 Part 102):
 Type of coordination "1":
 Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.
- Type of coordination "2":

No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.



Contactors for Special Applications
3RT14 contactors, 3-pole,
for switching resistive loads (AC-1)

Technical data					
Contactor Size Type			S3 3RT14 46		
Main circuit					
Load ratings with AC					
AC-1 utilization category, switching resistiv	e load				
Rated operational currents $I_{\rm e}$	at 40 °C up to 690 V at 60 °C up to 690 V at 1000 V	A A A	140 130 60		
Ratings of three-phase loads p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	50 86 107 148 98		
Minimum conductor cross-section with $I_{\rm e\;load}$	at 40 °C at 60 °C	mm² mm²	50 50		
AC-2 and AC-3 utilization categories With an electrical endurance of 1.3 million ope	erating cycles				
Rated operational current I _e	up to 690 V	Α	44		
Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz (at 60 °C)	at 230 V 400 V 500 V 690 V	kW kW kW	12.7 22 29.9 38.2		
Power loss per conducting path	at I _e /AC-1	W	12.5		
Load ratings with DC					
DC-1 utilization category, switching resistiv	e load L/R ≤ 1 ms) g paths when connected in series		1	2	3
Rated operational currents $I_{\rm e}$ (at 60 °C)	up to 24 V 60 V 110 V	A A A	130 80 12	130 130 130	130 130 130
	220 V 440 V 600 V	A A A	2.5 0.8 0.48	13 2.4 1.3	130 6 3.4
DC-3 and DC-5 utilization categories, shunt Number of conducting	and series motors g paths when connected in series		1	2	3
Rated operational currents $I_{\rm e}$ (at 60 °C)	up to 24 V 60 V 110 V 220 V 440 V	A A A A	6 3 1.25 0.35 0.15	130 130 130 1.75 0.42	130 130 130 4 0.8
	440 V 600 V	A	0.15	0.42	0.8 0.45

Operating frequency

Operating frequency z in operating cycles per hour			AC operation	DC operation
Contactors without overload relays	No-load operating fre- quency	1/h	5000	1000
Rated operation	for AC-1 for AC-3	1/h 1/h	650 1000	650 1 000
Dependence of the operating frequency z' on the operational current I' and the operational voltage U' :				
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \mathrm{V}}{U'}\right)^{1.5} 1/\mathrm{h}$				

Contactors for Special Applications
3RT14 contactors, 3-pole,
for switcing resistive loads (AC-1)



Technical data

Contactor	Size Type		S3 3RT14 46		
Conductor cross-secti	ions				
Screw connections (1 or 2 conductor	Main conductor: With box terminal		Front terminal connected	Back terminal connected	Both terminals connected
connections possible)	Finely stranded with end sleeve Finely stranded without end sleeve Solid Stranded Ribbon cable (qty. × width × thickness) AWG conductor connections	mm² mm² mm² mm² mm	2.5 50 4 50 2.5 16 4 70 6×9×0.8 10 2/0	2.5 50 10 50 2.5 16 10 70 6 × 9 × 0.8 10 2/0	max. 2×35 max. 2×35 max. 2×16 max. 2×50 2×(6×9×0.8) 2×(10 1/0)
Connection for drilled copper bars	Terminal screwsTightening torquemax. width	Nm mm	M 6 (hexagon socket) 4 6 (36 53 lb.in) 10	If bars larger than 12 × 10 mm are connected, a 3RT19 46-4EA1 terminal cover is necessary to comply with the phase clearance If conductors larger than 25 mm² are connected, a 3RT19 46-4EA1 terminal cover is necessary to comply with the phase clearance (0.75 2.5) acc. to IEC 60 947;	
	Without box terminal with cable lugs Finely stranded with cable lug Stranded with cable lug AWG conductor connections, solid or stranded	mm² mm² AWG	10 50¹) 10 70¹) 7 1/0		
	Auxiliary conductor: Solid Finely stranded with end sleeve AWG conductor connections, solid or stranded - Terminal screws - Tightening torque	mm² mm² AWG Nm	2 × (0.5 1.5); 2 × (0 max. 2 × (0.75 4) 2 × (0.5 1.5); 2 × (0 2 × (20 16); 2 × (18 M 3 0.8 1.2 (7 10.3 lb		



Contactors for Special Applications
3RT14 contactors, 3-pole,
for switching resistive loads (AC-1)

Technical data

Contactor	Size Type		S6 3RT14 56			
General data						
Permissible mounting position The contactors are designed for ope on a vertical mounting surface.	eration		90° 22.5° 22.5°			
Mechanical endurance		Oper. cycles	10 million	N		
Electrical endurance AC-1 utilization category at $I_{\rm e}$		Oper. cycles	0.5 million			
Rated insulation voltage U _i (pollution	on degree 3)	V	1000			
Rated impulse withstand voltage U	$J_{\rm imp}$	kV	8			
Safe isolation between coil, auxiliar (acc. to DIN VDE 0106 Part 101 and		V	690			
Permissible ambient temperature	in operation when stored	°C °C	-25 +60/+55 with -55 +80	AS-Interface		
Degree of protection acc. to IEC 60	947-1 and DIN 40 050		IP 00/open type, coil	l system IP 20		
Shock resistance Rectangular pulse g/ms Sine pulse g/ms			8.5/5 and 4.2/10 13.4/5 and 6.5/10			
Conductor cross-sections			See page 2/162			
Electromagnetic compatibility (EMC)			See page 2/106			
Short-circuit protection						
Main circuit Fuse links, utilization category gL/gG NH, Type 3NA	G, Type of coordination	"1" A	355			
Fuse links, utilization category gR, SITOR, Type 3NE	Type of coordination	"2" A	350			
Auxiliary circuit Fuse links, utilization category gL/gG (weld-free protection at I _k ≥ 1 kA) DIAZED Type 5SB, NEOZED Type 5S or miniature circuit-breaker with C-ch	SE	А	10			
Control circuit						
Coil voltage tolerance	AC/DC (UC)		0.8 × U _{s min} 1.1 ×	U _{s max}		
Power consumption of solenoid m (with coil in cold state and rated range)			Conventional op. me $U_{\rm smin}$ $U_{\rm ss}$		Solid-state op. I	mechanism U _{s max}
AC operation	closing p.f. closed p.f.	VA VA	250 300 0.9 0 4.8		190 0.8 3.5 0.5	280 0.8 4.4 0.4
DC operation	closing closed	W W	300 4.3	0 5.2	250 2.3	320 2.8
PLC control input (EN 61 131-2/Typ	pe 2)		DC 24 V/≤ 30 mA			
Operating times (Break-time = opening time + arcing	time)		Conventional op. mechanism Operation via A1/A2 PLC input			mechanism PLC input
– at 0.8 × $U_{\rm s min}$ 1.1 × $U_{\rm s max}$	closing time opening time	ms ms	20 95 40 60		95 135 80 90	35 75 80 90

Arcing time Main circuit

- at $U_{\rm s\;min}\;...\;U_{\rm s\;max}$

closing time opening time

Load ratings with AC			
AC-1 utilization category, switching resistive load	I		
Rated operational currents $I_{\rm e}$	at 40 °C up to 690 V at 60 °C up to 690 V at 1000 V	A A A	275 250 100
Ratings of three-phase loads p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	95 165 205 285 165
Minimum conductor cross-section with $I_{\rm e\;load}$	at 40 °C at 60 °C	mm² mm²	2 × 70 120
Power loss per conducting path	at I_/AC-1	W	20

25 ... 50 40 ... 60

10 ... 15

ms

ms

ms

100 ... 120 80 ... 90

10 ... 15

40 ... 60

80 ... 90

10 ... 15

Special Applications
3RT14 contactors, 3-pole, for switching resistive loads (AC-1)



Technical data

Contactor	Size			S6		
Contactor	Type			3RT14 56		
Main circuit						
Load ratings with A	C					
AC-2 and AC-3 utilization With an electrical endura	on category ance of 1.3 million operating cyc	cles				
Rated operational currer	nt $I_{ m e}$	up to 690 V	Α	97		
Ratings of slipring or squ motors at 50 Hz and 60	uirrel-cage Hz (at 60°C)	at 230 V 400 V 500 V 690 V	kW kW kW kW	30 55 55 90		
Load ratings with D	C					
DC-1 utilization category, switching resistive load (L/R ≤ 1 ms) Number of conducting paths connected in series			1	2	3	
Rated operational currer	nts I _e (at 60 °C)	up to 24 V 60 V 110 V	A A A	315 315 18	315 315 315	315 315 315
		220 V 440 V 600 V	A A A	3.4 0.8 0.5	20 3.2 1.6	315 11.5 4
DC-3 and DC-5 utilization (L/R ≤ 15 ms)	on categories, shunt and serie	es motors				
,	Number of conducting pa	aths connected in series		1	2	3
Rated operational currer	nts $I_{\rm e}$ (at 60 °C)	up to 24 V 60 V 110 V	A A A	315 7.5 2.5	315 315 315	315 315 315
		220 V 440 V 600 V	A A A	0.6 0.17 0.12	2.5 0.65 0.37	315 1.4 0.75

Operating frequency

Operating frequency	z in	operating	cycles	per	hour
---------------------	-------------	-----------	--------	-----	------

Contactors without overload relays No-load op. frequency 1/h 2000 for AC-1 for AC-3 1/h 1/h 1/h 600

Dependence of the operating frequency z' on the operational current I' and operational voltage U':

$$z' = z \cdot \frac{I_{\theta}}{I'} \cdot \left(\frac{400 \,\mathrm{V}}{U'}\right)^{1.5} \, 1/h$$

Conductor cross-sec

_		
SCROW	connections	

tions						
Main conductor: with 3RT19 55-4G box terminal		Front terminal connected	Back terminal connected	Both terminals connected		
Finely stranded with end sleeve Finely stranded without end sleeve Stranded AWG conductor connections, solid or stranded	mm² mm² mm²	10 70 10 70 16 70 6 2/0	10 70 10 70 16 70 6 2/0	max. 1×50, 1×70 max. 1×50, 1×70 max. 2×70 max. 2×1/0		
Ribbon cable (qty. \times width \times thickness)	mm mm	min. $3 \times 9 \times 0.8$ max. $6 \times 15.5 \times 0.8$	min. $3 \times 9 \times 0.8$ max. $6 \times 15.5 \times 0.8$	max. 2 × (6 × 15.5 × 0.8)		
with 3RT19 56-4G box terminal						
Finely stranded with/without end sleeve Stranded	mm² mm²	10 120 16 120	10 120 16 120	max. 1 × 95, 1 × 120 max. 2 × 120		
AWG conductor connections, solid or stranded	AWG	6 250 kcmil	6 250 kcmil	max. 2 × 3/0		
Ribbon cable (qty. × width × thickness)	mm mm	min. 3×9×0.8 max. 10×15.5×0.8	min. $3 \times 9 \times 0.8$ max. $10 \times 15.5 \times 0.8$	max. 2 × (10 × 15.5 × 0.8)		
Terminal screwsTightening torque	Nm	M 10 (hexagon socket, A/F4) 10 12 (90 110 lb) lb.in)			
Without box terminal/busbar connection						
Finely stranded with cable lug Stranded with cable lug AWG conductor connections, solid or stranded Connecting bar (max. width) - Terminal screws - Tightening torque	mm² mm² AWG mm	16 95 25 120 4 250 kcmil 17 M 8 × 25 (A/F 13) 10 14 (89 124 lb	If cable lugs acc. to DIN 46 235 are connected, as of a conductor cross-section 95 mm² a 3RT19 56-4EA1 terminal cover is essary to comply with the phase clearance b.in)			
Auxiliary conductor: Solid	mm²		0.75 2.5) acc. to IE0	C 60 947;		
Finely stranded with end sleeve AWG conductor connections, solid or stranded - Terminal screws	mm² AWG	max. 2 × (0.75 4) 2 × (0.5 1.5); 2 × (0.75 2.5) 2 × (18 14) M 3 (PZ2)				
 Tightening torque 	Nm	0.8 1.2 (7 10.3 l	D.III)			



Contactors for Special Applications

3RT14 contactors, 3-pole,
for switching resistive loads (AC-1)

Technical data

Contactor Size Type			S10 3RT14 66	S12 3RT14 76		
General data						
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.			90° ++++ 90° 22.5° 22.5° 89000000000000000000000000000000000000			
Mechanical endurance		Oper. cycles	10 million			
Electrical endurance AC-1 utilization category at $I_{\rm e}$		Oper. cycles	0.5 million			
Rated insulation voltage U_i (pollution degree 3)		V	1000			
Rated impulse withstand voltage $U_{\rm imp}$		kV	8			
Safe isolation between coil, auxiliary contacts and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89])			690			
Permissible ambient temperature in operation when stored			-25 +60/+55 with AS-Interface -55 +80			
Degree of protection acc. to IEC 60 947-1 and DIN 40	050		IP 00/open type, coil system IP 20			
Shock resistance Rectangular pulse Sine pulse		g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10			
Conductor cross-sections			See page 2/165			
Electromagnetic compatibility (EMC)			See page 2/106			
Short-circuit protection						
Main circuit						
Fuse links, utilization category gL/gG, NH, Type 3NA	Type of coordination "1"	А	500	800		
Fuse links, utilization category gR, SITOR, Type 3NE	Type of coordination "2"	А	500	710		
Auxiliary circuit Fuse links, utilization category gL/gG (weld-free protection at $I_k \ge 1$ kA) DIAZED Type 5SB, NEOZED Type 5SE or miniature circuit-breaker with C-characteristic ($I_k < 400$ A)			10			

Contactor	Size Type			S10 3RT14 66			
Control circuit							
Coil voltage tolerance		AC/DC (UC)		0.8 × <i>U</i> _{s min} 1.	$1 \times U_{\rm s max}$		
Power consumption of solenoid	mechanism			Conventional op	. mechanism	Solid-state op. n	nechanism
(with coil in cold state and rated ra	ange $U_{\text{s min}} \dots U_{\text{s max}}$			U _{s min}	U _{s max}	U _{s min}	U _{s max}
AC operation	closing p.f. closed p.f.		VA VA	490 0.9 5.6 0.9	590 0.9 6.7 0.9	400 0.8 4 0.5	530 0.8 5 0.4
DC operation	closing closed		W W	540 6.1	650 7.4	440 3.2	580 3.8
PLC control input (EN 61 131-2/	Type 2)			DC 24 V/≤ 30 mA			
Operating times (Break-time = opening time + arci	ng time)					Solid-state op. mechanism Operation via A1/A2 PLC input	
– at 0.8 × $U_{\rm s min}$ 1.1 × $U_{\rm s max}$	closing time opening time		ms ms	30 95 40 80		105 145 80 200	45 80 80 100
- at $U_{\rm smin}\ldotsU_{\rm smax}$	closing time opening time		ms ms	35 50 50 80		110 130 80 100	50 65 80 100
Arcing time			ms	10 15		10 15	10 15

Contactors for Special Applications

3RT14 contactors, 3-pole, for switching resistive loads (AC-1)



Technical data Contactor S12 Size 3RT14 76 Type **Control circuit** AC/DC (UC) Coil voltage tolerance $0.8 \times U_{\mathrm{s\,min}} \dots 1.1 \times U_{\mathrm{s\,max}}$ Conventional op. mechanism Power consumption of solenoid mechanism Solid-state op. mechanism (with coil in cold state and rated range $U_{\rm s\,min}$... $U_{\rm s\,max}$) $U_{\rm s\; min}$ $U_{\rm s\,min}$ AC operation closing VΑ 700 830 560 750 0.9 0.9 0.8 8.0 closed VΑ 9.2 5.4 0.8 p.f. 0.9 0.9 0.8 DC operation closing W 770 920 600 800 8.5 closed PLC control input (EN 61 131-2/Type 2) DC 24 V/≤ 30 mA Conventional op. mechanism Solid-state op. mechanism Operating times (Break-time = opening time + arcing time) Operation via A1/A2 PLC input 120 ... 150 60 ... 90 - at 0.8 \times $U_{\rm s \, min}$... 1.1 \times $U_{\rm s \, max}$ closing time ms 45 ... 100 opening time 60 ... 100 80 ... 100 80 ... 100 ms 50 ... 70 70 ... 100 65 ... 80 - at U_{s min} ... U_{s max} closing time ms 125 ... 150 80 ... 100 opening time ms 80 ... 100 Arcina time 10 ... 15 10 ... 15 10 ... 15 ms Contactor Size S₁₀ S12 3RT14 76 3RT14 66 Type **Main circuit** Load ratings with AC AC-1 utilization category, switching resistive load Rated operational currents I, at 40 °C up to 690 V 400 690 at 60 °C up to 690 V 380 650 1) at 1000 V at 230 V 245 430 Ratings kW 145 of three-phase loads 400 V kW 250 p.f. = 0.95 (at 60 °C) 500 V kW 315 535 740 690 V kW 430 1000 V at 40 °C 2 × 240 2 × 240 Minimum conductor cross-section with $I_{\mathrm{e\,load}}$ mm² 240 at 60 °C 240 Power loss per conducting path at I_e /AC-1 W 27 55 AC-2 and AC-3 utilization categories With an electrical endurance of 1.3 million operating cycles Rated operational current I_e up to 690 V Α 138 170 at 230 V Ratings of slipring or squirrel-cage kW 37 75 55 motors at 50 Hz and 60 Hz (at 60°C) 400 V kW 90 90 500 V kW 110 132 Load ratings with DC DC-1 utilization category, switching resistive load (L/R ≤ 1 ms) Number of conducting paths connected in series 1 2 3 1 2 3 Rated operational currents I_e (at 60 °C) up to 24 V 380 380 380 500 500 500 60 V 380 380 380 500 500 500 110 V Α 33 380 380 33 500 500 220 V Α 380 380 3.8 500 500 3.8 440 V 0.9 4 2 11 0.9 4 600 V 5.2 5.2 0.6 0.6 DC-3 and DC-5 utilization categories, shunt and series motors $(L/R \le 15 \text{ ms})$ Number of conducting paths connected in series 2 3 1 2 3 380 500 500 Rated operational currents I_e (at 60 °C) up to 24 V 380 380 500 380 380 11 60 V 11 500 500 110 V Α 380 500 500 3 380

220 V

440 V

600 V

Α

Α

0.6

0.18

2.5

0.65

380

0.75

0.6

0.18

0.125

2.5

500

0.75

¹⁾ Ambient temperature 50 °C for 3RT14 76-.N contactor





Contactors for Special Applications

3RT14 contactors, 3-pole,
for switching resistive loads (AC-1)

_			
Tec	hn	ica	l data

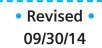
Contactor	Size Type			S10 3RT14 66	S12 3RT14 76
Main circuit					
Operating freque	псу			_	
Operating frequenc	y z in operating cycles per I	hour			
Contactors without o	verload relays	No-load op. frequency for AC-1 for AC-3	1/h 1/h 1/h	2000 600 1000	
	operating frequency z' on the and operational voltage U' :				
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400 \text{V}}{U'}\right)^{\frac{1}{2}}$	1.5 1/h				

Co

Conductor cross-sect							
Screw connections	Main conductor: with 3RT19 66-4G box terminal		Front terminal connected	Back terminal connected	Both terminals connected		
	Finely stranded with end sleeve	mm²	70 240	120 185	min. 2 × 50,		
	Finely stranded without end sleeve	mm²	70 240	120 185	max. 2 × 185 min. 2 × 50, max. 2 × 185		
	Stranded	mm²	95 300	120 240	min. 2 × 70, max. 2 × 240		
	AWG conductor connections, solid or stranded		3/0 600 kcmil	250 500 kcmil	min. 2 x 2/0, max. 2 x 500 kcmil		
	Ribbon cable (qty. \times width \times thickness)	mm mm	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0.5$	min. $6 \times 9 \times 0.8$ max. $20 \times 24 \times 0.5$	max. 2 × (20 × 24 × 0.5)		
	- Terminal screws		M 12 (hexagon		0.5)		
	– Tightening torque Nm		socket, A/F 5) 20 22 (180 195 lb.in)				
	Without box terminal/busbar connection						
	Finely stranded with cable lug Stranded with cable lug AWG conductor connections, solid or stranded Connecting bar (max. width) – Terminal screws – Tightening torque	mm² mm² AWG mm	50 240 70 240 2/0 500 kcmil 25 M 10 × 30 (A/F 17) 14 24 (124 210 lb.in)	If cable lugs acc. to DIN 46 234 are connected, as of a conductor cross tion of 240 mm² and DIN 46 235 as of a ductor cross-section of 185 mm², a 3RT19 66-4EA1 terminal cover is neces to comply with the phase clearance.			
	Auxiliary conductor: Solid	mm²	2 × (0.5 1.5); 2 × (0	0.75 2.5) acc. to IEC	60 947;		
	Finely stranded with end sleeve AWG conductor connections, solid or stranded – Terminal screws – Tightening torque	mm² AWG Nm	max. 2 × (0.75 4) 2 × (0.5 1.5); 2 × (0.75 2.5) 2 × (18 14) M 3 (PZ3) 0.8 1.2 (7 10.3 lb.in)				

Contactors for Special Applications 3RT23 contactors, 4-pole (4 NO),

switching resistive loads





Contactors	Туре		3RT23 16	3RT23 17	3RT23 25	3RT23 26	3RT23 2
Contactors	Size		S00	311123 17	S0	311123 20	311123 2
Dimensions (W x H x D) ³⁾	Width	mm	45 x 57.5 x 7	' 3	60 x 85 x 97		
General data							
Permissible mounting position ¹⁾ Mechanical endurance		Oper- ating cycles	30 million		10 million		
Electrical endurance at $I_{ m e}$ /AC-1		Oper- ating cycles	Approx. 0.5	million			
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	690				
Permissible ambient temperature	During operationDuring storage	°C °C	-25 +60 -55 +80				
Degree of protection Acc. to EN 60947-1, Appendix C	Device Connection range		IP20				IP20 IP00
Touch protection acc.to EN 50274			Finger-safe				
Short-circuit protection of contacto	ors without overload relays						
Main circuit Fuse links, gG operational class: LV HRC 3NA, DIAZED 5SB, NEOZED 5SE	Type of coordination "1" Type of coordination "2" Type of coordination "2"	A A	35 20		63 20		
according to IEC 60947-4-1/ EN 60947-4-1	Weld-free	A	10		16		
Control							
Solenoid coil operating range							
• AC operation	- At 50 Hz - At 60 Hz		0.8 1.1 x <i>U</i> _s 0.85 1.1 x <i>U</i> _s				
• DC operation - At 50 °C - At 60 °C			0.8 1.1 x U _s 0.85 1.1 x Ü _s				
AC/DC operation					0.8 1.1 x U	J _s	
Power consumption of the solenoid coil	,						
 AC operation, 50 Hz, standard version 	- Closing - P.f. - Closed	VA VA	 		77 0.82 9.8		
• AC operation, 50/60 Hz,	- P.f. - Closing	VA	27/24.3	37/33	0.25 81/79		
standard version	- P.f. - Closed - P.f.	VA	0.8/0.75 4.2/3.3 0.25/0.25	0.8/0.75 5.7/4.4 0.25/0.25	0.72/0.74 10.5/8.5 0.25/0.28		
• AC operation, 60 Hz,	- Closing	VA	31.7	43	87		
USA, Canada	- P.f. - Closed	VA	0.77 4.8	0.77 6.5	0.76 9.4		
DC operation	P.f.ClosingClosed	W	0.25 4	0.25	0.28 5.9		
Operating times for 0.8 1.1 x $U_{\rm S}^{(2)}$							
Total break time = Opening delay + Arcing • AC operation	g time - Closing delay - Opening delay	ms ms	8 35 3.5 14	8 33 4 15	9 38 4 16	8 40 4 16	
DC operation	Closing delay Opening delay Opening delay	ms ms	30 100 7 13	1 10	50 170 15 17.5	1 10	
Arcing time	opog dolay	ms	10 15		10 17.5		
Main circuit							
AC capacity							
Utilization category AC-1, switching res							
 Rated operational currents I_e 	At 40 °C, up to 690 V At 60 °C, up to 690 V	A A	18 16	22 20	35 30	40 35	50 42
• Rated power for AC loads P.f. = 0.95 (at 40 °C)	At 460 V	HP	5	5	10	10	10
 Minimum conductor cross-section for loads with I_e 	At 40 °C At 60 °C	mm ² mm ²	2.5 2.5	2.5 2.5	10 10	10 10	10 10
Utilization category AC-3							
• Rated operational currents I_e	At 60 °C, up to 400 V	Α	9	12 5	15.5 10	17 10	17 10
Rated power for slipring	At 460 V	HP	5				

 $^{^{\}rm 1)}$ In accordance with the corresponding 3-pole 3RT2. contactors.

 $^{^{2)}}$ With size S00, DC operation: Operating times at 0.85 \dots 1.1 x U .

³⁾ Dimensions for devices with screw terminals. Size S0 for AC operation. DC operation: Depth + 10mm.



Contactors for Special Applications 3RT13 contactors, 4-pole (4 NO),

for switching resistive loads

Technical specifications

Type Size Dimensions (W x H x D)		mm	3RT13 36 S2 61 x 85 x 86	3RT13 44 S3 73 x 112 x 110	3RT13 46 S3 93 x 146 x 134
With mounted auxiliary switch block	W	mm	61 x 85 x 135	73 x 112 x 160	93 x 146 x 183
General technical specifications					
Permissible mounting position ¹⁾					
Mechanical endurance		Operating cycles	10 million		
Electrical endurance at I _e /AC-1		Operating cycles	Approx. 0.5 million	า	
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	690		
Permissible ambient temperature • During operation • During storage		°C °C	-25 +60 -55 +80		
Degree of protection acc. to IEC 60947-1, Appendix C	Device Connection range		IP20 IP00		
Touch protection acc. to EN 50274			Finger-safe		
Short-circuit protection of contactors with Main circuit	nout overload relays				
Fuse links, operational class gG:	Type of coordination "1" 1)	Α	160	250	250
LV HRC, 3NA; DIAZED, 5SB; NEOZED, 5SE according to IEC 60947-4-1/EN 60947-4-1	 Type of coordination "2"¹⁾ Weld-free 	A A	63 50	125 63	160 100
Control circuit					
Coil operating range (AC/DC)			0.8 1.1 x U _s		
Power consumption of the solenoid coils (when	0,				
• AC operation, 50 Hz	ClosingP.f.ClosedP.f.	VA VA VA VA	145 0.79 12.5 0.36	270 0.68 22 0.27	
• AC operation, 50/60 Hz	- Closing - P.f. - Closed - P.f.	VA VA	170/155 0.76/0.72 15/11.8 0.35/0.38	298/274 0.72/0.62 27/20 0.29/0.31	
DC operation	- Closing = Closed	W	13.3	15	
Operating times for 0.8 1.1 x $U_s^{(2)}$ Total break time = Opening delay + Arcing time					
DC operation	Closing delayOpening delay	ms ms	50 110 15 30	110 200 14 20	
AC operation	Closing delayOpening delay	ms ms	4 35 10 30	20 50 10 25	
Arcing time		ms	10 15	10 15	
Main circuit					
AC capacity					
Utilization category AC-1, switching resistive loa	ads				
 Rated operational currents I_e 	At 40 °C, up to 690 V At 60 °C, up to 690 V		60 55	110 100	140 120
 Rated power for AC loads P.f. = 0.95 (at 40 °C) 	At 230 V 400 V	kW kW	23 39	42 72	53 92
\bullet Minimum conductor cross-section for loads with $I_{\rm e}$	At 40 °C At 60 °C	mm² mm²	16 16	50 50	50 50
Utilization categories AC-2 and AC-3					
Rated operational currents I _e Rated power for slipring required each matter at 50 and 60 Hz	At 60 °C, up to 400 V At 230 V	A kW	26 5.5		
or squirrel-cage motors at 50 and 60 Hz	400 V	kW	11		

 $^{^{1)}\,}$ In accordance with the corresponding 3-pole 3RT1 contactors.

²⁾ With size S00, DC operation: Operating times for 0.85 ... 1.1 x $U_{\rm S}$

Contactors for Special Applications
3RT25 contactors, 4-pole (2 NO + 2 NC),
for switching motors



More information						
Contactors	Type Size		3RT25 16 S00	3RT25 17 S00	3RT25 18 S00	3RT25 26 S0
Dimensions (W x H x D)	W. dila		45 57 70	45 v 57 5 v 70	45 v 57 5 v 70	CO OF O7
for screw terminal versions General data	Width	mm	45 x 57.5 x 73	45 x 57.5 x 73	45 x 57.5 x 73	60 x 85 x 97
Permissible mounting position 1)						
Mechanical endurance		Oper-	30 million			10 million
		ating cycles	CO TIMINOT			TO THIMIOT
Electrical endurance at I _e /AC-1		Oper- ating cycles	Approx. 0.5 milli	on		
Rated insulation voltage $\emph{U}_{\it i}$ (pollution d	egree 3)	V	690			
Permissible ambient temperature	During operationDuring storage	°C °C	-25 +60 -55 +80			
Degree of protection acc. to EN 60947-	1, Appendix C		IP20			IP20
Terminal compartment			IP20			IP00
Touch protection acc.to EN 50274			Finger-safe			
Short-circuit protection of contac	tors without overload relays					
Main circuit	- ,					
Fuse links, gG operational class: LV HRC 3NA, DIAZED 5SB, NEOZED 5S	Type of coordination "1" F Type of coordination "2"	A A	35 20			63 35
Acc. to IEC 60947-4-1/EN 60947-4-1	Weld-free	A	10			16
Control		* *	. 5			
Solenoid coil operating range			See 3RT23 16	See 3RT23 17		See 3RT23
Power consumption of the solenoid co	bils (when coil is cold and 1.0 x (1/2)		See 3RT23 16	See 3RT23 17		See 3RT23
Operating times for 0.8 1.1 x U _S Total break time = Opening delay + Arci			See 3RT23 16	See 3RT23 17		See 3RT23
Main circuit						
AC capacity						
Utilization categories AC-1, switching	resistive loads					
• Rated operational currents $I_{\rm e}$	At 40 °C up to 690 V At 60 °C up to 690 V	A A	18 16	22 20		40 35
Rated power for AC loads p.f. = 0.95 (at 60 °C)	At 230 V 400 V	kW kW	6.5 11	7.5 13		15 26
• Minimum conductor cross-section for loads with $I_{\rm e}$	At 40 °C	mm ²	2.5	2.5		10
Jtilization categories AC-2 and AC-3						
• Rated operational currents $I_{\rm e}$ (at 60 °C) Up to 400 V	Α	9	12	16	25 / 20 ²⁾
Rated power for slipring or squirrel-cage motors	At 230 V NO contact at 400 V	kW kW	3 4 4	3 5.5	4 7.5	5.5 11
at 50 and 60 Hz Load rating with DC	NC contact at 400 V	kW	71	4	4	11
Load rating with DC Utilization category DC-1, switching re	esistive load (I /P < 1 ms)					
Rated operational currents $I_{ m e}$ (at 60 °C	, ,					
- 1 conducting path	, Up to 24 V 60 V 110 V 220 V 440 V	A A A A	16 16 2.1 0.8 0.6	20 20 2.1 0.8 0.6		35 20 4.5 1 0.4
- 2 conducting paths in series	Up to 24 V 60 V 110 V 220 V	A A A	16 16 12 1.6	20 20 12 1.6		35 35 35 5
Indication asteron DC 0/DC 53\	440 V	A	0.8	0.8		1
Utilization category DC-3/DC-5 ³⁾ , shunt-wound and series-wound motor	rs (<i>L/R</i> ≤ 15 ms)					
 Rated operational currents I_P (at 60 °C 	,					
- 1 conducting path	Up to 24 V 60 V 110 V 220 V 440 V	A A A A	16 0.5 0.15 0.75	20 0.5 0.15 0.75		20 5 2.5 1 0.09
- 2 conducting paths in series	440 V Up to 24 V 60 V 110 V 220 V 440 V	A A A A	16 5 0.35	20 5 0.35		35 35 15 3 0.27

¹⁾ In accordance with the corresponding 3-pole 3RT2. contactors.

²⁾ For AC operation: 25 A; for DC operation: 20 A.

 $^{^{3)}}$ For $U_{\rm S}$ >24 V the rated operational currents $I_{\rm e}$ for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.



Contactors for Special Applications

3RT15 contactors, 4-pole (2 NO + 2 NC), for switching motors

Technical specifications

Туре			3RT15 35
Size			S2
Dimensions (W x H x D)		mm	73 x 112 x 110
With mounted auxiliary switch block	W	mm	73 x 112 x 160
General technical specifications			

Permissible mounting position 1)	Permissible	mounting	position	1)
----------------------------------	-------------	----------	----------	----

Mechanical endurance	Operating cycles	10 million
Electrical endurance at I _O /AC-1	Operating cycles	Approx. 0.5 million
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	690
Permissible ambient temperature		
During operation	°C	-25 +60
During storage	°C	-55 +80
Degree of protection acc. to IEC 60947-1, Appendix C		IP20 (IP00 terminal compartment)
Touch protection and to EN 50274		Finger-safe

Short-circuit protection of contactors without overload relays

Power consumption of the solenoid coils (when coil is cold and $1.0 \times U_s$)

Main circuit

Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1

• Type of coordination "1" Α 160 • Type of coordination "2" Α 80 • Weld-free Α 50

Control circuits

Coil operating range (AC/DC)	0.8	1.1 x	Us
------------------------------	-----	-------	----

 AC operation, 50 Hz 		
- Closing - P.f.	VA VA	145 0.79
- Closed - P.f.	VA VA	12.5 0.36
AC operation, 50/60 Hz		
- Closing - P.f.	VA VA	170/155 0.76/0.72
- Closed - P.f.	VA VA	15/11.8 0.35/0.38
 DC operation (closing = closed) 	W	13.3
Operating times for 0.8 1.1 x $U_s^{(2)}$ Total break time = Opening delay + Arcing time		
AC operation		
- Closing delay - Opening delay	ms ms	4 35 10 30
DC operation		
- Closing delay - Opening delay	ms ms	50 110 15 30
Arcing time	ms	10 15

Main circuit

АС сараспу			
Utilization category AC-1, switching resistive load	ls		
$ullet$ Rated operational currents $I_{ m e}$	At 40 °C up to 690 V At 60 °C up to 690 V		60 55
Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V 400 V	kW kW	20 36
\bullet Minimum conductor cross-section for loads with $I_{\rm e}$	At 40 °C	mm ²	16
Utilization categories AC-2 and AC-3			
 Rated operational currents I_e (at 60 °C) 	Up to 400 V	Α	40
Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V 400 V	kW kW	9.5 18.5

¹⁾ In accordance with the corresponding 3-pole 3RT1 contactors.

 $^{^{2)}}$ With size S00, DC operation: Operating times for 0.85 ... 1.1 x $U_{\rm S}.$

Contactors for Special Applications

3RT16 capacitor contactors



Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT10 17 contactors for size S00, to

those of the 3RT10 26 contactors for size S0 and to those of the 3RT10 45 contactors for size S3.

defilical to those of the office of the contactors	7 101 0120 000, 10	01111	10 40 00111401013 101	0120 00.	
Type Size Dimensions (W x H x D) including auxiliary switches and connecting cables	T O O	mm	3RT16 17A3 S00 45 x 101 x 105	3RT16 27A1 S0 45 x 100 x 130	3RT16 47A1 S3 70 x 167 x 183
General technical specifications					
Capacitor rating at rated power (utilization category AC-6b)	230 V, 50/60 Hz 400 V, 50/60 Hz 525 V, 50/60 Hz 690 V, 50/60 Hz	kvar kvar	3 7.5 5 12.5 7.5 15 10 21	3.5 15 6 25 7.8 30 10 42	3.5 30 5 50 7.5 60 10 84
Auxiliary contacts mounted (unassigned)			1 NO + 1 NC	1 NO	
Auxiliary contacts mountable (lateral), not for sizes	S00 and S0				2 NC + 2 NO or 1 NO + 1 NC
Max. switching frequency		h ⁻¹	180	100	
Electrical endurance		Operating cycles	> 250000	> 150000	> 100000
Ambient temperature		°C	60		
Short-circuit protection			1.6 2.2 x I _e		
Coil operating range			0.8 1.1 x <i>U</i> _s		
Conductor cross-sections (1 or 2 conductor	rs connectable)				
Main conductors			Screw terminals		
• Solid		mm²	2 x (0.5 1.5) ²), 2 x (0.75 2.5) ²) according to IEC 60947; max. 2 x (1 4) ²)	2 x (1 2.5) ²); 2 x (2.5 6) ²) according to IEC 60947; max. 1 x 10 ¹) ²)	
Finely stranded with end sleeve		mm²	2 x (0.5 1.5) ²⁾ . 2 x (0.75 2.5) ²⁾	2 x (1 2.5) ²⁾ ; 2 x (2.5 6) ¹⁾²⁾	
AWG cablesSolidSolid or strandedStranded		AWG AWG AWG	2 x (20 16) 2 x (18 14) 1 x 12	2 x (16 12) 2 x (14 10) 1 x 8	
Terminal screws Tightening torque		Nm lb.in	M3 0.8 1.2 7 10.3	M4 (Pozidriv size 2) 2 2.5 18 22	

 $^{^{\}rm 1)}$ 3RV19 25-5AB feeder terminal for 16 mm².

²⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.



Contactors for Special Applications

3RT20 coupling relays (interface)
for switching motors

More information

All technical specifications not mentioned in the table below are identical to those of the 3RT20 contactors for switching motors (see 2/128-2/130)

See 2/120-2/130)								
Contactors	Type Size		3RT20 1HB4. S00	3RT20 S00	1JB4.	3RT20 1K S00	B4.	3RT20 2KB4. S0
	Width	mm	45	45		45		45
General data								
Mechanical endurance		Oper- ating cycles	30 million					10 million
Protective separation between the coacc. to EN 60947-1, Appendix N	il and the main contacts	V	400					
Control								
Solenoid coil operating range			0.7 1.25 x <i>U</i> _s					
Power consumption of the solenoid coil (for cold coil)	At <i>U</i> _S 17 V 24 V		1.6 2.8					2.3 4.5
Closing = Closed Permissible residual current	30 V	W	4.4 < 10 mA x (24 V/U _S	.)				7 < 6 mA x (24 V/L
of the electronics (for 0 signal)								
Overvoltage configuration of the sol	enoid coil		Without overvoltage damping	With d	iode	With suppres	ssor	With varistor
			, , ,					บี
Operating times of the coupling con-	tactors							
• Closing								
- At 17 V	ON-delay NO OFF-delay NC	ms ms	40 130 30 80					70 270 60 250
- At 24 V	ON-delay NO OFF-delay NC	ms ms	35 60 25 40					65 90 55 80
- At 30 V	ON-delay NO OFF-delay NC	ms ms	25 50 15 30	00 ()-	7 00		52 65 43 57
• Closing at 17 30 V	OFF-delay NO ON-delay NC	ms ms	7 20 20 30	38 6 55 7		7 20 20 30		19 21 25 31
Contactors	Туре			3RT20 11MB40KT0 3RT20 11VB4.		3RT2	3RT20 11WB4.	
	Size Width	mm	S00 45		S00 45		S00 45	
General data	Width	mm	40		40		40	
Mechanical endurance		Oper- ating	30 million					
Protective separation between the coacc. to EN 60947-1, Appendix N	il and the main contacts	V	400					
Control								
Solenoid coil operating range			0.85 1.85 x <i>U</i> _s					
Power consumption of the solenoid coil (for cold coil) Closing = Closed	At <i>U</i> _s 24 V	W	1.6					
Permissible residual current, upright mounting position			On request					
Overvoltage configuration of the sol	enoid coil		Without overvoltage damping	Э	With diode		With s	suppressor diode
			\$ C \$				-DK	
Operating times of the coupling con	tactors							
ClosingAt 20.5 V	ON-delay NO	ms	30 120					
- At 24 V	OFF-delay NC ON-delay NO	ms ms	20 110 25 90					
- At 44 V	OFF-delay NC ON-delay NO	ms ms	15 80 15 60					
Opening	OFF-delay NO OFF-delay NO ON delay NC	ms ms	10 50 5 20		20 80		5 2	
	ON-delay NC	ms	10 30		30 90		10	30

3TF68 and 3TF69 Vacuum contactors



Overview

Standards

IEC 60947-1, EN 60947-1, IEC 60947-4-1, EN 60947-4-1, IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3TF68/69 contactors are climate-proof.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see Accessories and Spare Parts on page 2/54).

Main contacts

Contact erosion indication with 3TF68/69 vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base. If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, then the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters simultaneously.

Auxiliary contacts

Contact reliability

These auxiliary contacts are particularly suitable for solid-state circuits with currents \geq 1 mA at a voltage \geq 17 V.

Electromagnetic compatibility

The 3TF68/69....**C** contactors for AC operation are fitted with an electronically controlled solenoid operating mechanism with a high interference immunity (for EMC values see page 3/115). The solenoid coil is connected to varistors for protection against overvoltages.

The 3TF68/69..-. Q... contactors for AC operation are designed for operation in systems with AC control supply voltage which is subject to strong interference. The solenoid systems of these contactors are configured in the DC economy circuit with rectification. The rectifier bridge is connected to varistors for protection against overvoltages.

Protection of the main current paths

An integrated RC varistor connection for the main current paths dampens the switching overvoltage rises to safe values. This prevents multiple restricting. It can therefore be assumed that the motor winding cannot be damaged by switching overvoltages with steep voltage rises.

Note:

During operation in installations in which the emitted interference limits cannot be observed, e.g. when used for output contactors in converters, $3TF68/69..-.\mathbf{Q}$ contactors without a main current path circuit are recommended.

Technical specifications

Contactor	Туре	3TF68 and 3TF69
Rated data of the auxiliary contacts		Acc. to IEC 60947-5-1
Rated insulation voltage U_i (pollution degree 3)	V	690
Conventional thermal current $I_{\rm th}$ = Rated operational current $I_{\rm e}$ /AC-12	А	10
AC load Rated operational current $I_{\rm e}/{\rm AC}$ -15/AC-14 • For rated operational voltage $U_{\rm e}$		
- At 24 V - At 110 V - At 125 V - At 220 V - At 230 V	A A A A	10 10 10 6 5.6
- At 380 V - At 400 V - At 500 V - At 660 V - At 690 V	A A A A	4 3.6 2.5 2.5 2.3
DC load Rated operational current $I_{\rm e}/{\rm DC}$ -12 • For rated operational voltage $U_{\rm e}$		
- At 24 V - At 60 V - At 110 V - At 125 V	A A A	10 10 3.2 2.5
- At 220 V - At 440 V - At 600 V	A A A	0.9 0.33 0.22
Rated operational current I_e /DC-13 • For rated operational voltage U_e		
- At 24 V - At 60 V - At 110 V - At 125 V - At 220 V - At 440 V	A A A A	10 5 1.14 0.98 0.48 0.13
- At 600 V	Ā	0.07
	V 40	000
	v AC	
® and ® rated data of the auxiliary contacts Rated voltage, max. Switching capacity	V AC	600 A 600, P 600



3TF68 and 3TF69 Vacuum contactors

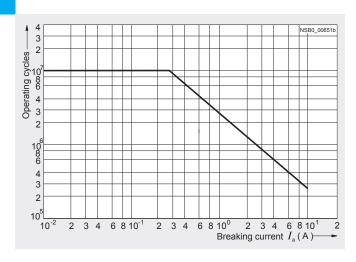
Contactor

Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The characteristic curves apply to 230 V AC.

3TF68 and 3TF69



3TF68 and 3TF69

Contact erosion indication with vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base.

If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters.

Contact endurance of the main contacts

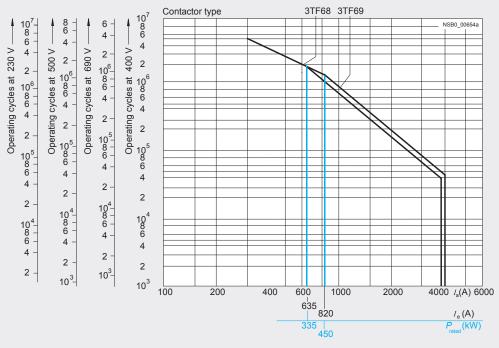


Diagram legend:

 P_{rated} = Rated power for squirrel-cage motors at 400 V I_{a} = Breaking current

 $I_{\rm e}$ = Rated operational current





Type		3TF68	3TF69
Size		14	14
Dimensions (W x H x D)	mm	230 x 276 x 237	230 x 295 x 237
±			
> *			
General data			
Permissible mounting position, installation		00 50 00 50 . #	
instructions ^{1) 2)}		22,5 22,5 8	
The contactors are designed for operation on a verti-			
cal mounting surface.		<u>* ++ ++ </u>	
Mechanical endurance	Operating cycles	5 million	
Electrical andrusana		3)	
Electrical endurance	Operating cycles		
Rated insulation voltage <i>U</i> _i	kV	1	
(pollution degree 3)			
Rated impulse withstand voltage U_{imp}	kV	8	
Protective separation between the coil and the main contacts	kV	1	
acc. to IEC 60947-1, Appendix N		·	
Mirror contacts		Yes, acc. to IEC 60947-4-1, Append	dix F
A mirror contact is an auxiliary NC contact that cannot be closed simul-	_		
taneously with a NO main contact.			
One NC contact each must be connected in series for the right and left			
auxiliary switch block respectively.			
Permissible ambient temperature			
During operation	°C	-25 +55	
During storage	°C	-55 +80	
Degree of protection acc. to IEC 60947-1, Appendix C		IP00/open, coil assembly IP40	
Touch protection acc. to EN 50274		Finger-safe with cover	
Shock resistance			
Rectangular pulse			
- AC operation	<i>g</i> /ms	8.1/5 and 4.7/10	9.5/5 and 5.7/10
- DC operation	<i>g</i> /ms	9/5 and 5.7/10	8.6/5 and 5.1/10
• Sine pulse			
- AC operation	g/ms	12.8/5 and 7.4/10	13.5/5 and 7.8/10
- DC operation	<i>g</i> /ms	14.4/5 and 9.1/10	13.5/5 and 7.8/10
Conductor cross-sections		See page 2/177.	
Electromagnetic compatibility (EMC)		See page 2/106.	
Short-circuit protection			
Main circuit			
Fuse links, gG operational class:			
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE			
according to IEC 60947-4-1/EN 60947-4-1			
Type of coordination "1"	Α	1000	1250
Type of coordination "2"	Α	500	630
• Weld-free ⁴⁾	Α	400	500
Auxiliary circuit			
Short-circuit test with fuse links of gG operational class:	Α	10	
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE			
with $I_{\rm k}$ = 1 kA acc. to IEC 60947-5-1			
Test with miniature circuit breaker up to 230 V with C characteristic: Short disputs a versel I = 400 A again to IEC 60047. F. 1. Test with miniature circuit breaker up to 230 V with C characteristic:	А	10	
Short-circuit current I_k = 400 A acc. to IEC 60947-5-1			
1) To easily replace the laterally mounted auxiliary switches it is recom-			

To easily replace the laterally mounted auxiliary switches it is recommended to maintain a minimum distance of 30 mm between the contactors

²⁾ If mounted at a 90° angle (conducting paths are horizontally above each other), the switching frequency is reduced by 80% compared with the normal values.

³⁾ See "Endurance of the auxillary contacts", page 2/173.

⁴⁾ Test conditions according to IEC 60947-4-1.



3TF68 and 3TF69 Vacuum contactors

Contactor		Type Size	3TF68 14	3TF69 14
Control				
Coil operating range			0.8 x <i>U</i> _{s min} 1.1 x <i>U</i> _{s max}	
Power consumption of the solene (when coil is cold and 1.0 x U _s)	oid coils			
• AC operation, $U_{\text{s max}}$	ClosingClosed	VA/p.f. VA/p.f.	1850/1 49/0.15	950/0.98 30.6/0.31
\bullet AC operation, $U_{\rm S\ min}$	ClosingClosed	VA/p.f. VA/p.f.	1200/1 13.5/0.47	600/0.98 12.9/0.43
• DC economy circuit ¹⁾	Closing at 24 VClosed	W W	1010 28	960 20.6
For contactors of type 3TF68/69	. Q:			
• AC operation, $U_{\rm S min}^{2)}$	- Closing - Closed	VA/p.f. VA/p.f.	1000/0.99 11/1	1150/0.99 11/1
Operating times for 0.8 1.1 x U (Total break time = Opening delay			(Values apply to cold and warm	n coil)
AC operation	Closing delayOpening delay	ms ms	70 120 (22 65) ³⁾ 70 100	80 120 70 80
DC economy circuit	Closing delayOpening delay	ms ms	76 110 50	86 280 19 25
Arcing time		ms	10 15	10
For contactors of type 3TF68/69	. Q:			
AC operation	Closing delayOpening delay	ms ms	35 90 65 90	45 160 30 80
Operating times for 1.0 x U _s (Total break time = Opening delay	+ Arcing time)			
AC operation	Closing delayOpening delay	ms ms	80 100 (30 45) ³⁾ 70 100	85 100 70
DC economy circuit	Closing delayOpening delay	ms ms	80 90 50	90 125 19 25
Minimum command duration for closing	Standard Reduced make-time	ms ms	120 90	120
Minimum interval time between tv	vo ON commands	ms	100	300

 $^{^{1)}}$ At 24 V DC; for further voltages, deviations of up to ±10 % are possible. $^{2)}$ Including reversing contactor.

³⁾ Values in brackets apply to contactors with reduced operating times.

Contactor	Туре	3TF6. 44- .CF7	3TF6. 44- .CM7	3TF6. 44- .CP7	3TF6. 44- .CQ7	3TF6. 44- .CS7
Electromagnetic compatibility						
Rated control supply voltage U _s	V AC	110 132	200 240	230 277	380 460	500 600
Overvoltage type acc. to IEC 60801		Burst/Surge				
Degree of severity acc. to IEC 60801						
• Burst		3	4	4	4	4
• Surge		4	4	4	4	4
Overvoltage resistance						
• Burst	kV	2	4	4	4	4
• Surge	kV	6	5	5	6	6



3TF68 and 3TF69 Vacuum contactors

Contactor	Type		3TF68	3TF69
	Size		14	14
Main circuit				
AC capacity				
Utilization category AC-1 Switching resistive loads				
Rated operational currents I _e	At 40 °C up to 690 V At 55 °C up to 690 V At 55 °C up to 1000 V	A A A	700 630 450	910 850 800
 Rated power for AC loads with p.f. = 0.95 at 55°C 	230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	240 415 545 720 780	323 558 735 970 1385
\bullet Minimum conductor cross-sections for loads with $I_{\rm e}$	At 40°C	mm ²	2 x 240	$I_{\rm e} \ge 800 \text{ A: } 2 \times 60 \times 5$ (copper busbars)
Utilization categories AC-2 and AC-3	At 55°C	mm ²	2 x 185	I _e < 800 A: 2 × 240
• Rated operational currents I_e	Up to 690 V 1000 V	A A	630 435	820 580
Rated power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	At 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW	200 347 434 600 600	260 450 600 800 800
Utilization category AC-4 (for $I_a = 6 \times I_e$)				
 Rated operational current I_e 	Up to 690 V	Α	610	690
 Rated power for squirrel-cage motors with 50 Hz and 60 Hz 	At 400 V	kW	355	400
The following applies to a contact endurance of about 200000 operating cycles:				
 Rated operational currents I_e 	Up to 690 V 1000 V	A A	300 210	360 250
 Rated power for squirrel-cage motors with 50 Hz and 60 Hz 	At 230 V 400 V 500 V ¹⁾ 690 V ¹⁾ 1000 V ¹⁾	kW kW kW kW	97 168 210 278 290	110 191 250 335 350
Switching frequency				
Switching frequency z in operating cycles/hour				
Contactors without overload relays	No-load switching frequency AC	1/h	2000	1000
	No-load switching frequency DC AC-1 AC-2 AC-3 AC-4	1/h 1/h 1/h 1/h 1/h	1000 700 200 500 150	1000 700 200 500 150
	, 10 1	.,		

 $^{^{1)}}$ Max. permissible rated operational current $I_{\rm e}/{\rm AC-4}=I_{\rm e}/{\rm AC-3}$ up to 500 V, for reduced contact endurance and reduced switching frequency.



3TF68 and 3TF69 Vacuum contactors

Contactor	Туре	3TF68	3TF69
	Size	14	14
Conductor cross-sections			
Main conductors:		Screw terminals	
Busbar connections			
 Finely stranded with cable lug Stranded with cable lug Solid or stranded Connecting bar (max. width) 	mm ² mm ² AWG mm	50 240 70 240 2/0 500 MCM 50	50 240 50 240 2/0 500 MCM 60 ($U_0 \le$ 690 V) 50 ($U_0 >$ 690 V)
 Terminal screw Tightening torque With box terminal¹⁾ 	Nm	M10 x 30 14 24 (124 210 lb.in)	M12 x 40 20 35 (177 310 lb.in)
 Connectable copper bars Width Max. thickness Terminal screw Tightening torque 	mm mm Nm Ib.in	15 25 1 x 26 or 2 x 11 A/F 6 (hexagon socket) 25 40 221 354	15 38 1 x 46 or 2 x 18 A/F 8 (hexagon socket) 35 50 266 443
Auxiliary conductors:			
 Solid Finely stranded with end sleeve Pin-end connector acc. to DIN 46231 Solid or stranded Tightening torque 	mm ² mm ² mm ² AWG Nm lb.in	$2 \times (0.5 \dots 1)^{2}/2 \times (1 \dots 2.5)^{2}$ $2 \times (0.5 \dots 1)^{2}/2 \times (0.75 \dots 2.5)^{2}$ $2 \times (1 \dots 1.5)$ $2 \times (18 \dots 12)$ $0.8 \dots 1.4$ $7 \dots 12$	

¹⁾ See "Accessories and Spare Parts", page 2/54.

²⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Contactor	Type	3TF68	3TF69
	Size	14	14
® and ® rated data			
Rated insulation voltage	V AC	600	600
Uninterrupted current			
Open and enclosed	А	630	820
Maximum horsepower ratings (and approved values)			
 Rated power for induction motors at 60 Hz 			
- At 200 V - At 230 V - At 460 V - At 575 V	hp hp hp hp	231 266 530 664	290 350 700 860
NEMA/EEMAC ratings			
SIZE	hp	6	7
Uninterrupted current			
- Open - Enclosed	A A	600 540	820 810
 Rated power for induction motors at 60 Hz 			
- At 200 V - At 230 V - At 460 V - At 575 V	hp hp hp hp	150 200 400 400	 300 600 600
Overload relays	Туре	3RB12.	
Setting range	Α	200 820	

3TC contactors



Overview

3TC4 and 3TC5

IEC 60947-1, EN 60947-1, IEC 60947-4-1, EN 60947-4-1

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The DC motor ratings given in the tables are applicable to the DC-3 and DC-5 utilization categories with two-pole switching of the load or with the two conducting paths of the contactor connected in series.

One contactor conducting path can switch full power up to 220 V. The ratings for higher voltages are available on request.

3TC7

IEC 60947-4-1, EN 60947-4-1.

The contactors are suitable for use in any climate. They are suitable for switching and controlling DC motors as well as all other DC circuits.

The solenoid excitation is configured for a particularly large operating range. It is between 0.7 or 0.8 to 1.2 $\times U_s$.

3TC74 contactors can be used at up to 750 V/400 A and 50 Hz in AC-1 operation.

Application

The contactors are suitable for switching and controlling DC motors as well as all other DC circuits.

A version with an especially large coil operating range is available for operation in electrically driven vehicles and in switch-gears with significant fluctuations in the actuating voltage

Technical specifications

Contactors	Туре	3TC4 and 3TC7	3TC5	
Rated data of the auxiliary contacts				
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	690		
Conventional thermal current I_{th} = Rated operational current I_e /AC-12	А	10	10	
AC load Rated operational current I_e /AC-15/AC-14 • For rated operational voltage U_e				
	24 V A 110 V A 125 V A 220 V A 230 V A 380 V A 400 V A 500 V A 660 V A	10 10 10 6 5.6 4 3.6 2.5 2.5	10 10 6 5.6 4 3.6 2.5 2.5	
DC load Rated operational current I_e /DC-12 • For rated operational voltage U_e				
	24 V A 60 V A 110 V A 125 V A 220 V A	10 10 3.2 2.5	10 10 8 6 2 0.6	
	440 V A 600 V A	0.33 0.22	0.6	
Rated operational current $I_{\rm e}$ /DC-13 • For rated operational voltage $U_{\rm e}$				
	24 V A 60 V A 110 V A 125 V A	10 5 1.14 0.98	10 5 2.4 2.1	
	220 V A 440 V A 600 V A	0.48 0.13 0.07	1.1 0.32 0.21	



3TC contactors

Contactors	Туре	3TC44 3TC56		
® and ® rated data of the auxiliary contacts	V AC	600		
Rated voltage, max. Switching capacity	V AC	A 600, P 600		
Juntoning Capacity		A 600, T 600		
Contactors	Туре	3TC44 3TC78		
Contact endurance of the main contacts				
10 ⁷		ı	20	
107	NSB0_00655		Mill.	NSB0_00656
> 4			3 18	
2 3TC44 3TC48 3TC52 3TC56 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		1	ਹੈ ਹ 16	
<u>\$\tilde{0}\tag{10}\tag{6}\tag{9}</u>		<u>.</u>		
> 4 05 2 8 10 6 0 0 4 1 1 1 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			2 14 P	
			18 16 16 16 14 12 12 12 12 12 12 12 12 12 12 12 12 12	
Ö ₁₀ 5		Ċ		
8 6			10	
4			8	
2			6	
104				
8 6			4	
4			2	
2			0,5	
10 20 40 100 200 400 600 1	1000 I_a (A)			200 250 300 I _a (A) 400
BTC44 to 3TC56 contactors	a \ /		C74 and 3TC78 conta	
	Type		C48 3TC5	
V _a = Breaking current Contactors General technical specifications	Type Size	3TC44 3T 2 4	C48 3TC52	2 3TC56 12
		2 4		
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a				
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a		2 4		
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.	Ŝize	22,5°,22,5°,22,5°,22,5°		
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of	Size	2 4 22,5°,22,5° 22,5°,22,5 10 million		
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Operating Operating of Operating of Operating	Size cycles cycles	22.5° 22.5° 22.5° 22.5° 10 million 1)	8	
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of the contact of	Size	2 4 22,5°,22,5° 22,5°,22,5 10 million		12
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of the Contact of	Size cycles cycles V	2 4 22,5° +22,5° 22,5° 22,5° 122,5° 120 10 million 1) 800 Up to 300	1000 Up to	12
Contactors General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Comparison	Size cycles cycles V V	2 4 22.5° 22.5° 22.5° 22.5° 10 million 1) 800	1000 Up to	12
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Electrical endurance Operating of Rated insulation voltage U ₁ (pollution degree 3) Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N Mirror contacts ²⁾ A mirror contact is an auxiliary NC contact that cannot be closed simult busly with a NO main contact.	Size cycles cycles V V	2 4 22,5° +22,5° 22,5° 22,5° 122,5° 120 10 million 1) 800 Up to 300	1000 Up to	12
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Electrical endurance Operating of Rated insulation voltage U ₁ (pollution degree 3) Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N Mirror contact is an auxiliary NC contact that cannot be closed simult brusly with a NO main contact. Permissible ambient temperature	cycles cycles V V	22,5°,	1000 Up to	12
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Generating Office of Generating of Generating Office of Generatin	Size cycles cycles V V	2 4 22,5° +22,5° 22,5° 22,5° 122,5° 120 10 million 1) 800 Up to 300	1000 Up to	12
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Electrical endurance Operating of Rated insulation voltage U ₁ (pollution degree 3) Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N Mirror contact is an auxiliary NC contact that cannot be closed simult brusly with a NO main contact. Permissible ambient temperature	cycles cycles V V tane-	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 10 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094	1000 Up to	660
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Generating Office of Generating Offic	cycles cycles V V tane-	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 10 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094	1000 Up to 47-4-1, Appendix F	660
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Electrical endurance Operating of Rated insulation voltage U ₁ (pollution degree 3) Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N Mirror contact is an auxiliary NC contact that cannot be closed simult busly with a NO main contact. Permissible ambient temperature During operation During storage Degree of protection acc. to IEC 60947-1, Appendix C Shock resistance Rectangular pulse Short-circuit protection	cycles cycles V V tane-	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 10,000 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094 -25 +55 -50 +80 IP00/open, for AC op	1000 Up to 47-4-1, Appendix F	12 660 y IP40
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Electrical endurance Operating of Rated insulation voltage U ₁ (pollution degree 3) Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N Mirror contacts ² A mirror contact is an auxiliary NC contact that cannot be closed simult busly with a NO main contact. Permissible ambient temperature During operation During storage Degree of protection acc. to IEC 60947-1, Appendix C Shock resistance Rectangular pulse Short-circuit protection Main circuit	cycles cycles V V tane-	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 10,000 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094 -25 +55 -50 +80 IP00/open, for AC op	1000 Up to 47-4-1, Appendix F	12 660 y IP40
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Operation of	cycles cycles V V tane-	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 10,000 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094 -25 +55 -50 +80 IP00/open, for AC op	1000 Up to 47-4-1, Appendix F	660 y IP40
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Generating Office of Gen	cycles cycles V V tane-	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 10,000 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094 -25 +55 -50 +80 IP00/open, for AC op	1000 Up to 47-4-1, Appendix F eration, coil assembly 5 and 5/10 12/5 a	660 y IP40
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Celectrical endurance Operation Number of Celectrical endurance Operation Operatio	cycles cycles V V tane- °C °C g/ms	2 4 22,5° +22,5° 22,5° 22,5° 22,5° 1	1000 Up to 47-4-1, Appendix F veration, coil assembly 5 and 5/10 12/5 a	9 IP40 and 5.5/10 12/5 and 5.6/10
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Coperating of Coperatin	cycles cycles V V tane- °C °C g/ms A A	22.5° 22.5°	1000 Up to 47-4-1, Appendix F veration, coil assembly 5 and 5/10 12/5 a	9 IP40 and 5.5/10 12/5 and 5.6/10
General technical specifications Permissible mounting positions The contactors are designed for operation on a vertical mounting surface. Mechanical endurance Operating of Generating Operating Operati	cycles cycles V V tane- °C °C g/ms	2 4 22.5° 22.5° 22.5° 22.5° 22.5° 10 million 1) 800 Up to 300 Yes, acc. to IEC 6094 -25 +55 -50 +80 IP00/open, for AC op 7.5/5 and 3.4/10 10	1000 Up to 47-4-1, Appendix F veration, coil assembly 5 and 5/10 12/5 a	9 IP40 and 5.5/10 12/5 and 5.6/10

¹⁾ See the endurance diagram above.

²⁾ For 3TC44, one NC contact each must be connected in series for the right and left auxiliary switch block respectively.



3TC contactors

Type			3TC44	3TC48	3TC52	3TC56
Size			2	4	8	12
Dimensions (W x H x D) DC operation		mm	70 x 85 x 141	100 x 183 x 180	135 x 238 x 232	160 x 279 x 310
AC operation	W	mm	70 x 85 x 100	100 x 183 x 154	135 x 238 x 200	160 x 279 x 251
Control circuits						
Coil operating range			0.8 1.1 x U _s			
Power consumption of the solenoid coils (for cold coil and $1.0 \times U_{\rm S}$)						
DC operation	- Closing = Closed	W	10	19	30	86
AC operation, 50 Hz coil	ClosingClosed	VA/p.f. VA/p.f.	68/0.86 10/0.29	300/0.5 26/0.24	640/0.48 46/0.23	1780/0.3 121/0.22
AC operation, 60 Hz coil	ClosingClosed	VA/p.f. VA/p.f.	95/0.79 12/0.3	365/0.45 35/0.26	730/0.38 56/0.24	2140/0.3 140/0.29
AC operation, 50/60 Hz coil	 Closing at 50 Hz/60 Hz 	VA/p.f.	79/73/0.83/0.78			
	- Closed at 50 Hz/60 Hz	VA/p.f.	11/9/0.28/0.27			
Operating times (for 0.8 1.1 x $U_{\rm S}$) Total break time = Opening delay + Arcing time					ing 20 % undervol the coil is cold and	
DC operation	 Closing delay Opening delay¹⁾ 	ms ms	35 190 10 25	90 380 17 28	120 400 22 35	110 400 40 110
AC operation	 Closing delay Opening delay¹⁾ 	ms ms	10 40 5 25	20 50 5 30	20 50 10 30	20 50 10 30
Arcing time	- DC-1 - DC-3/DC-5	ms ms	20 30			
Main circuit						
Load rating with DC			_			
Utilization category DC-1, switching resistive	loads (L/R ≤1 ms)					
 Rated operational currents I_e (at 55 °C) 	Up to <i>U</i> _e 750 V	А	32	75	220	400
Minimum conductor cross-section		mm ²	6	25	95	240
 Rated power at U_e 	At 220 V 440 V	kW kW	7 14	16.5 33	48 97	88 176
	600 V	kW	19.2	45	132	240
Utilization category DC-3 and DC-5 Shunt-wound and series-wound motors (L/R ≤	750 V	kW	24	56	165	300
Rated operational currents I _e	Up to 220 V	А	32	75	220	400
(at 55 °C)	440 V	Α	29	75	220	400
	600 V 750 V	A A	21 7.5	75 75	220 170	400 400
Rated power at U _e	At 110 V	kW	2.5	6.5	20	35
	220 V	kW	5 9	13	41	70
	440 V 600 V	kW kW	9	27 38	82 110	140 200
	750 V	kW	4	45	110	250
Switching frequency Switching frequency z in operating cycles/hour						
AC/DC operation						
With resistive load DC-1		h ⁻¹	1500	1000		
• For inductive load DC-3/DC-5		h ⁻¹	750	600		
Conductor cross-sections (1 or 2 condu	ctors connectabl <u>e)</u>					
Main conductors:			Screw tern	ninals		
• Solid		mm ²	2 x (2.5 10)	2 x (6 16)		
 Finely stranded with end sleeve 		mm ²	2 x (1.5 4)	'		
 Stranded with cable lug Pin-end connector acc. to DIN 46231 		mm ² mm ²	2 x 16 2 x (1 6)	2 x 35	2 x 120	2 x 150
Busbars		mm	'	15 x 2.5	25 x 4	2 x (25 x 3)
Terminal screw			M5	M6	M10	M10
Auxiliary conductors:		2				
SolidFinely stranded with end sleeve		mm ² mm ²	2 x (1 2.5) 2 x (0.75 1.5)			
, chanaca mar cha dicovo			= x (0 0 1.0)			

¹⁾ The opening delay times can increase if the contactor coils are damped against voltage peaks. Only 3TC44 contactors are allowed to be fitted with diodes.



3TC contactors

Туре			3TC74	3TC78
Design			1-pole contactors	2-pole contactors
Dimensions		mm	78 x 352 x 276	160 x 366 x 290
	w o '			
General technical specifications				
Permissible mounting positions			22,5° _↓ 22,5° 22,5° _↓ 22,5° g	
The contactors are designed for operation on a			7, 5, 5, 5, 6, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,	
vertical mounting surface.			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
			¥ -= 2	
Mechanical endurance	Operating cycles		30 million	
Electrical endurance	Operating cycles		1)	
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	1500	
Rated impulse withstand voltage <i>U</i> _{imp}		kV	8	
Protective separation between the coil and the mai	in contacts	V	630	
acc. to IEC 60947-1, Appendix N				
Permissible ambient temperature		°C	-25 +55	
Degree of protection acc. to IEC 60947-1, Appendi	ix C		IP00/open	
Short-circuit protection				
Main circuit				
Fuse links, operational class gG: LV HRC, type 3NA				
Type of coordination "1"		Α	630	
Type of coordination "2"		А	500	
Auxiliary circuitsShort-circuit test with fuse links of gG operational of	alone:	Α	16	
Short-circuit test with fuse links of gG operational of DIAZED, type 5SB; NEOZED, type 5SE	Jass.	А	10	
with short-circuit current $I_k = 1$ kA acc. to IEC 6094				
Test with miniature circuit breaker up to 230 V with		Α	10	
Short-circuit current $I_k = 400 \text{ A}$ acc. to IEC 60947-5 Control circuits	U- I			
Coil operating range DC operation	At $U_{c} = 24 \text{ V}$		0.8 1.2 x U _s	
20 oporation	At $U_{\rm C} > 24$ V		0.7 1.2 x U _s	
AC operation	At $U_{\rm c} = 24 \text{ V}$		0.7 1.15 x <i>U</i> _s	
	At U _c > 24 V		0.7 1.14 x U _s	
Power consumption of the solenoid coils (when cools of the solenoid coils (when co	0.	W	46	92
	osing = Closed	VA	80	160
	sed	*/ (0.95	0.95
Operating times			(The values apply up to and include	
(Total break time = Opening delay + Arcing time)	01 1 1 1		10 % overvoltage, as well as when	the coil is cold and warm)
	Closing delay Opening delay	ms ms	60 100 20 35	
• Arcing time at 0.06 4 x I _e	oponing dolay	ms	40 70	
Main circuit				
Load rating with DC				
Utilization category DC-1, switching resistive load	ds (<i>L/R</i> ≤ 1 ms)			
• Rated operational current $I_e/DC-1$ (at 55 °C)	/	Α	500	500
Minimum conductor cross-section		mm ²	2 x 150	2 x 150
Rated power	At 220 V	kW	110	110
•	440 V	kW	220	220
	600 V	kW	300	300
	750 V 1200 V	kW kW	375 —	375 600
	1500 V	kW	_	750
Critical currents, without arc extinction	At 440 V	Α	≤7	_
	600 V 750 V	A A	≤13 ≤15	
	730 V ≤800 V	A	0	<u> </u>
	1200 V	Α	_	≤13
Hall-alian advanta BOO 1805 VIII	1500 V	Α	2)	≤15
Utilization categories DC-3 and DC-5, switching D		Δ.		
Permissible rated current for regenerative braking	g At 110 600 V	А	400	
Switching frequency				
Switching frequency <i>z</i> in operating cycles/hour AC/DC operation				
With resistive load DC-1		h ⁻¹	750	1000
• For inductive load DC-3/DC-5		h ⁻¹	500	500
1) Endurance see page 2/179				
2)				

¹⁾ Endurance see page 2/179..2) See Selection and ordering data.

Accessories 3RT1 contactors

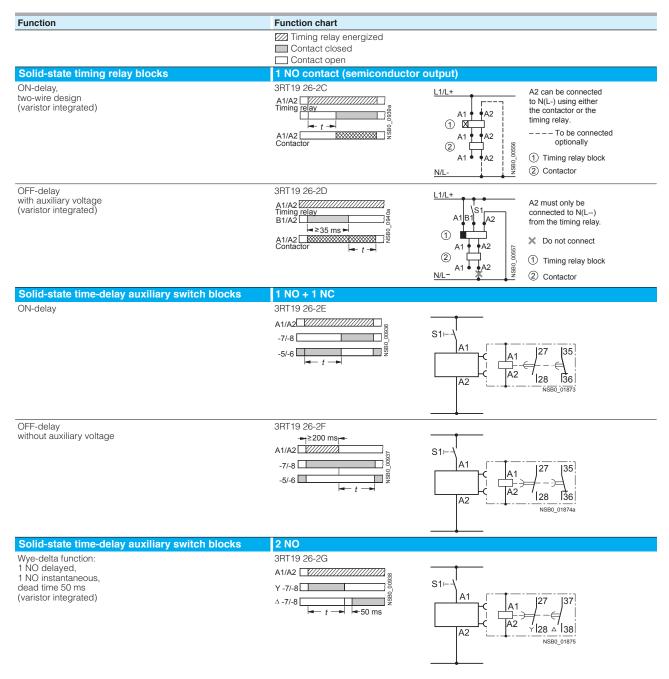


Technical specifications

Contactor Typ	9	3RT19 26-2C 3RT19 26-2D Solid-state timing relay blocks with semiconductor output	3RT19 26-2E 3RT19 26-2F 3RT19 26-2G Solid-state time-delay auxiliary switch blocks
General data			
Rated insulation voltage <i>U_i</i> Pollution degree 3 Overvoltage category III acc. to EN 60664-1	V AC	250	
Permissible ambient temperature			
During operation	°C	-25 +60	
During storage	°C	-40 +80	
Degree of protection acc. to EN 60947-1, Appendix C • Cover • Terminals		IP40 IP20	
Shock resistance Half-sine acc. to IEC 60068-2-27	g/ms	15/11	
Vibration resistance according to IEC 60068-2-6	Hz/mm	10 55/0.35	
EMC tests Basic specification	n	IEC 61000-6-4	
Conductor connections			
• Solid	mm^2	2 x (0.5 1.5), 2 x (0.75 4)	
Finely stranded with end sleeve	mm^2	2 x (0.5 2.5)	
 AWG cables, solid or stranded 	AWG	2 x (18 14)	
Terminal screws		M3	
Tightening torque	Nm lb.in	0.8 1.2 7 10.3	
Permissible mounting positions		Any	
Control			
Operating range of excitation		0.8 1.1 x $U_{\rm S}$, 0.95 1.05 times the rated frequency	0.85 1.1 x $U_{\rm s}$, 0.95 1.05 times the rated frequency
Rated power	W	1	2
 Power consumption at 230 V AC, 50 Hz 	VA	1	4
Overvoltage protection		Varistor integrated in timing relay	
Recovery time	ms	50	150
Minimum ON period	ms	35	200 (with OFF-delay)
Setting accuracy Typ With reference to upper limit of scale). %	±15	
Repeat accuracy Max	c. %	±1	
Load side			
Rated operational currents $I_{\rm e}$			
• AC-140, DC-13	A A	0.3 for 3RT19 16 0.3 for 3RT19 26	
• AC-15, 230 V, 50 Hz	Α		3
• DC-13, 24 V	Α		1
• DC-13, 110 V	Α		0.2
• DC-13, 230 V	А		0.1
Short-time loading capacity Up to 10 m	s A	10	
DIAZED protection gG operational class	A		4
	. mA	5	
	. VA	3.5	
Mechanical endurance	Operating cycles	100 x 10 ⁶	10 x 10 ⁶
Switching frequency for load			
• With I _e at 230 V AC	h ⁻¹	2500	2500
With 3RT20 16 contactor at 230 V AC	h ⁻¹	2500	5000



Accessories 3RT1 contactors



Accessories 3RT1 contactors



Contactor	Туре		3RH19 24, 3TX7 090	
			Coupling links for mounting on contactors acc. to IEC 60947/EN 60947	
General data				
Rated insulation voltage U _i (pollution degree 3)		V	300	
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N		V AC	Up to 300	
Permissible ambient temperature				
During operation		°C	-25 +60	
During storage		°C	-40 +80	
Degree of protection acc. to IEC 60947-1, Appendix C				
Connections			IP20	
Enclosure			IP40	
Circuit diagram			2 A1 Coupling link 2 Contactor	
Conductor cross-sections				
• Solid		mm^2	2 x (0.5 2.5)	
Finely stranded with end sleeve		mm²	2 x (0.5 1.5)	
Terminal screws			M3	
Control side				
Rated control supply voltage $U_{\rm S}$		V DC	24	
Operating range		V DC	17 30	
Power consumption at $U_{\rm S}$		W	0.5	
Nominal current input		mA	20	
Release voltage		V	≥4	
Function display			Yellow LED	
Protection circuit			Varistor	
Load side				
Mechanical endurance	perating cycles		20 x 10 ⁶	
Electrical endurance at I_{Θ}	perating cycles		1 x 10 ⁵	
Switching frequency	perating cycles	h ⁻¹	5000	
Make-time		ms	Approx. 7	
Break-time		ms	Approx. 4	
Bounce time		ms	Approx. 2	
Contact material			AgSnO	
Switching voltage	AC/DC	\/	24 250	



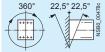
3RH2 control relays size S00

Technical specifications

Contactor relays 3RH2 Type Size S00

Permissible mounting positions

The contactor relays are designed for operation on a vertical mounting surface.



Upright mounting position



Special version required

(3RH21 22-2K.40 coupling relays and contactor relays with extended operating range on request)

Positively-driven operation of contacts in contactor relays

3RH2:

Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the front-mounted auxiliary switch block (removable)

• IEC 60947-5-1, Appendix L

3RH22:

Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) acc. to:

- IEC 60947-5-1, Appendix L

3RH29 11-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts

Contact reliability

Contact reliability at 17 V, 1 mA acc. to IEC 60947-5-4

Explanations

There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

Safety Rules for Controls on Power-Operated Metalworking Presses.

IEC 60947-5-1, Appendix L Low-Voltage Controlgear, Controls and Contact Blocks. Special requirements for positively-driven contacts

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary, e.g. in the form of RC elements and freewheel diodes.

The characteristic curves apply to:

- 3RH21/3RH22 contactor relavs
- · 3RH24 latched contactor relays
- 3RH29 11 auxiliary switch blocks¹⁾
- · Auxiliary switch blocks for snapping onto the front, max. 4-pole and for mounting onto the side in size S00

Frequency of contact faults <10⁻⁸ i.e. < 1 fault per 100 million operating cycles

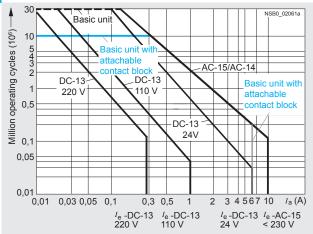


Diagram legend:

 I_a = Breaking current

 I_e = Rated operational current

¹⁾ $I_e = 6 \text{ A for AC-15/AC-14}$

Control Relays 3RH2 control relays size S00



Type	1		3RH21	3RH22	3RH24
Size			S00	S00	S00
Dimensions (W x H x D) with screw terminals		mm	45 x 57.5 x 73		90 x 57.5 x 73
With mounted auxiliary switch block	W.	mm	45 x 57.5 x 116	45 x 57.5 x 116	
General technical specifications					
Mechanical endurance					
Basic units		Operating cycles	30 million		5 million
Basic unit with snap-on auxiliary switch block		Operating cycles	10 million		
Solid-state compatible auxiliary switch block		Operating cycles	5 million		
Rated insulation voltage U _i (pollution degree 3)		V	690		
Rated impulse withstand voltage <i>U</i> _{imp}		kV	6		
Protective separation between the coil and the contactacc. to IEC 60947-1, Appendix N	s in the basic unit	V	400		
Permissible ambient temperature					
During operation During storage		°C °C	-25 +60 -55 +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20, coil assembly	IP40	
ouch protection acc. to EN 50274			Finger-safe		
Shock resistance					
Rectangular pulse	- AC operation	g/ms	7.3/5 and 4.7/10		
	- DC operation	g/ms	>10/5 and >5/10		
• Sine pulse	 AC operation DC operation 	<i>g</i> /ms <i>g</i> /ms	11.4/5 and 7.3/10 >15/5 and >8/10		
Short-circuit protection	DO OPERALION	ушо	210/0 and 20/10		
Short-circuit test with fuse links of gG operational class	:	А	10		
DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_{\rm K}$ = 1 kA acc. to IEC 60947-5-	1				
• Test with miniature circuit breaker up to 230 V with C c Short-circuit current $I_{\rm k}$ = 400 A acc. to IEC 60947-5-1	haracteristic:	А	6		
Conductor cross-sections					
Auxiliary conductors and coil terminals 1 or 2 conductors can be connected)			Screw termina		
Solid		mm ²	2 x (0.5 1.5) ¹⁾ ; 2 x	(0.75 2.5) ¹⁾ accord	ing to IEC 60947;
Finely stranded with end sleeve		mm^2	max. 2 x (0.5 4) 2 x (0.5 1.5) ¹⁾ ; 2 x	(0.75 2.5) ¹⁾	
AWG cables, solid or stranded		AWG	2 x (20 16) 1/; 2 x (18 14) 17	
Terminal screw - Tightening torque		Nm	M3 (for standard scr 0.8 1.2 (7 10.3	ewdriver size 2 or Poz lb.in)	tidriv 2)
Auxiliary conductors and coil terminals 1 or 2 conductors can be connected)			Spring-type te	rminals	
Operating devices		mm	3.0 x 0.5; 3.5 x 0.5		
• Solid		mm_2^2	2 x (0.5 4)		
Finely stranded with end sleeve Finely stranded without end sleeve		mm ² mm ²	2 x (0.5 2.5)		
 Finely stranded without end sleeve AWG cables, solid or stranded 		mm- AWG	2 x (0.5 2.5) 2 x (20 12)		
Auxiliary conductors for front and laterally mounted a	auxiliary switches		,		
Operating devices		mm	3.0 x 0.5; 3.5 x 0.5		
Solid		mm ²	2 x (0.5 2.5)		
Finely stranded with end sleeve		mm ²	2 x (0.5 1.5)		
Finely stranded without end sleeve AWG cables, solid or stranded		mm ² AWG	2 x (0.5 2.5) 2 x (20 14)		
Auxiliary conductor and coil terminals				lug connection	
-			U		
Terminal screw	d ₃ →	mm	M3, Pozidriv size 2		
Operating devices	d ₂	Nm	Ø 5 6		
Tightening torque		mm	0.8 1.2		
Usable ring terminal lugs	+(- -)+	mm	$d_2 = min. 3.2$		
- DIN 46234 without insulation sleeve	1 4 1	mm	$d_3 = \text{max. 7.5}$		
- DIN 46225 without insulation sleeve - DIN 46237 with insulation sleeve	ا				
- JIS C2805 Type R without insulation sleeve	1274				
- JIS C2805 Type RAV with insulation sleeve	[] 교				
- JIS C2805 Type RAP with insulation sleeve					
If two different conductor cross-sections are connected	da a a a a la acada a	T	r opening the enri		

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Max. external diameter of the cable insulation: 3.6 mm.

Tool for opening the spring-type terminals see Accessories, page 2/79.

An insulation stop must be used for conductor cross-sections ≤1 mm², see Accessories, page 2/79.



Control Relays
3RH2 control relays

size S00

Contactor relays	Туре		3RH2.
Control circuits	Size		S00
Control circuits Coil operating range			
AC operation	At 50 Hz		0.9 1.1 v //
	At 60 Hz		0.8 1.1 x U _S 0.85 1.1 x U _S
DC operation	At +50 °C At +60 °C		0.8 1.1 x <i>U</i> _s 0.85 1.1 x <i>U</i> _s
Power consumption of the solenoic (when coil is cold and $1.0 \times U_{\rm S}$)	d coils		
 AC operation, 50 Hz 			
ClosingClosed		VA/p.f. VA/p.f.	37/0.8 5.7/0.25
 AC operation, 60 Hz 			
- Closing - Closed		VA/p.f. VA/p.f.	33/0.75 4.4/0.25
• DC operation (closing = closed)		W	4.0
Permissible residual current of the (with 0 signal)	electronics		
 For AC operation¹⁾ For DC operation 			$<$ 4 mA x (230 V/ $U_{\rm S}$) $<$ 10 mA x (24 V/ $U_{\rm S}$)
Operating times ²⁾ Total break time = OFF-delay + Arcin	ig time		-
Values apply with coil in cold state ar operating range	nd at operating temperature for		
AC operation			
Closing			
- ON-delay of NO contact	With 0.8 1.1 × $U_{\rm S}$ With 1.0 × $U_{\rm S}$ 3RH24 minimum operating time	ms ms ms	8 33 9 22 ≥35
- OFF-delay of NC contact	With 0.8 1.1 x $U_{\rm S}$ With 1.0 x $U_{\rm s}$	ms ms	6 25 6.5 19
Opening	With 1.0 X Os	1113	0.0 10
- OFF-delay of NO contact	With 0.8 1.1 x U _s	ms	4 15
orr delay erros contact	With 1.0 x $U_{\rm S}$	ms	4.5 15
	3RH24 minimum operating time	ms	≥30
- ON-delay of NC contact	With 0.8 1.1 x U_s With 1.0 x U_s	ms ms	5 15 5 15
DC operation			
Closing			
- ON-delay of NO contact	With 0.8 1.1 x U _s	ms	30 100
	With 1.0 x U_s 3RH24 minimum operating time	ms ms	35 50 ≥100
- OFF-delay of NC contact	With 0.8 1.1 x U_s With 1.0 x U_s	ms ms	25 90 30 45
Opening	-5		
- OFF-delay of NO contact	$\begin{array}{c} \text{With 0.8 1.1 \times } \text{$U_{\rm S}$} \\ \text{With 1.0 \times } \text{$U_{\rm S}$} \\ \text{3RH24 minimum operating time} \end{array}$	ms ms ms	7 13 7 12 ≥30
- ON-delay of NC contact	With 0.8 1.1 × $U_{\rm S}$ With 1.0 × $U_{\rm S}$	ms ms	13 19 13 18
Arcing time	x Og	ms	10 15
Dependence of the switching frequer on the operational current I' and ope		-	
$z' = z \cdot I_{\Theta}/I' \cdot (U_{\Theta}/U')^{1.5} \cdot 1/h$			

¹⁾ The 3RT29 16-1GA00 additional load module is recommended for higher residual currents (see page 2/74).

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Coupling Relays 3RH2 control relays size S00



Contactor relays	Туре		3RH2.
Contactor rollayo	Size		S00
Load side			
AC capacity			
Rated operational currents I_e			
AC-12		А	10
AC-15/AC-14 for rated operational voltage $U_{\rm s}$	Up to 230 V	А	6
	400 V	Α	3 2
	500 V 690 V	A A	1
Load rating with DC			
Rated operational currents I _e			
DC-12 for rated operational voltage $U_{\rm S}$			
1 conducting path	24 V	A	6
	60 V 110 V	A A	6 3
	220 V 440 V	A	1
	600 V	A A	0.3 0.15
• 2 conducting paths in series	24 V	Α	10
	60 V 110 V	A A	10 4
	220 V	Α	2
	440 V 600 V	A A	1.3 0.65
3 conducting paths in series	24 V	Α	10
	60 V	Α	10
	110 V 220 V	A A	10 3.6
	440 V	Α	2.5
DC-13 for rated operational voltage U_s	600 V	A	1.8
1 conducting path	24 V	А	6
	60 V	Α	2
	110 V 220 V	A A	1 0.3
	440 V	A	0.14
• 2 conducting paths in series	600 V 24 V	A A	0.1
2 conducting paths in series	60 V	A	3.5
	110 V 220 V	A A	1.3 0.9
	440 V	Α	0.2
	600 V	A	0.1
3 conducting paths in series	24 V 60 V	A A	10 4.7
	110 V	Α	3
	220 V 440 V	A A	1.2 0.5
	600 V	А	0.26
Switching frequency			
Switching frequency <i>z</i> in operating cycles/hour	AC 10/DC 10	h-1	1000
For rated operation For utilization category	AC-12/DC-12 AC-15/AC-14	h ⁻¹ h ⁻¹	1000 1000
	DC-13	h ⁻¹	1000
No-load switching frequency		h ⁻¹	10000
Dependence of the switching frequency z' on the operational current I' and operational voltage U:			
$z' = z \cdot I_e / I' \cdot (U_e / U)^{1.5} \cdot 1/h$			
® and ® rated data			
Basic units and auxiliary switch blocks			
Rated control supply voltage		V AC	max. 600
Rated voltage		V AC	600
Switching capacity			A 600, Q 600
 Uninterrupted current at 240 V AC 		Α	10



Control Relays
SIRIUS 3RH21 coupling relays
for switching auxiliary circuits, 4-pole

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RH21 contactor relays (see page 5/6).

Contactor type		3RH21HB40	3RH21JB40	3RH21KB40
Size		S00	S00	S00
Control circuits				
Coil operating range		0.7 1.85 x <i>U</i> _s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed				
• At $U_{\rm S}$ = 17 V	W	1.4		
• At U _S = 24 V	W	2.8		
• At U _S = 30 V	W	4.4		
Permissible residual current of the electronics for 0 signal		< 10 mA x (24 V/U _s)		
Overvoltage configuration of the solenoid coil		No overvoltage damping	With diode	With suppressor diode
		\$.0.\$		->
Operating times				
Closing at 17 V ON-delay NO OFF-delay NC	ms ms	40 130 30 80		
• At 24 V - ON-delay NO - OFF-delay NC	ms ms	35 60 25 40		
At 30 V ON-delay NO OFF-delay NC	ms ms	25 50 15 30		
Opening at 17 30 VOFF-delay NOON-delay NC	ms ms	7 20 20 30	38 65 55 75	7 20 20 30
Upright mounting position		Request required		
			3PH21 - VR40	3DH21 - WB40
Contactor type	_	3RH21MB40-0KT0	3RH21 VB40	3RH21WB40
Contactor type Size			3RH21 VB40 S00	3RH21WB40 S00
Contactor type Size Control circuits		3RH21MB40-0KT0 S00		
Contactor type Size Control circuits Coil operating range	W	3RH21MB40-0KT0 S00 0.85 1.85 x U _s		
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil)	W	3RH21MB40-0KT0 S00		
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at $U_{\rm S} = 24 \text{ V}$ Permissible residual current	W	3RH21MB40-0KT0 S00 0.85 1.85 x U _s		
Contactor type Size Control circuits	W	3RH21MB40-0KT0 \$00 0.85 1.85 x U _s 1.6 < 8 mA x (24 V/U _s) Diode, varistor or RC element,	S00	
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at $U_{\rm S} = 24 \text{ V}$ Permissible residual current of the electronics for 0 signal	W	3RH21MB40-0KT0 \$00 0.85 1.85 × U _S 1.6 < 8 mA × (24 V/U _S) Diode, varistor or RC element, attachable	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at $U_{\rm S} = 24 \text{ V}$ Permissible residual current of the electronics for 0 signal	W	3RH21MB40-0KT0 \$00 0.85 1.85 × U _S 1.6 < 8 mA × (24 V/U _S) Diode, varistor or RC element, attachable	S00	S00
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at $U_{\rm S} = 24 \text{ V}$ Permissible residual current of the electronics for 0 signal	W	3RH21MB40-0KT0 \$00 0.85 1.85 x U _s 1.6 < 8 mA x (24 V/U _s) Diode, varistor or RC element,	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at U _S = 24 V Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil	W	3RH21MB40-0KT0 \$00 0.85 1.85 × U _S 1.6 < 8 mA × (24 V/U _S) Diode, varistor or RC element, attachable	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at U _S = 24 V Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil	W	3RH21MB40-0KT0 \$00 0.85 1.85 × U _S 1.6 < 8 mA × (24 V/U _S) Diode, varistor or RC element, attachable	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at $U_s = 24 \text{ V}$ Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil Control circuits Operating times	W	3RH21MB40-0KT0 \$00 0.85 1.85 × U _S 1.6 < 8 mA × (24 V/U _S) Diode, varistor or RC element, attachable	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at $U_s = 24 \text{ V}$ Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil Control circuits Operating times	w W	3RH21MB40-0KT0 \$00 0.85 1.85 × U _S 1.6 < 8 mA × (24 V/U _S) Diode, varistor or RC element, attachable	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at U _s = 24 V Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil Control circuits Operating times Closing at 20.5 V ON-delay NO OFF-delay NC	ms	3RH21MB40-0KT0 \$00 0.85 1.85 x U _s 1.6 < 8 mA x (24 V/U _s) Diode, varistor or RC element, attachable	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at U _S = 24 V Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil Control circuits Operating times Closing at 20.5 V ON-delay NO OFF-delay NC At 24 V ON-delay NO OFF-delay NC	ms ms	3RH21MB40-0KT0 \$00 0.85 1.85 x U _s 1.6 < 8 mA x (24 V/U _s) Diode, varistor or RC element, attachable \$\int_{\sqrt{1}}^{\sqrt{2}}\int_{\sqrt{1}}^{\sqrt{2}}\$	S00 Built-in diode	Built-in suppressor diode
Contactor type Size Control circuits Coil operating range Power consumption of the solenoid coil (for cold coil) Closing = Closed at U _s = 24 V Permissible residual current of the electronics for 0 signal Overvoltage configuration of the solenoid coil Control circuits Operating times • Closing at 20.5 V - ON-delay NO - OFF-delay NC • At 24 V - ON-delay NO - OFF-delay NC • At 44 V - ON-delay NO	ms ms ms ms	3RH21MB40-0KT0 \$00 0.85 1.85 x U _s 1.6 < 8 mA x (24 V/U _s) Diode, varistor or RC element, attachable \$\sqrt{-1} \sqrt{-1} -	S00 Built-in diode	Built-in suppressor diode

3RT Contactors

3RT2 and 3RH2 contactors and relays



Terminal designations and identification numbers for auxiliary contacts

Terminal designations

The terminal designations are 2-digit, e.g. 13, 14, 21, 22:

- Tens digit: sequence digit
- 1-2 for normally closed contacts (NC)

Identification numbers

The identification number indicates the number and type of the auxiliary contacts, e.g. 40, 31, 22, 13:

- 1st digit: number of normally open contacts (NO)
- 2nd digit: number of normally closed contacts (NC)

Examples

- 31 = 3 NO + 1 NC
- 40 = 4 NO

Selection guide for mountable auxiliary switch blocks for power contactors and contactor relays

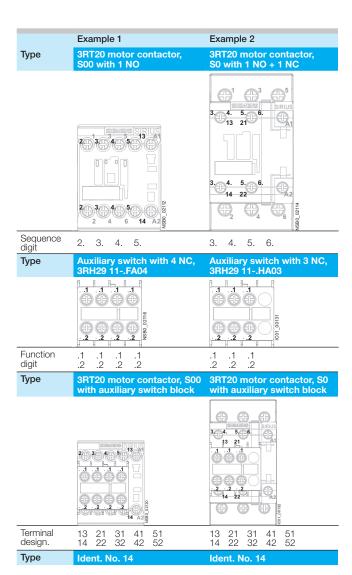
The auxiliary switch blocks of the 3RH29 series for mounting on the front and side can be used for power contactors as well as for contactor relays.

The possible combinations of basic unit and mounted auxiliary switch block can be found in the tables below.

Where the columns and lines intersect (blue and green in the example) you will find the identification number for the combination of basic unit (column) and auxiliary switch block (line).

			3-pole c	ontactors		
	kiliary ntacts	Version	3RT20 1 S00	3RT20 1 S00	3RT20 2 S0	
NO	NC		10	01	11	
1	7		13	21	13 21	
				5. 6. 7. 8.	l	
				g to EN 50		Order No.
Au	xiliar	y switches w	ithout N	O contac	et	
	1	1.1	11	02	12	3RH29 11HA01
	2	1 1.1	12	03	13	3RH29 11HA02
	3	1 1 1 1	13	04	14	3RH29 11HA03
	4	1.1 .1 .1 .1 .1 .1 .1 .2 .2	14			3RH29 11FA04
Au	xiliar	y switch wit	1 1 NO c	ontact		
1		.4	20	11	21	3RH29 11HA10
1	1	1.1 .3	21	12	22	3RH29 11HA11

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.





3RT2 and 3RH2 contactors and relays







				A year				20000			
	3-pole co	ontactors		4-pole co	ontactors			Contactor rela	iys		
Auxiliary contacts Version NO NC	S00 3RT20 1 10	3RT20 1 01	S0 3RT20 2 11	S00 3RT23 1	3RT25 1	S0 3RT23 2 11	3RT25 2 11	S00 3RH21, 3RH24 40E	3RH21, 3RH24 31E	3RH21, 3RH24 22E	
\	113 14 2. 3. 4.	21 22 5. 6. 7.	13 21 / 14 22 3. 4. 5.	1. 2. 3.	1. 2. 3.	13 21 / 14 22 3. 4. 5.	13 21 / 14 22 3. 4. 5.	13 23 33 43 14 24 34 44 5. 6. 7. 8	13 21 33 43 14 22 34 44 5. 6. 7. 8	13 21 31 43 14 22 32 44 5. 6. 7. 8	
Front auxiliary switche	5.	8. ig to EN 50	6.	4.	4. g to EN 50	6.	6.	According to I	=N 500111)		Ouder No
Without NO conta		ig to EN 50	012.7	Accordin	g to EN 50	1012.7		According to i	EN 50011.7		Order No.
1 .1 • .2	11	02	12	01	01	12	12	41X	32X	23X	3RH29 11HA01
2 1 1 1 2 2 2 2	12	03	13	02	02	13		42E	33X	24	3RH29 11HA02
3 .1 .1 .1 	13	04	14	03				43	34		3RH29 11HA03
4 1 1 1 1 1 1 1 1 1	14							44E			3RH29 11FA04
With 1 NO contact	et										
1 .3	20	11	21	10	10	21	21	50E	41E	32E	3RH29 11HA10
1 1 1 1.3	21	12	22	11	11	22	22	51X	42X	33X	3RH29 11HA11
1 2 1 1 3	22	13	23	12	12	23		52	43	34	3RH29 11HA12
1 3 1 1 1 3	23	14	24	13				53X	44X		3RH29 11HA13
With 2 NO contact	ets										
2 \ \frac{1.3}{1.4}\ \frac{1}{4}\ \frac{1}	30	21	31	20	20	31	31	60E	51X	42X	3RH29 11HA20
2 1 1 3 3	31	22	32	21	21	32	32	61	52	43	3RH29 11HA21
2 2 1.1 1.1 1.3 1.3	32	23	33	22	22	33		62X	53	44X	3RH29 11HA22
2 2 3 .1 .1 3		23	33	22	22	33		62X	53	44X	3RH29 11FA22
								1			

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

3RT Contactors

3RT2 and 3RH2 contactors and relays



Α	dd	ition	al auxillary s	witch bl	locks									
٧	ersi	on	ontacts	S00 3RT20 1	1	S0 3RT20 2	S00	ontactors 3RT25 1	1			24		
	10	NC L		10 13 14 2. 3. 4. 5.	01 21 22 5. 6. 7. 8.	11 13 21 	1. 2. 3. 4.	1. 2. 3. 4.	11 13 21 14 22 3. 4. 5. 6.	11 13 21 14 22 3. 4. 5. 6.	40E 	31E 13 21 33 43 14 22 34 44 5. 6. 7. 8	13 21 31 43 14 22 32 44 5. 6. 7. 8	
					g to EN 5		Accordin	ng to EN 5	0012 ¹⁾		According to	EN 50011 ¹⁾		Order No.
3		nt au 	xiliary switch	40	3 NO co 31	ntacts 41	30	30	41	41	70	61	52	3RH29 11HA30
3		1	1.1 3 3 3 3 5 5 5 5 5 5	41	32	42	31	31	42	42	71X	62X	53X	3RH29 11HA31
F	ron	nt au	xiliary switch	nes with	4 NO co	ntacts								
4			3 3 3 3 3	50	41	51	40	40	51	51	80E	71X	62X	3RH29 11FA40
					N 50005			N 50005			Acc. to EN 5	0005		
F			xiliary switch								I = .			
		1	.7 .5 	21	12	22	11	11	22	22	51	42	33	3RH29 11FB11
		2	.3 .1 .5 .7 	32	23	33	22	22	33		62	53	44	3RH29 11FB22
		3	7 .7 .5 .5	32	23	33	22	22	33		62	53	44	3RH29 11FC22
F	ron	nt au	xiliary switch	nes with	complet	e inscrip	otion ²⁾							
1			73	20	11	21	10	10	21	21	50	41	32	3RH29 11-1AA10
1			73	20	11	21	10	10	21	21	50	41	32	3RH29 11-1BA10
-		1	[71 -	11	02	12	01	01	12	12	41	32	23	3RH29 11-1AA01
		1	72 71 - - 72	11	02	12	01	01	12	12	41	32	23	3RH29 11-1BA01
1		1	73 81	21	12	22	11	11	22	22	51	42	33	3RH29 11-1LA11
1		1	74 82 73 81	21	12	22	11	11	22	22	51	42	33	3RH29 11-1MA11
2			73 83 	30	21	31	20	20	31	31	60	51	42	3RH29 11-1LA20
2			73 83 -\ 74 84	30	21	31	20	20	31	31	60	51	42	3RH29 11-1MA20
				-										

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

²⁾ Terminals from the top or bottom.



3RT2 and 3RH2 contactors and relays

	3-pol	e contactors		4-pole co	ontactors			Contactor rel	ays		
Auxiliary contact	ts S00		S0	S00	I	S0	1	S00			
Version	3RT2	0 1 3RT20 1	3RT20 2	3RT23 1	3RT25 1		3RT25 2	3RH21, 3RH24	1		
NO NC	10	01	11			11	11	40E	31E	22E	
\	13	21 -	13 21			13 21	13 21	13 23 33 43	13 21 33 43	13 21 31 43	
) (14	22	14 22			14 22	14 22	14 24 34 44	14 22 34 44	14 22 32 44	
		5. 5. 6. 7. 8.		1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.		5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8	
	Acc.	to EN 50005		Acc. to E	N 50005			According to	EN 500111)		Order No.
Front auxilia	y switches	with comp	lete inscr	iption (fo	or conta	ctor rela	ys)				
1-1	3 73 83 4 74 84							80E			3RH29 11GA40
+	1 73 83							71E			3RH29 11GA31
+	1 71 83							62E			3RH29 11GA22
\ 	1 71 81							53E			3RH29 11GA13
 	71 81 + + 72 82							44E			3RH29 11GA04
Front auxilia	y switches	with comp	lete inscr	iption, s	pecial ve	ersion					
1-1	3 73 83 50 4 74 84	41	51	40	40	51	51	80E	71X	62X	3RH29 11XA40 -0MA0
\\	1 73 83 41 41 41 41 41 41 41 4	32	42	31	31	42	42	71E	62X	53	3RH29 11XA31 -0MA0
\\ -\ \	1 71 83 32	23	33	22	22	33		62E	53	44X	3RH29 11XA22 -0MA0
52 62	71 81 14 7- 7 72 82							44E			3RH29 11XA04 -0MA0
Front auxilia	y switches,	Solid-stat	e compat								
2 .1 	- 12	03	13	02	02	13		42	33	24	3RH29 11NF02
1 1 .3		12	22	11	11	22	22	51	42	33	3RH29 11NF11
2 .3	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	21	31	20	20	31	31	60	51	42	3RH29 11NF20

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

3RT Contactors

3RT2 and 3RH2 contactors and relays



	Additional	auxiliary	Switch	DIOCKS	
ı					

1	٩d٥	ditio	nal aux	cillary s	witch b	locks									
						contactors			ontactors			Contactor rel	lays		
	Aux ∕ers		contact	S	S00	3RT20 1	S0	S00	3RT25 1	S0 3RT23 2	DTOE O	S00 3RH21, 3RH24			
		NC			10	01	11			11	11	40E	31E	22E	
	Ī	L			13		13 21			13 21	13 21	13 23 33 43	13 21 33 43	13 21 31 43	
,	Ì	7			-/-	21	\ /			\ /	\ /	1-4-4-1	+++	+++	
	'	'			114	22	14 22			14 22	14 22	14 24 34 44	14 22 34 44	14 22 32 44	
					2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8	
			Left	Right		ng to EN 5		Accordin	ng to EN 5	0012 ¹⁾		According to	EN 50011 ¹⁾		Order No.
	La	tera	l auxili	ary swi	tches f	or size S	600								
	-	2		21 31	12			02	02						3RH29 11DA02
-	-	2	41 51 	21 31	14										3RH29 11DA02
			42 52	22 32											
-	1	1		21 33	21			11	11						3RH29 11DA11
-	1	1	41 53 42 54	21 33	32			22	22						3RH29 11DA11
2	2			23 33	30			20	20						3RH29 11DA20
2	2		43 53 	23 33	50			40	40						3RH29 11DA20
2	2	1	43 53 	21 33	41			31	31						3RH29 11DA20 + 3RH29 11DA11
2	2	2	43 53 	21 31 •	32			22	22						3RH29 11DA20 + 3RH29 11DA02
-	1	1 2	41 53 42 54	21 31	23			13							3RH29 11DA11 + 3RH29 11DA02
	Lat	eral	auxilia	ry swit	ches fo	r size S	0	•							
	-	2		31 41 • - 32 42	12	03	13	02	02	13					3RH29 21DA02
-	-	2	51 61 	31 41	14										3RH29 21DA02
_	1	1		31 43	21	12	22	11	11	22	22				3RH29 21DA11
-	1	1	51 63 52 64	31 43	32	23	33	22	22	33					3RH29 21DA11
2	2			33 43	30	21	31	20	20	31	31				3RH29 21DA20
2	2		53 63 	33 43	50	41	51	40	40	51	51				3RH29 21DA20
_	1\ -				•										

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.



3RT2 and 3RH2 contactors and relays

Auxiliary Version NO NC	/ contact	S	3-pole co S00 3RT20 1		S0 3RT20 2 11	4-pole co S00 3RT23 1		S0 3RT23 2 11	3RT25 2 11	Contactor rel S00 3RH21, 3RH2 40E		22E	
\			13	21	13 21 14 22			13 21	13 21 14 22	13 23 33 43	13 21 33 43	13 21 31 43	
	Left	Right		5. 6. 7. 8. g to EN 50		1. 2. 3. 4. According		3. 4. 5. 6. 0012 ¹⁾	3. 4. 5. 6.	5. 6. 7. 8 According to	5. 6. 7. 8 EN 50011 ¹⁾	5. 6. 7. 8	Order No.
Latera	l auxilia	ry swit	ches for		S00								
2	53 63 	31 43	41	32	42	31	31	42	42				3RH29 21DA20 + 3RH29 21DA11
2 2	53 63 	31 41	32	23	33	22	22	33					3RH29 21DA20 + 3RH29 21DA02
1 1	51 63 52 64	31 41	23	14	24	13							3RH29 21DA11 + 3RH29 21DA02
Latera	l auxilia	ry swit	ches for	contact	or relays								
2	51 61 									42Z	33X	24	3RH29 21DA02
1 1	51 63 52 64									51X	42X	33X	3RH29 21DA11
2	53 63 									60Z	51X	42X	3RH29 21DA20
Latera	l auxilia	ry swit	ches, So	lid-state	compa	tible for s	size S00						
1 1		23 31	21			11	11						3RH29 11-2DE11
1 1	41 53 42 54	23 31	32			22	22						3RH29 11-2DE11
Latera	l auxilia	ry swit	ches, So	lid-state	compa	tible for s	size S0,	S00					
1 1		33 41	21	12	22	11	11	22	22				3RH29 21-2DE11
1 1	51 63 52 64	33 41	32	23	33	22	22	33					3RH29 21-2DE11
Latera	auxilia	y switc	hes, Soli	d-state	compati	ble for co	ontactor	relays					
1 1	51 63 52 64									51X	42X	33X	3RH29 21DE11

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in bold print. All combinations comply with EN 50005.

3RT Contactors

3RT1 contactors and accessories



Internal circuit diagrams (applicable to screw, spring and ring lug connection)

Sizes S2 to S12

Terminal designations according to EN 50 012

3RT10 3 to 3RT10 7, 3RT12, 3RT14 contactors

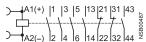


3RT10 3 to 3RT10 7, 3RT14 contactors

With 3RH19 21-. HA22 4-pole auxiliary contact block, mountable on the front

2 NO + 2 NC

Ident. no. 22E



3RT1. 5, 3RT1. 6, 3RT1. 7 contactors (sizes S6, S10, S12)

With 3RH19 21-1DA11 2-pole auxiliary switch blocks, laterally mountable

2 NO + 2 NO



3RH19 21- . HA../-.XA..4-pole auxiliary switch blocks, for snapping onto the front $^2)\,$

3 NO + 1 NC 2 NO + 2 NC ldent. no. 31 22 1/31/21/33/43 1/31/21/31/43

53 | 61 | 71 | 83 | 54 | 62 | 72 | 84

2 NO + 2 NC

13 21 31 41 66 60 88 14 12 32 42 8

1 NO + 3 NC

3RH19 21-. DA11, 3RH19 21-2DE11 first laterally mountable auxiliary switch block (solid-state compatible)

1 NO + 1 NC left |21|13 m 3RH19 21-. JA11, 3RH19 21-2JE11 second laterally mountable auxiliary switch block (solid-state compatible)

(only for sizes \$3 to \$12)

1 NO + 1 NC left 1 NO + 1 NC right

61 |53 ₂₆,008s

Surge suppressor (plug-in direction coded; exception: marked +/- for 3RT19 16-1T... diode assembly) for sizes S2 to S3

Diode

Diode assembly
_ ^ℵ

Varistor

RC element

Diode with LED

Varistor with LED

1) RH29 auxiliaries are intended to be used only with 3RT2 or 3RH2 base devices.

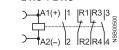
3RH19 auxiliaries are intended to be used only with 3RT1 or 3RH1 base devices.

2) Not for 3RT12. vacuum contactors

Contactors with 4 main contacts, sizes S2 to S3 Terminal designations acc. to EN 50 005

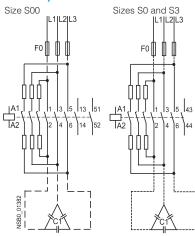
3RT13/23 and 3RT15/25 contactors

NO 2 NO + 2 NC



(3RH19 21 auxiliary switch blocks acc. to EN 50 005 can be snapped on)

3RT16 capacitor contactors





3RT1 contactors and accessories

Internal circuit diagrams (applicable to screw connection and Spring-type terminal connection)

Accessories for size S21) to S12 contactors Terminal designations acc. to EN 50 005

3RH19 21-.F..., 4-pole,

for snapping onto the front 1)

4 NO 3 NO + 1 NC Ident. no. 40 |13|23|33|43

2 NO + 2 NC

4 NC

2 NO + 2 NC make-before-break

3RH19 21-. CA., auxiliary switch blocks, single-pole,

for snapping onto the front 2)

1 NO

(terminal designations according to EN 50 005 or EN 50 012)

3RH19 21-1CD.. auxiliary switch blocks, single-pole,

with make-before-break contacts, for snapping onto the front 1)

Accessories for size S0 to S12 contactors Terminal designations acc. to EN 50 005

3RH19 21-1LA.. and 3RH19 21-1MA.. auxiliary switch block, 2-pole, for snapping onto the front 1)

cable entry from above or below

2 NO

1 NO + 1 NC



Internal wiring



Example: 1 NO + 1 NC, cable entry from below

3RH19 21-. FE22 solid-state compatible auxiliary switch block, 4-pole,

for snapping onto the front 1)

2 NO + 2 NC Ident no 22



3RH19 21-. EA.. first laterally mountable auxiliary switch blocks (left) 1 NO + 1 NC

2 NO

2 NO

3RH19 21-. EA.. first laterally mountable auxiliary switch blocks (right) 1 NO + 1 NC

3RH19 21-. KA.. second laterally mountable auxiliary switch blocks (left) (only for sizes S3 to S12)

2 NO

 $1 \text{ NO} \pm 1 \text{ NC}$

2 NC

3RH19 21-. KA.. second laterally mountable auxiliary switch blocks (right

2 NO

(only for sizes S3 to S12) 1 NO + 1 NC

- 1) RH29 auxiliaries are intended to be used only with 3RT2 or 3RH2 base devices. 3RH19 auxiliaries are intended to be used only with 3RT1 or 3RH1 base devices.
- 2) Not for 3RT12. vacuum contactors

3RT Contactors and 3RH2 Control Relays

Accessories for size S00 to S3



Circuit diagrams

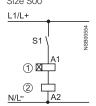
Accessories for size S2 to S3 contactors and control relays

Solid-state time-delay blocks

(see configuring aid on page 2/38)

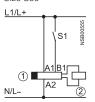
3RT19 16-2C...

ON-delay Size S00



3RT19 16-2D...

OFF-delay (with auxiliary voltage) Size S00

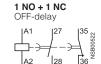


Sizes S2 to S12

3RT19 16-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks



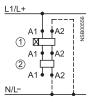
(Integrated varistors not shown)





3RT19 26-2C...

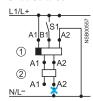
ON-delay Sizes S0 to S3



A2 can be connected to N(L-) via either the contactor or the time-delay relay.
--- optional connection

3RT19 26-2D...

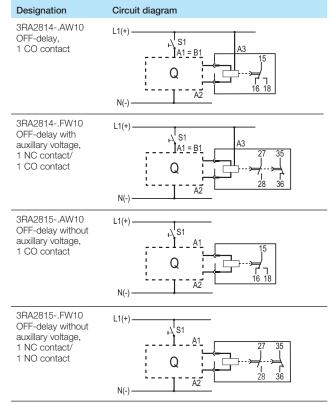
OFF-delay (with auxiliary voltage) Sizes S0 to S3



A2 can only be connected to N(L-) via the time-delay relay.

- x don't connect
- ① Time-delay block ② Contactor

Designation	Circuit diagram
3RA2811CW10 ON-delay	3RA28 A3 A1 Q
	N(-)
3RA2812DW10 OFF-delay with auxillary voltage	11(+) A3 B1 A1 3RA28
	N(-)
3RA2813AW10 ON-delay, 1 CO contact	L1(+) ————————————————————————————————————
3RA2813FW10 ON-delay, 1 NC contact/ 1 NO contact	L1(+)



3RT29 accessories are intended to be used only with 3RT2 or 3RH2 base devices. 3RT19 auxiliaries are intended to be used only with 3RT1 or 3RH1 base devices.

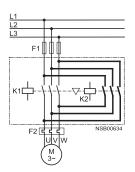
3RA Contactor Assemblies



3RA13 / 3RA23 contactor assemblies for reversing

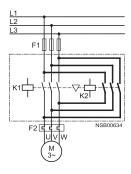
Circuit diagrams

Size S00 to S0 Main circuit



The 3RA2913-2AA. (S00) and 3RA2913-2AA (S0) installation kit contains wiring connectors for connecting the main conducting paths, the mechanical interlock and two connecting clips for the contactors.

Sizes S2 to S3 Main circuit

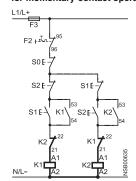


The 3RA19 .3-2A installation kits contain, among other things, the wiring connectors on the top and bottom for connecting the main conducting paths.

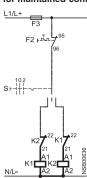
Control circuit (sizes S00 and S0)

(terminal designations of contactors according to EN 50 012)

for momentary-contact operation



for maintained-contact operation

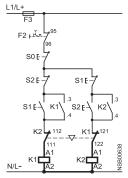


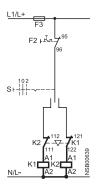
Control circuit

(terminal designations of contactors according to EN 50 005)

for momentary-contact operation

for maintained-contact operation





The 3RA19 24-2B mechanical interlock contains one NC contact for the NC contact interlock for each contactor

Position of terminals

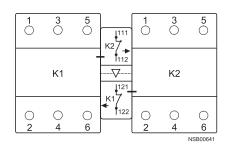
Sizes S2 to S3

Terminal designations according to EN 50 005

3RA19 24-2B mechanical interlock (laterally mountable), integrated in reversing contactor assemblies (reversing starters), contains one NC contact for the electrical interlock for each contactor

2 NC





- S0 "OFF" button
- S1 "Clockwise ON" button
- S2 "Counterclockwise ON" button
- S "CW-OFF-CCW" button
- K1 Clockwise contactor
- K2 Counterclockwise contactor
- F1 Fuses for main circuit
- F3 Fuses for control circuit
- F2 Overload relay

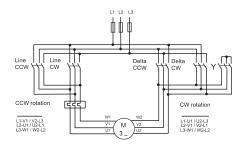
3RA Contactor Assemblies

Circuit Diagrams for WYE-delta switching



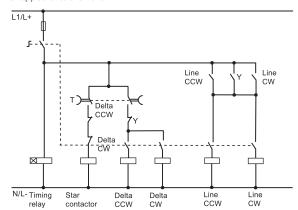
Circuit diagrams

Size S00 / S0 Main circuit



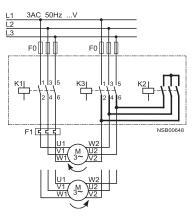
Control circuits with 3RA2816-0EW20 function module (set of three)

snapped onto the front



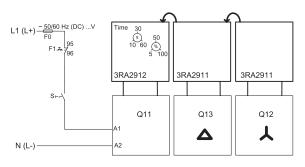
Sizes S2 to S3 Main circuit

Sizes S2 and S3



- S0 "OFF" button
- S1 "ON" button
- Maintained-contact switch
- K1 Line contactor
- K2 Star contactor
- K3 Delta contactor
- K4 Solid-state, time-delay auxiliary switch block or time-delay relay
- F0 Fuses
- F1 Overload relay

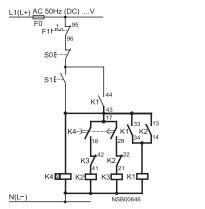
3RA2816-0EW20

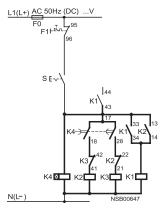


Control circuits with 3RP15 7. time-delay relay, laterally mounted (typical circuits)

for momentary-contact operation

for maintained-contact operation





Contact element 17/18 is only closed on the star step; the contact element is open on the delta step and when de-energized.



3TF68 and 3TF69 vacuum contactors

Internal circuit diagrams

3TF68 44 and 3TF69 44 contactors

4 NO + 4 NC

AC operation max. complement of auxiliary



3TF68 33 and 3TF69 33 contactors

3 NO + 3 NC

DC operation max. complement of auxiliary



Auxiliary switch blocks 3TY7 681-1G

for coil reconnection, 3TF68 and 3TF69, DC economy circuit



Auxiliary switch blocks 3TY7 561-1AA00

first auxiliary switch block left or right mounted on left mounted on right

Auxiliary switch blocks 3TY7 561-1KA00

second auxiliary switch block mounted on left mounted on right



Auxiliary switch blocks 3TY7 561-1EA00

with make-before-break contacts mounted on left mounted on right



Auxiliary switch blocks

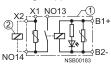
solid-state compatible aux. switch block mounted on left mounted on right





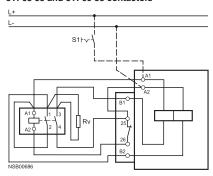
Interface for control by PLC 3TX7 090-0D

with surge suppression



Circuit diagrams for DC economy circuit · maintained-contact operation

3TF68 33 and 3TF69 33 contactors



Terminal designations according to EN 50 012.

Coupling Relays

3RH21 coupling for switcing auxillary circuits



Terminal diagrams

DC operation

L+ is to be connected to coil terminal A1.

3RH21 coupling relays for auxiliary circuits, size S00

Terminal designations according to EN 50 011

(it is not possible to snap on an auxiliary switch block)

Surge suppressor can be mounted



Ident no.: 40E



3 NO + 1 NC



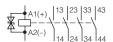
2 NO + 2 NC



Suppressor Diode integrate

4 NO

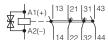
Ident no.:40E



3 NO + 1 NC



2 NO + 2 NC



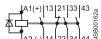
Diode integrated

4 NO

Ident no.:40E



3 NO + 1 NC 31E



2 NO + 2 NC



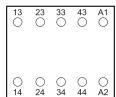
Position of terminals

Size S00

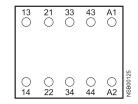
3RH21 coupling relays

4 NO

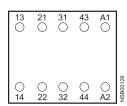
Ident no.: 40E



3 NO + 1 NC



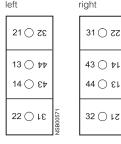
2 NO + 2 NC



3RH19 21-. DA11 first laterally mountable auxiliary switch

mountable on left or right

1 NO + 1 NC



3RH19 21-. JA11 second laterally mountable auxiliary switch

mountable on left or right (only for sizes S3 to S12)

1 NO + 1 NC

eft right			
61 🔾 7.4		71 🔾 79	
53 🔾 †8 54 🔾 £8		83 \(\) \(\psi \) \(
62 🔾 14	NSB00573	72 🔾 19	NSBOO574

Note the location digit.
 Can only be used if no 4-pole auxiliary switch block is snapped onto the front.

3RH2 Control & Latching Relays



3RH2 Terminal Designations

Terminal designations according to EN 50 011

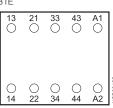
3RH21 control relays

4 NO

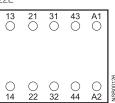
Ident no.:40E

13	23	33	43	A1	
O 14	O 24	O 34	O 44	O A2	

3 NO + 1 NC



2 NO + 2 NC



3RH21 40 control relays

with 3RH19 11-1GA.. auxiliary switch blocks snapped onto the front

8 NO

Ident no.:80E

_					
13	23	33	43	A1	
53	63	73	83		
O 54	O 64	O 74	O 84		27
O 14	O 24	O 34	O 44	O A2	NSB00127
					•

7 NO + 1 NC 71E

13	23	33	43	A1	
53	61	73	83		
O 54	O 62	O 74	O 84		
0	0	0	0	0	00,000

6 NO + 2 NC

13	23	33	43 ()	A1
53	61 ()	71 ()	83	
O 54	O 62	〇 72	O 84	
O 14	O 24	O 34	O 44	S4○

5 NO + 3 NC 53E

					_
13	23	33	43	A1	l
	\cup	\cup	\cup	\cup	1
53	61	71	81		1
ΙÕ	Ŏ.	$\dot{\Box}$	Ŏ.		ı
	\circ	\circ	\circ		ı
l					ı
	\bigcirc	\bigcirc	\bigcirc		ı
54	62	72	82		L
U-T	02	12	02		18
Γ	\circ	\circ	\circ	\circ	3
14	24	34	44	Ã2	00,000,00

4 NO + 4 NC

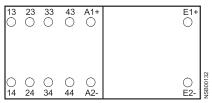
Ident no.:44E

I	13	23	33	43	A1	
	51	61	71	81		
		0	0	0		
	52	62	72	82	0	NCDO0131
	14	24	34	44	Ă2	9

3RH24 latched control relays

4 NO

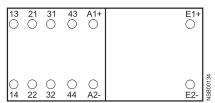
Ident no.: 40E



3 NO + 1 NC 31E

2 NO + 2 NC

Ident no.: 22E



3RT Contactors and 3RH Control Relays

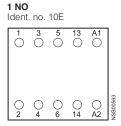
3RT1/2 contactors and accessories

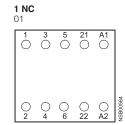


Position of terminals (applicable to screw connection and Cage Clamp connection)

Terminal designations according to EN 50 012

3RT20 1 contactors, 3RT20 1 coupling relays,

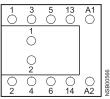




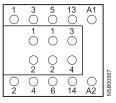
3RT20 1 contactors (with 1 NO)

with auxiliary switch blocks snapped onto the front 3RH19 11-. H . . .

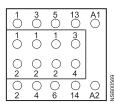




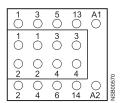




2 NO + 3 NC



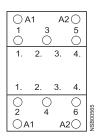
3 NO + 2 NC



Terminal designations according to EN 50 012

Sizes S2 to S12

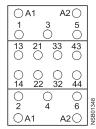
3RT 10 3. 3RT10 4, 3RT14 46 contactors,



3RT10 3, 3RT10 4 contactors

with 4-pole auxiliary switch block for snapping onto the front 3RH19 21-. HA31

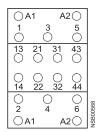
3 NO + 1 NC Ident. no. 31 E



3RT 10 3, 3RT 10 4 contactors

3RH19 21-. HA22 4-pole auxiliary switch block snapped onto the front

2 NO + 2 NC Ident. no. 22 E



3RT10 3, 3RT10 4 contactors

with 4-pole auxiliary switch block for snapping onto the front 3RH19 21-. HA13

1 NO + 3 NC

13 E

○A1		A:	20	
1	;	3	5	
\cup	(<u>) </u>	\cup	
13	21	31	41	1
\circ	\circ	\circ	\circ	
$\overline{}$	$\overline{}$	\circ	\sim	
14	22	32	42	l
14	22	32	42	1
\circ		\mathcal{C}	\circ	١,
2	4	4	6	3
\bigcirc A	۸1	A	20	07070101

Size S0

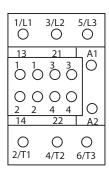
Terminal designations according to EN 50 012

3RT20 2 Contactors with 1NO + 1NC 3RT20 2 Contactors 3RT20 2 Coupling Relays

1/L1 3/L2 5/L3 0 \circ \circ 13 21 O A1 Õ 0 0 \bigcirc 14 0 0 0

4/T2

6/T3



with 3NO + 3NC

2/T1



3RT1/2 contactors and accessories

Position of terminals (applicable to screw connection and Spring-type connection)

Accessories for size S2 to S12 contactors Terminal designations acc. to EN 50 005

3RH19 21-. F... auxiliary switch blocks, 4-pole,

for snapping onto the front

	9	
4 NO Ident. no. 4	0	
13 23 33	43	
0 0 0 14 24 34	O 44	NSB00599









3RH19 21-1LA.. auxiliary switch blocks, 2-pole,

for snapping onto the front, cable entry from above







3RH19 21-1MA.. auxiliary switch blocks, 2-pole, for snapping onto the front, cable entry from below

2 NO





3RH19 21-. FE22 solid-state compatible auxiliary switch block, 4-pole,

for snapping onto the front

2 NO + 2 NC Ident. no. 22



Terminal designations according to EN 50 005 or EN 50 012

3RH19 21-. CA.. auxiliary switch blocks, single-pole, for snapping onto the front











with extended contact-making

3RT Contactors

3RT1/2



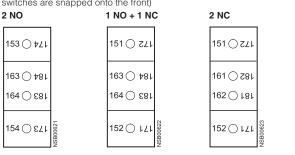
Position of terminals

Accessories for size S2 to S12 contactors Terminal designations acc. to EN 50 005

3RH19 21-. EA.. first laterally mountable auxiliary switch blocks (left)

2 NO		1 NO + 1 NO		2 NC	
53 🔾 ÞZ		51 🔾 7,7		51 🔾 7,7	
63 () †8 64 () £8		63 () †8 64 () £8		61 \(\tag{28}\)	
54 ○ €∠	VSB00815	52 O 12	VSB00616	52 O LZ	VSB00617

3RH19 21-. KA.. second laterally mountable auxiliary switch blocks (left) (only for sizes S3 to S12; can only be used if no auxiliary switches are snapped onto the front)



Accessories for size S2 to S12 contactors Terminal designations acc. to DIN 46 199 Part 5

3RT19 26-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

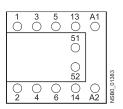






3RT16 capacitor contactors

with 4-pole auxiliary switch block mounted on the front



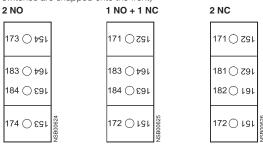
The auxiliary switch block comprises 3 leading contacts (not shown) and one unassigned NO contact.

3RH19 21-. EA.. first laterally mountable auxiliary switch blocks (right)

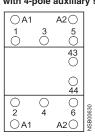
2 NO		1 NO + 1 N	С	2 NC	
73 🔾 79		71 🔾 79		71 🔾 79	
83 \(\) \(83 () †9 84 () £9		81 \(\tag{79}\)	
74 🔾 89	NSB00618	72 () LG	NSB00619	72 🔾 19	NSB00620

3RH19 21-. KA.. second laterally mountable auxiliary switch blocks (right) (only for sizes S3 to S12; can only be used if no auxiliary

switches are snapped onto the front)



with 4-pole auxiliary switch block mounted on the front



The auxiliary switch block comprises 3 leading contacts (not shown) and one unassigned NO contact.



3RT1 contactors and accessories

Position of terminals (applicable to screw connection and Spring-type terminal connection)

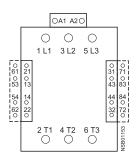
Sizes S6 to S12

3RT1.5, 3RT1.6, 3RT1.7 contactors

• with conventional op. mechanism (3RT1...-.**A**...)

with laterally mountable auxiliary switch blocks 3RH19 21-1DA11 (for 2 NO + 2 NC, incl. in contactor) 3RH19 21-1JA11 (expandable to 4 NO + 4 NC)

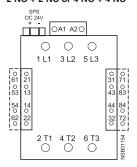
2 NO + 2 NC or 4 NO + 4 NC



• with solid-state op. mechanism (3RT1...-.N...)

with laterally mountable auxiliary switch blocks 3RH19 21-1DA11 (for 2 NO + 2 NC, incl. in contactor) 3RH19 21-1JA11 (expandable to 4 NO + 4 NC)

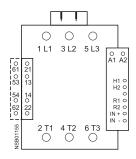
2 NO + 2 NC or 4 NO + 4 NC



• with solid-state op. mechanism (3RT1...-.**P**...)

with laterally mountable auxiliary switch blocks 3RH19 21-1DA11 (for 1 NO + 1 NC, incl. in contactor) 3RH19 21-1JA11 (expandable to 2 NO + 2 NC)

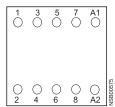
1 NO + 1 NC or 2 NO + 2 NC



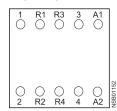
Contactors with 4 main contacts, size S00 Terminal designations acc. to EN 50 005

3RT23 and 3RT25 contactor s

4 NO



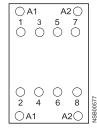
2 NO + 2 NC



Contactors with 4 main contacts, sizes S2 to S3 Terminal designations acc. to EN 50 005

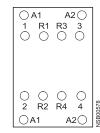
3RT13 and 3RT15 contactors

4 NO



Size S0 with integrated 1NO + 1NC aux (13/14 + 21/22) and only one set of A1+A2 on front

2 NO + 2 NC



3T Contactors

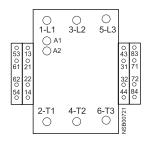
3TF68 and 3TF69 vacuum contactors, 3-pole



Position of terminals

AC operation

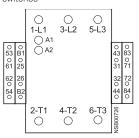
3TF68 and 3TF69 contactors 4 NO + 4 NC



DC operation

3TF68 and 3TF69 contactors

max. complement of auxiliary switches



Solid-state compatible auxiliary switch blocks

3TY7 561-1. for lateral mounting onto size 6 to 14 contactors

mounted on left

mounted on right





3RT20 contactors, 3-pole

Dimension drawings

3RT2.1.-1 contactor and 3RH21..-1 contactor relays Size S00 and NEMA Size 0, screw connection

with surge suppressor and auxiliary switch block

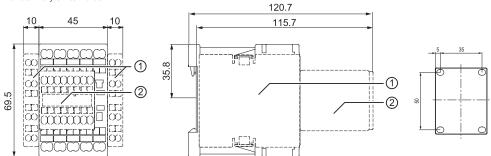
Lateral clearance from earthed parts = 6 mm

- 1) Laterally mountable auxiliary switch block 3RH2911-1DA.. / -1DE.. / -1EE..
- 2) Auxiliary switch block for mounting on the front 3RH2911-1FA.. / -1GA.. / -1HA.. / -1NF..

3RT2.1.-2 contactor and 3RH21..-2 contactor relay

Size S00, Spring-type terminal connection

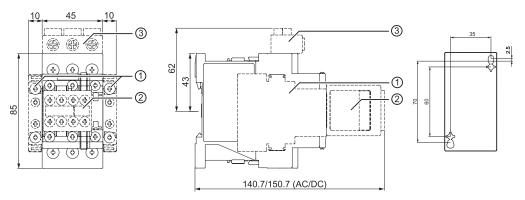
with auxiliary switch block



- 1) Laterally mountable auxiliary switch block 3RH2911-2DA.. / -2DE.. / -2EE..
- 2) Auxiliary switch block for mounting on the front 3RH2911-2FA.. / -2GA.. / -2HA.. / -2NF..

3RT2.2.-1 contactors Size S0 and NEMA Size 1,

(screw-type connection system) with auxiliary switch blocks mounted and other accessories



- 1) Laterally mountable auxiliary switch block 3RH2921-1DA.. / -1DE..
- 2) Auxiliary switch block for mounting on the front 3RH2911-1FA.. / -1GA.. / -1HA.. / -1NF..
- 3)3-phase infeed terminal 3RV2925-5AB

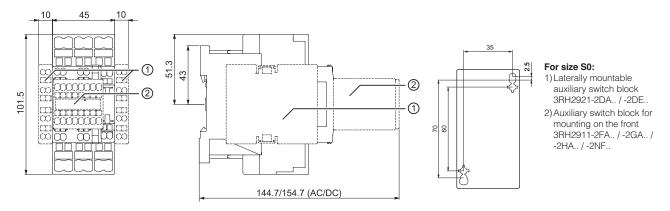
3RT10/20 contactors, 3-pole



Dimension drawings

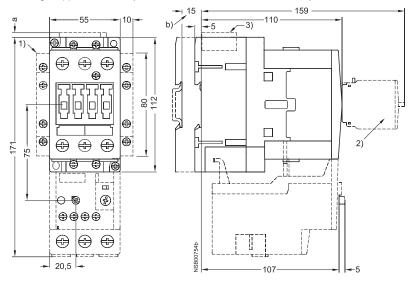
3RT2.2.-2 and 3RT202.-....-0LA2 contactors

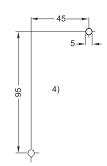
Size S0 (spring-loaded connection) with auxiliary switch blocks mounted



3RT10 3 contactors

Size S2 and NEMA Size 2, screw connection with surge suppressor, auxiliary switch blocks and mounted overload relay





For size S2:

- a = 0 mm with varistor < 240 V, diode assembly
- a = 3.5 mm with varistor > 240 V a = 17 mm with RC element
- b = DC 15 mm deeper than AC
- Auxiliary switch block, laterally mountable
 Auxiliary switch block, mountable on the front
 (1, 2 and 4-pole)
- Surge suppressor
 Drilling pattern



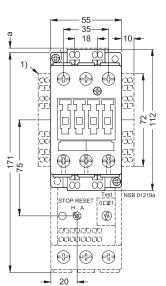
3RT10 and 3RT14 contactors,

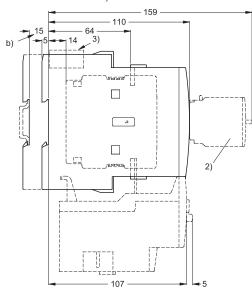
Dimension drawings

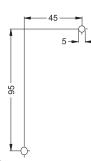
3RT10 3 contactors

Size S2, Spring-type terminal connection

with surge suppressor, auxiliary switch blocks and mounted overload relay







For size S2:

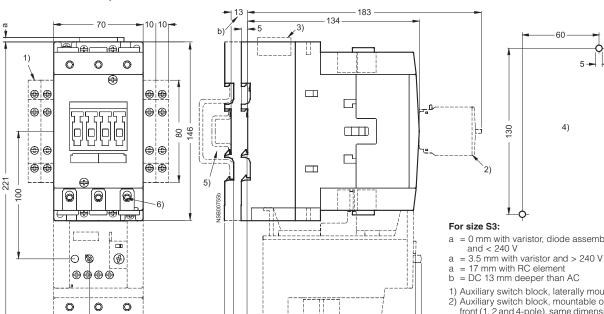
- $\begin{array}{ll} a &= 0 \text{ mm with varistor} < 240 \text{ V}, \text{ diode assembly} \\ a &= 3.5 \text{ mm with varistor} > 240 \text{ V} \\ a &= 17 \text{ mm with RC element} \end{array}$

- b = DC 15 mm deeper than AC
- 1) Auxiliary switch block, laterally mountable
- 2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole)
- Surge suppressor
 Drilling pattern

3RT10 4, 3RT14 46 contactors Size S3 and NEMA Size 3, screw connection

with surge suppressor, auxiliary switch blocks and mounted overload relay





For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

- a = 0 mm with varistor, diode assembly and < 240 V
- 1) Auxiliary switch block, laterally mountable
- 2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole), same dimensions for designs with screw or Spring-type connection

 Output

 Description:
- Surge suppressor
- 4) Drilling pattern
- 7) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to
- 6) Hexagon socket screw 4 mm

- 28

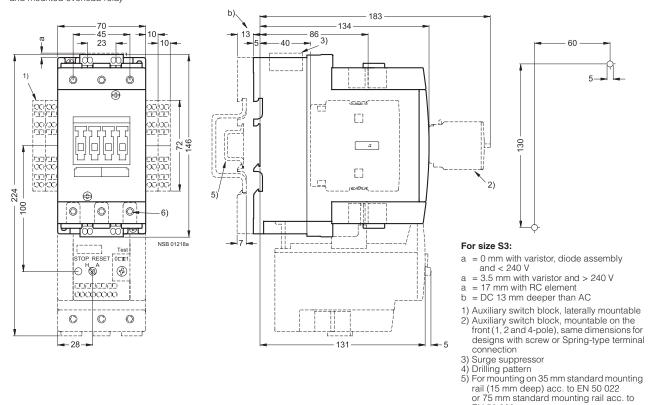
3RT10 contactors, 3-pole



Dimension drawings

3RT10 4 contactors,

Size S3, Spring-type terminal connection with surge suppressor, auxiliary switch blocks and mounted overload relay



For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

EN 50 023 6) Hexagon socket screw 4 mm



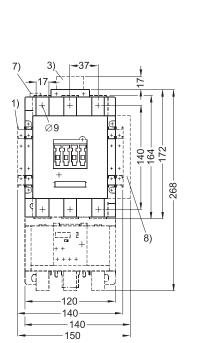
3RT10 and 3RT14 contactors,

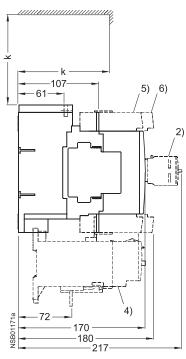
Dimension drawings

3RT10 5, 3RT14 5 contactors Size S6 and NEMA Size 4

with auxiliary switch block, laterally mountable and mountable on the front, mounted overload relay and box terminals,

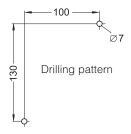
laterally mounted electronics module with remaining lifetime indication





For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

Clearance from earthed parts with directly mounted overload relay: lateral: 10 mm front: 20 mm



For size S6:

- k = 120 mm (minimum clearance for removing the withdrawable coil)
- 1) Second auxiliary switch block, laterally mountable 2) Auxiliary switch block, mountable on the front

- 3) RC element 4) 3RB10 overload relay, mounted 5) 3RT19 55-4G box terminal block (hexagon socket 4 mm)
- 6) 3RT19 56-4G box terminal block
- (hexagon socket 4 mm)
 7) PLC connection DC 24 V and changeover switch (with 3RT1...-.N)
- 8) Electronics module with remaining lifetime indication (auxiliary switch block not mountable on righthand side)

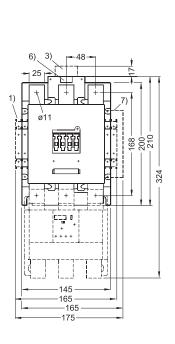
3RT10 and 3RT14 contactors, 3-pole

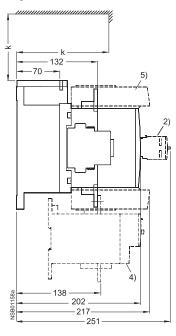
Dimension drawings

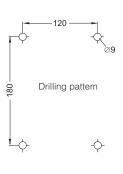
3RT10 6, 3RT14 6 contactors Size S10

with auxiliary switch block, laterally mountable and mountable on the front, mounted overload relay and box terminals,

laterally mounted electronics module with remaining lifetime indication



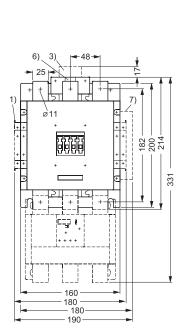


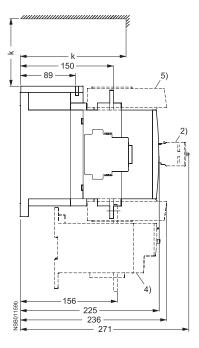


3RT10 7, 3RT14 7 contactors Size S12

with auxiliary switch block, laterally mountable and mountable on the front, mounted overload relay and box terminals,

laterally mounted electronics module with remaining lifetime indication



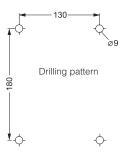


For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

For sizes S10 and S12:

Clearance from earthed parts with directly mounted overload relay:

lateral: 10 mm front: 20 mm



For sizes S10 and S12:

- k = 150 mm (minimum clearance for removing the withdrawable coil)
- Second auxiliary switch block, laterally mountable
 Auxiliary switch block, mountable on the front
 RC element

- 4) 3RB10 overload relay, mounted
- 5) Box terminal block (hexagon socket 6 mm)
 6) PLC connection DC 24 V and changeover switch (with 3RT1...-.N)
- 7) Electronics module with remaining lifetime indication (auxiliary switch block not mountable on right-

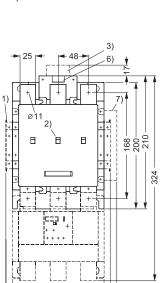


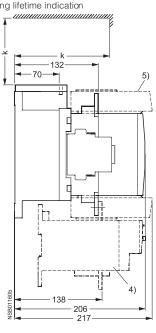
3RT12 vacuum contactors, 3-pole

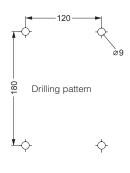
Dimension drawings

3RT12 6 vacuum contactors Size S10

with auxiliary switch block, laterally mountable, mounted overload relay and box terminals, laterally mounted electronics module with remaining lifetime indication







Detail

Contact erosion indicator for vacuum interrupters



3RT12 7 vacuum contactors Size S12

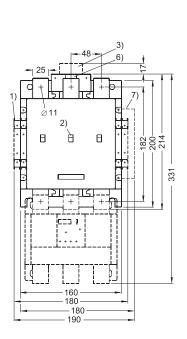
145

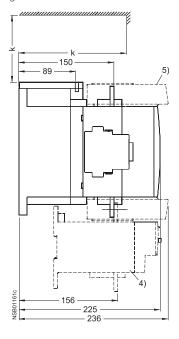
165

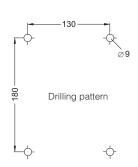
165

with auxiliary switch block, laterally mountable,

mounted overload relay and box terminals, laterally mounted electronics module with remaining lifetime indication







For sizes S10 and S12:

- k = 150 mm (minimum clearance for removing the withdrawable coil)
- Second auxiliary switch block, laterally mountable
 Position and contact erosion indicator
- 3) RC element
- 4) 3RB10 overload relay, mounted
- 5) Box terminal block (hexagon socket 6 mm)
 6) PLC connection DC 24 V and changeover switch (with 3RT1...-.N)
 Electronics module with remaining lifetime indica-
- tion (auxiliary switch block not mountable on righthand side)

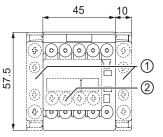
3RT13/23 and 3RT15/25 contactors, 4-pole

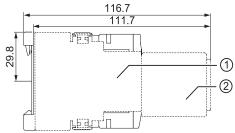


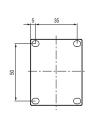
Dimension drawings

3RT23 1 and 3RT25 1 contactors

Size S00, screw connection with surge suppressor and auxiliary switch block







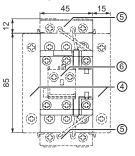
Lateral clearance from earthed parts = 6 mm

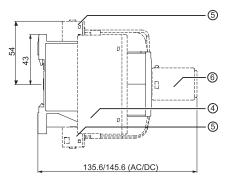
For size S00:

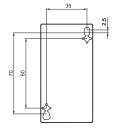
- 1) Laterally mountable auxiliary switch block 3RH2911-1DA.. / -1DE.. / -1EE.
- 2) Auxiliary switch block for mounting on the front 3RH2911-1FA.. / -1GA.. / -1HA.. / -1NF..

3RT23 2 and 3RT25 2 contactors

Size S0 with coil terminal module and auxiliary switch block





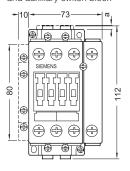


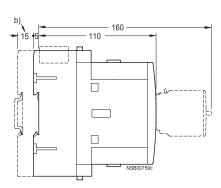
For size S0:

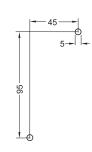
- 4) 4-pole contactor for switching 4 resistive loads 3RT232. 4-pole pole-changing contactor for changing the polarity of hoisting gear motors (2 NO contacts and 2 NC contacts) 3RT252
- 5) Coil terminal module 3RT2926-4RA11/-4RB11
- 6) Auxiliary switch block for mounting on the front 3RH2911-1AA.. / -1BA

3RT13 3 and 3RT15 3 contactors

Size S2 with surge suppressor and auxiliary switch block





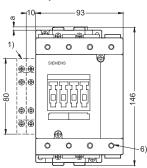


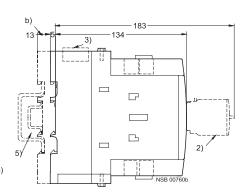
For sizes S2 and S3:

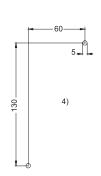
- a = 0 mm with varistor < 240 V
- = 3.5 mm with varistor > 240 V
- = 17 mm with RC element and diode assembly
- S2: DC 15 mm deeper than AC S3: DC 13 mm deeper than AC
- 1) Auxiliary switch block, laterally mountable (right or left)
- 2) Auxiliary switch block, mountable on the front, (1, 2 and 4-pole, also 3RH19 21-1FE22 solid-state compatible design)
- 3) Surge suppressor
- 4) Drilling pattern
- 5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or, in the case of size S3, 75mm standard mounting rail acc. to EN 50 023
- 6) Hexagon socket screw 4 mm

3RT13 4 contactors

Size S3 with surge suppressor and auxiliary switch block





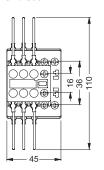


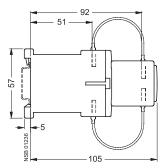
3RT16 capacitor contactors

SIRIUS

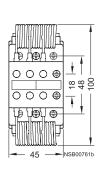
Dimension drawings

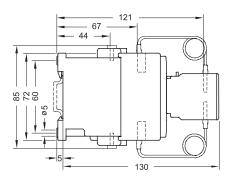
3RT16 17 capacitor contactors Size S00



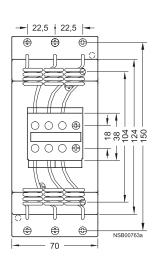


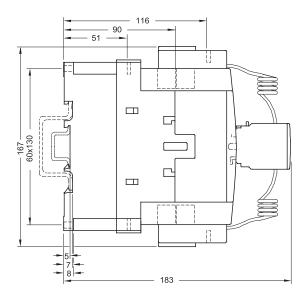
3RT16 27 capacitor contactors Size S0





3RT16 47 capacitor contactors Size S3



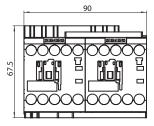


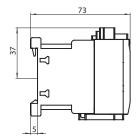
3RA13/23 contactor assemblies for reversing



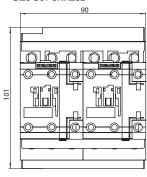
Dimension drawings

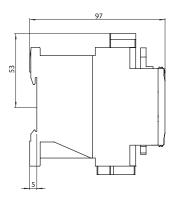
Size S00 / 3RA231



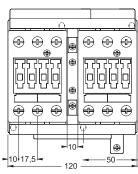


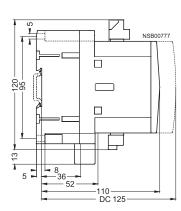
Size S0 / 3RA232



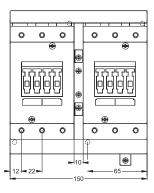


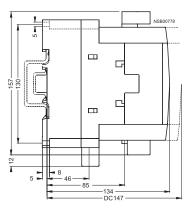
Size S2 / 3RA133





Size S3 / 3RA134



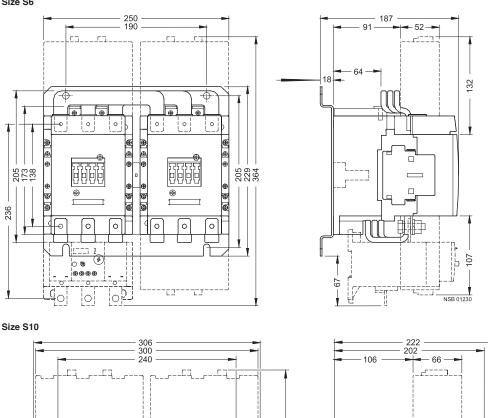


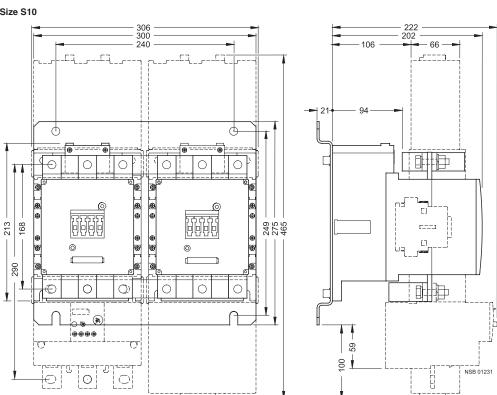


3RA13 contactor assemblies for reversing

Dimension drawings

Size S6





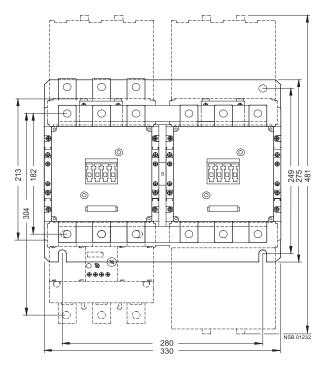
The assemblies shown on this page are for customer assembly with individual components.

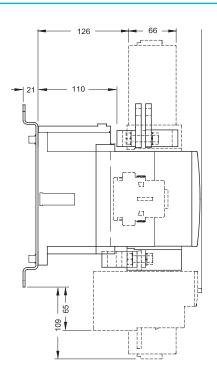
3RA13 contactor assemblies for reversing

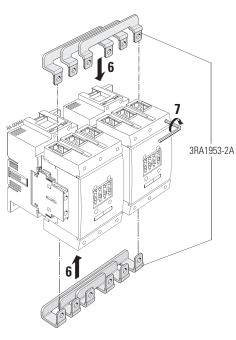


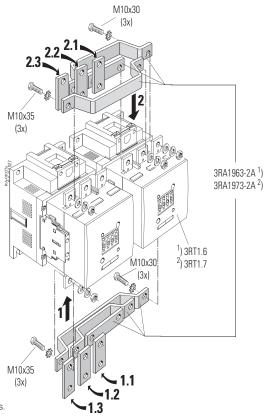
Dimension drawings

Size S12









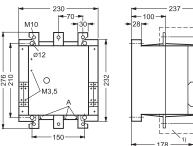
The assemblies shown on this page are for customer assembly with individual components.



3TF68 and 3TF69 vacuum contactors, 3TC4 and 3TC5 DC contactors

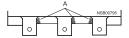
Dimension drawings

3TF68 vacuum contactors



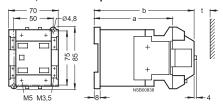
Detail

A = Contact erosion indicator for vacuum interrupter contacts



3TC4 and 3TC5 contactors

3TC44 contactors Size 2, AC and DC operation



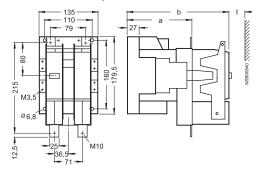
t = minimum clearance from insulated components: 15 mm (600 V and 750 V)

from grounded components: 30 mm (600 V and 750 V)

245 300

	а	b	
DC operation	109	141	
DC operation AC operation	68	100	

3TC52 contactors Size 8, AC and DC operation



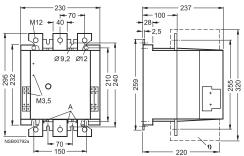
t = minimum clearance from insulated components: 20 mm (600 V and 750 V)

from grounded components: 70 mm (600 V and 750 V)

		I-
	а	D
DC operation AC operation	147	232
AC operation	115	200

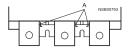
1) With box terminals for laminated copper bars (accessories).

3TF69 vacuum contactors

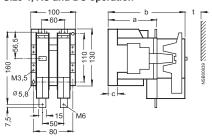


Detail

A = Contact erosion indicator for vacuum interrupter contacts



3TC48 contactors Size 4, AC and DC operation



t = minimum clearance from insulated components:

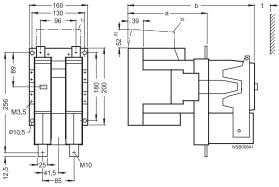
15 mm (600 V), 20 mm (750 V)

from grounded components:

35 mm (600 V). 55 mm (750 V)

	а	b	С
DC operation	112	180	21.5
AC operation	86	154	23.5

3TC56 contactors Size 12, AC and DC operation



t = minimum clearance from insulated components: 25 mm (600 V and 750 V)

from grounded components: 80 mm (600 V),

	а	b	
DC operation AC operation	200 141	310 251	

2) DC operation only

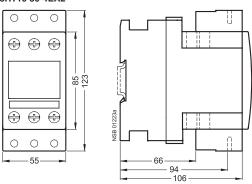
Contactors and Contactor Assemblies

Accessories for 3RT1 contactors

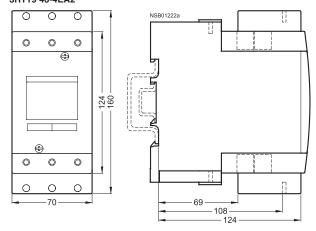


Dimension drawings

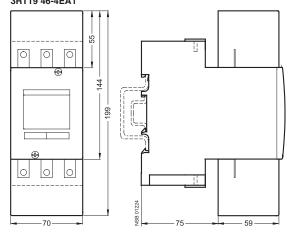
Terminal cover for box terminals for size S2, 3RT19 36-4EA2



Terminal cover for box terminals for size S3, 3RT19 46-4EA2

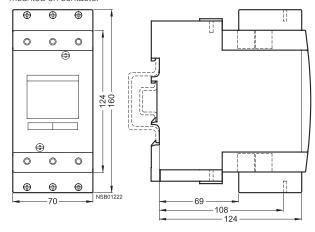


Terminal cover for cable lug and bar connection for size S3, 3RT19 46-4EA1



Auxiliary conductor terminal, 3-pole 3RT19 46-4F Size S3

mounted on contactor



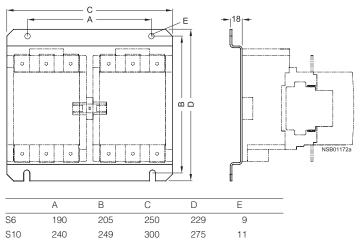
For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax



Accessories for 3RA1 contactor assemblies

Dimension drawings

3RA19.2-2A baseplates for reversing contactor assemblies



275

11

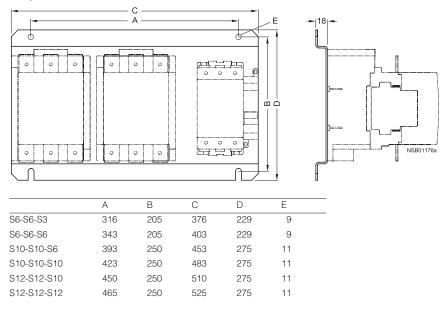
330

3RA19.2-2E, 3RA19.2-2F baseplates for star-delta assemblies

249

280

S12



For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

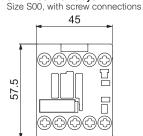
Contactors and Contactor Assemblies

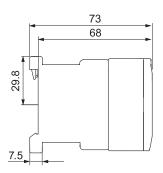
3RH21 and 3RH24 control relays

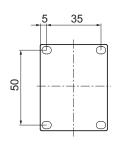


Dimension drawings

3RH21 control relays

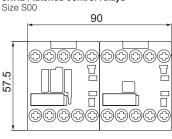


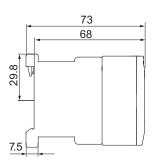




Lateral clearance from earthed parts = 6 mm

3RH24 latched control relays

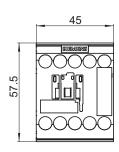


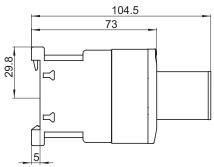


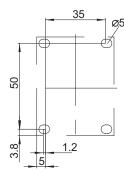
3RH21 coupling relay

Dimension drawings

Size S00, with screw connections, with surge suppressor







1) Surge suppressor 2) Drilling pattern

Deviating dimensions for coupling relays with Spring-type terminal connections

Height: 69.5 mm

For specific dimensions, 2D / 3D CAD files and technical data, please visit www.siemens.com/cax

Contents

Thermal overload relays









3RU11 / 3RU21 overload relays up to 100 A with screw connection, CLASS 10

Page

Selection and ordering data

• Basic unit 3/10 Accessories 3/11

3/8-3/9 Description Technical data 3/12-3/14 Circuit diagrams 3/15 3/16-3/17 Dimension drawings

Solid state overload relays





3RB24 overload relays up to 630A with IO-Link current monitoring

Page

Contents

Selection and ordering data

• Basic unit 3/51 3/55 Accessories

Description 3/52-3/53 3/58-3/62 Technical data

Solid state overload relays







3RB20/21, 3RB30/31 overload relays up to 630 A, 3RB20/30 CLASS 10 or 20 3RB21/31 CLASS 5, 10, 20, 30 Page

Selection and ordering data

• Basic Unit 3/22-3/23 Accessories 3/11

3/18-3/19 Description Cross Reference Aid 3/21 Technical data 3/24-3/28 Dimension drawings 3/30 Circuit diagrams 3/31



3RB22/23 overload relays up to 820 A for full motor protection, CLASS 5 to **CLASS 30 adjustable**

Page

Selection and ordering data

• Basic Unit 3/34-3/35 3/49-3/50 Accessories

Description 3/40-3/43 Technical data Dimension drawings 3/45-3/46 Circuit diagrams 3/47



3UF7 SIMOCODE Pro Motor management and control devices

Page

Selection and ordering data

Basic UnitAccessories	3/69-3/72 3/73-3/76
Description	3/63-3/68

Technical data 3/77-3/78 3/79-3/82 Dimension drawing

• Revised • 04/20/15

General data

Overview



				-			
Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
General data							
Sizes	S00, S0, S2	S3	S3 S00, S0, S2	S3 S12	S00 S12	S00 S12	 Are coordinated with the dimensions, con- nections and technical characteristics of the other devices in the SIRIUS modular system (contactors, etc.,)
							 Permit the mounting of slim and compact load feeders in widths of 45 mm (S00), 45 mm (S0), 55 mm (S2), 70 mm (S3), 120 mm (S6) and 145 mm (S10/S12); this does not include the current measuring modules for the 3RB22 to 3RB24 evalua- tion modules sizes S00 to S3
							Simplify configuration
Seamless current range	0.11 80 A	18 100 A	0.1 80 A	12.5 630 A	0.3 630 A (up to 820 A) ¹⁾	0.3 630 A (up to 820 A) ¹⁾	 Allows easy and consistent configuration with one series of overload relays (for small to large loads)
Protection fun	ctions						
Tripping due to overload	✓	✓	✓	✓	✓	✓	 Provides optimum inverse-time delayed protection of loads against excessive tem- perature rises due to overload
Tripping due to phase unbalance	✓	✓	✓	✓	✓	✓	 Provides optimum inverse-time delayed protection of loads against excessive tem- perature rises due to phase unbalance
Tripping due to phase failure	✓	✓	✓	✓	✓	✓	Minimizes heating of induction motors during phase failure
Protection of single-phase loads	✓	✓	_	_	✓	✓	Enables the protection of single-phase loads
Tripping in the event of overheating	2)	2)	2)	2)	1	/	Provides optimum temperature-dependent protection of loads against excessive temperature rises e.g. for stator-critical motors or in the event of insufficient cool-
integrated							ant flow, contamination of the motor sur- face or for long starting or braking operations
thermistor motor protec- tion function							Eliminates the need for additional special equipment
							Saves space in the control cabinet
							 Reduces wiring outlay and costs
Tripping in the event of a ground fault by	_	_	(only 3RB31)	(only 3RB21)	✓	√	 Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc.
internal ground- fault detection							Eliminates the need for additional special equipment
(activatable)							Saves space in the control cabinetReduces wiring outlay and costs
/ Available					1)		n ha raaardad and ayalyatad by a ayrrant

- ✓ Available
- Not available

- Motor currents up to 820 A can be recorded and evaluated by a current measuring module, e.g. 3RB29 06-2BG1 (0.3 to 3 A), in combination with a 3UF18 68-3GA00 (820 A/1 A) series transformer.
- 2) The SIRIUS 3RN thermistor motor protection devices can be used to provide additional temperature-dependent protection.

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	Pocco !	000	acces.	00000	******	200000	
Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Features							
RESET function	✓	1	✓	✓	1	1	Allows manual or automatic resetting of the device
Remote RESET function	(by means of separate mod- ule)	(by means of separate mod- ule)	(only with 3RB31 and external auxiliary voltage 24 V DC)	(only with 3RB21 and external auxiliary voltage 24 V DC)	(electrically via external but- ton)	(electrically with button or via IO-Link)	Allows the remote resetting of the device
TEST function for auxiliary contacts	✓	✓	✓	✓	✓	✓	Allows easy checking of the function and wiring
TEST function for electronics	_	_	✓	✓	✓	✓	Allows checking of the electronics
Status display	✓	/	/	✓	/	✓	Displays the current operating state
Large current adjustment button	✓	✓	✓	✓	✓	✓	Makes it easier to set the relay exactly to the correct current value
Integrated auxiliary contacts (1 NO + 1 NC)	✓	✓	✓	✓	✓ (2 ×)		 Allows the load to be switched off if necessary Can be used to output signals
Integrated auxiliary contacts (1 CO and 1 NO in series)	_	_	_	_	_	1	Enables the controlling of contactors directly from the higher-level control sys- tem through IO-Link
IO-Link connection	_	_	_	_	_	✓	Reduction of wiring in the control cabinetEnables communication
Connection of optional hand-held device	_	_	_	_	_	✓	Enables local operation
Communication	on capability t	hrough IO-Li	nk				
Full starter functionality through IO-Link	_	_	_	_	_	√	Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)
Reading out of diagnostics functions	_	_	_	_	_	✓	 Enables the reading out of diagnostics in- formation such as overload, open circuit, ground fault, etc.
Reading out of current values	_	_	_	_	_	✓	Enables the reading out of current values and their direct processing in the higher- level control system
Reading out all set parameters	_	_	_	_	_	✓	Enables the reading out of all set parameters, e.g. for plant documentation

[✓] Available

[—] Not available





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Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Design of load	feeders						
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corre- sponding fuses or the corre- sponding motor starter protector)	/	/	/	/	,	V	Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT contactors	1	✓	✓	✓	√ 1)	√ 1)	Simplifies configuration Reduces wiring outlay and costs Enables stand-alone installation as well as space-saving direct mounting
Straight- through trans- formers for main circuit ²) (in this case the cables are routed through the feed-through openings of the overload relay and connected directly to the box terminals of the contactor)	_	_	√ (S2)	(S3 S6)	(S00 S6)	(S00 S6)	 Reduces the contact resistance (only one point of contact) Saves wiring costs (easy, no need for tools, and fast) Saves material costs Reduces installation costs
Spring-type connection system for main circuit ²⁾	(S00, S0)	_	(S00, S0)	_	_	_	Enables fast connectionsPermits vibration-resistant connectionsEnables maintenance-free connections
Spring-type connection system for auxiliary circuits ²⁾	✓	√	<i>y</i>	1	✓	✓	 Enables fast connections Permits vibration-resistant connections Enables maintenance-free connections
Ring terminal lug connection method for main and auxiliary circuits ²⁾	(S00, S0)	_	_	_	_	_	Enables fast connections Permits vibration-resistant connections Enables maintenance-free connections
Full starter functionality through IO-Link	_	_	_	_	_	1	Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)
Starter function	_	_	_	_	_	✓	Integration of feeders via IO-Link in the control system up to 630 A or 820 A

[✓] Available

Not available

 $^{^{1)}\,}$ Exception: up to size S3, only stand-alone installation is possible.

²⁾ Alternatively available for screw terminals.



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Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Other features							
Temperature compensation	√	✓	√	1	/	V	Allows the use of the relays at high temperatures without derating Prevents premature tripping Allows compact installation of the control cabinet without distance between the devices/load feeders
Very high long- term stability	✓	✓	✓	✓	✓	✓	Provides safe protection for the loads even after years of use in severe operating conditions
Wide setting ranges	_	_	/ (1:4)	(1:4)	(1:10)	(1:10)	 Minimize the configuration outlay and costs Minimize storage overheads, storage costs, tied-up capital
Fixed trip class	CLASS 10 CLASS 10A	CLASS 10	3RB30: CLASS 10E or CLASS 20E	3RB20: CLASS 10 or CLASS 20			Optimum motor protection for standard starts
Trip classes adjustable on the device CLASS 5, 10, 20, 30	_	_	3RB31: ✓	3RB21: ✓	✓	/	 Enables solutions for very fast starting motors requiring special protection (e.g. Ex motors) Enables heavy starting solutions Reduces the number of versions
Low power loss	_	_	1	1	/	✓	 Reduces energy consumption and energy costs (up 98 % less energy is used than for thermal overload relays). Minimizes temperature rises of the contactor and control cabinet – in some cases this may eliminate the need for controlgear cabinet cooling. Direct mounting to contactor saves space, even for high motor currents (i.e. no heat decoupling is required).
Internal power supply	_1)	<u>_1</u>)	✓	✓	_	_	Eliminates the need for configuration and connecting an additional control circuit
Supplied from an external volt- age through IO-Link	_	_	_	_		✓	Eliminates the need for configuration and connecting an additional control circuit
Overload warning	_	_	_	_	,	,	Indicates imminent tripping of the relay directly on the device due to overload, phase unbalance or phase failure through flickering of the LEDs or in the case of the 3RB24 as a signal through IO-Link Allows the imminent tripping of the relay to be signaled Allows measures to be taken in time in the event of inverse-time delayed overloading of the load for an extended period over the current limit
Analog output	_	_	_	_	1	✓	Allows the output of an analog output signal for actuating moving-coil instruments, feeding programmable logic controllers or transfer to bus systems Eliminates the need for an additional measuring transducer and signal converter
					()		

[✓] Available

[—] Not available

¹⁾ SIRIUS 3RU11 and 3RU21 thermal overload relays use a bimetal contactor and therefore do not require a control supply voltage.

Revised **SIRIUS** 04/20/15

General data

Overview of overload relays – matching contactors

	Overload relays	Current measure- ment	Current range		(type, size, rating 3RT20 2.	in HP) 3RT20 3.	3RT10 4.	3RT10 5.	3RT10 6.	3RT10 7	3TF68/ 3TF69
				S00	S0	S2	S3	S6	S10	S12	Size 14
	Туре	Туре	Α	3/5/7.5/10	5/7.5/10/15/20/25	30/40/50	50/60/70	100/125/150	150/200/250	300/400	500/700
SIRIUS 3RU2	1 thermal	overload	relays								
اسألما	3RU21 1	Integrated	0.11 16	✓	_	_	_	_	_	_	_
	3RU21 2	Integrated	1.8 40	_	✓	_	_	_	_	_	_
The same of the sa	3RU21 3	Integrated	22 80	_	_	1	_	_	_	_	_
00000											

3RU21

SIRIUS 3RU11 thermal overload relays 3RU11 4 Integrated 18 ... 10 —

3RU11

SIRIUS 3RB	30 solid-st	ate overload relays ¹⁾								
@u	3RB30 1	Integrated 0.1 16	✓	_	_	_	_	_	_	_
	3RB30 2	Integrated 0.1 40	_	✓	_	_	_	_	_	_
	3RB30 3	Integrated 12 80	_	_	✓	_	_	_	_	_
accord.										

3RB30

SIRIUS 3RB	31 solid-st	tate overload relays ¹⁾								
	3RB31 1	Integrated 0.1 16	✓	_	_	_	_	_	_	_
1111	3RB31 2	Integrated 0.1 40	_	✓	_	_	_	_	_	_
Gua -	3RB31 3	Integrated 12 80	_	_	✓	_	_	_	_	_

3RB31										
SIRIUS 3RB2	20 solid-sta	ate overload relays ¹⁾								
Bon.	3RB20 4	Integrated 12.5 100				1				
	3RB20 5	Integrated 50 200	_	_	_	_	1	_	_	_
600	3RB20 6	Integrated 55 630						1	✓	✓
*****	3RB20 1 + 3UF18	Integrated 630 820	_	_	_	_	_	_	_	✓
3RB20										
SIRIUS 3RB2	21 solid-sta	ate overload relays ¹⁾								
Ban.	3RB21 4	Integrate 12.5 10				✓				
	3RB21 5	Integrated 50 200	_	_	_	_	✓	_	_	_
© 3(6)	3RB21 6	Integrated 55 630						1	✓	✓
	3RB21 1 + 3UF18	Integrated 630 820	_	_	_	_	_	_	_	
00001										

3RB21

- ✓ Can be used
- Cannot be used



Overview of overload relays - matching contactors (continued)

Overload	Current	Current	Contactors (type, size, rating in HP)							
relays	measure- ment	range	3RT20 1	3RT20 2	3RT20 3	3RT10 4	3RT10 5	3RT10 6	3RT10 7	3TF68/ 3TF69
			S00	S0	S2	S3	S6	S10	S12	Size 14
Туре	Туре	Α	3/5/7.5/1.	5/7.5/10/15/ 20/25	30/40/50	50/60/75	100/125/150	150/200/250	300/400	500/700

					20,20						
SIRIUS 3RB22	SIRIUS 3RB22 to 3RB24 solid-state overload relays ¹⁾										
		3RB29 0	0.3 25	✓	✓	_	_	_	_	_	_
000000	3RB22 83/	3RB29 0	10 100	_	1	✓	✓			_	_
<u>eeccce</u>	3RB23 83/	3RB29 5	20 200	_	_	_	_	1	_	_	_
	3RB24 83+	3RB29 6	63 630	_	_	_	_		✓	✓	✓
		3RB29 0 + 3UF18	630 820	_	_	_	_	_	_	_	✓
3RB22, 3RB23											
3RB24											
✓ Can be used					1)	"Technical S	pecification	s" for use of th	e overload rela	ays with trip	class
— Cannot be used						≥ CLASS 20 feeders",	can be fou	nd in "Short-cir	cuit protection	n with fuses	tor motor

Connection methods

Depending on the device version of the 3RU2 and 3RB3 overload relays, the terminals for screw terminals, spring-type terminals or ring terminal lug connection are configured for both the main and auxiliary circuit in frame sizes S00 and S0.

The 3RU11 thermal overload relays come with screw terminals.

The electronic overload relays 3RB20 and 3RB21 are available with screw terminals (box terminals) or spring-type terminals on the auxiliary current side; the same applies for the evaluation modules of the 3RB22 to 3RB24 electronic overload relays for High-Feature applications.

Thermal Overload Relays

3RU11, 3RU21 up to 100 A, CLASS 10



Description

The 3RU thermal overload relays up to 100 A are designed for current-dependent protection of applications with normal start-up conditions (see "Trip classes") against impermissibly high rises in temperature as a result of overload or phase failure (see "Phase failure protection"). An overload or phase failure causes the motor current to rise above the set rated motor current (see "Setting"). This current rise heats up the bimetal strips within the relay via heating elements which, in turn, operate the auxiliary contacts via a tripping mechanism due to their deflection (see "Auxiliary contacts"). These switch the load off via a contactor. The switch-off time is dependent on the ratio of tripping current to operational current $I_{\rm e}$ and is stored in the form of a tripping characteristic with long-term stability (see "Tripping characteristics"). The "Tripped" state is signalled by means of a switching position indicator (see "Indication of status").

Resetting takes place manually or automatically (see "Manual and automatic resetting") after a recovery time has elapsed (see "Recovery time").

The 3RU thermal overload relays are electrically and mechanically optimised to the 3RT contactors such that, in addition to individual mounting, they can also be directly mounted onto the contactors to save space (see "Design and mounting"). The main and auxiliary circuits can be connected in various ways (see "Connection"), including the use of Cage Clamp terminals. When the overload relay has been connected, it can be tested for correct functioning using a TEST slide (see "TEST function"). In addition to the TEST function, the 3RU thermal overload relay is equipped with a STOP function (see "STOP function").

For a wide variety of application possibilities for the 3RU thermal overload relay, please refer to the sections "Application", "Ambient conditions", "Overload relays in WYE-delta combinations" and "Operation with frequency converters".

The 3RU thermal overload relays can protect your loads from overload and phase failure. You must implement short-circuit protection (see "Short-circuit protection") by means of a fuse or circuit-breaker.

The 3RU thermal overload relays are environmentally friendly

(see "Environmental considerations") and comply with all the main international standards and approvals (see "Specifications" and "Increased safety type of protection EEx").

The accessories for the 3RU thermal overload relays have been designed on the principle that all requirements are covered by a small number of variants.

Application

The 3RU thermal overload relays are designed for the protection of three-phase and single-phase AC and DC motors.

If single-phase AC or DC loads are to be protected using 3RU thermal overload relays, all three bimetal strips should be heated. Therefore all main circuits of the relay must be connected in series.

Overload relays in WYE-delta combinations

When overload relays are used in WYE-delta combinations, it is important to note that only $1/\sqrt{3}$ of the motor current flows through the mains contactor. An overload relay mounted on the main contactor must be set to 0.58 times the motor current.

A second overload relay must be mounted on the star contactor if your load is also to be optimally protected in WYE operation. The WYE current is 1/3 of the rated motor current. The relevant relay must be set to this current.

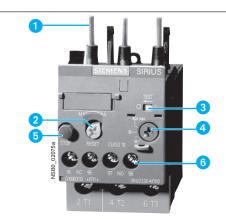
Control circuit

An additional power supply is not required for operation of the 3RU thermal overload relays.

Ambient conditions

The 3RU thermal overload relays are temperature compensating according to IEC 60 947-4-1/DIN VDE 0660 Part 102 in the temperature range –20 °C to +60 °C. For temperatures from +60 °C to +80 °C, the upper setting value of the setting range must be reduced by a specific factor as given in the table below.

Ambient temperature in °C	Reduction factor for the upper setting value
+60	1.0
+65	0.94
+70	0.87
+75	0.81
180	0.73



1 Connection for mounting onto contactors:

Optimally adapted in electrical, mechanical and design terms to the contactors. The overload relay can be connected directly to these contactor using these pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal bracket for stand-alone installation)

- 2 Selector switch for manual/automatic RESET and RESET button: With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. A remote RESET is possible using the RESET modules (accessories), which are independent of size.
- 3 Switch position indicator and TEST function of the wiring: Indicates a trip and enables the wiring test.
- 4 Motor current setting: Setting the device to the rated motor current is easy with the large rotary knob.
- 5 STOP button: If the STOP button is pressed, the NC contact is opened. This switches off the contactor downstream. The NC contact is closed again when the button is released.
- Supply terminals: Depending on the device version, the terminals for screw, spring-type or ring lug terminal connection are configured for the main and auxiliary circuit.

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

3RU21 26-4FB00 thermal overload relays

Trip classes

The 3RU thermal overload relay is available for normal startup conditions in CLASS 10. For further details about trip classes, see "Tripping characteristics".

Tripping characteristics

The tripping characteristics show the relationship between the tripping time and the tripping current as a multiple of the operational current $I_{\rm e}$ and are specified for symmetrical three-pole and two-pole loading from cold.

The smallest current at which tripping occurs is called the limiting tripping current. In accordance with IEC 60 947-4-1/
DIN VDE 0660 Part 102, this must lie within certain specified limits. The limits of the limiting tripping current lie, in the case of the 3RU11 thermal overload re-

lay for symmetrical three-pole loading between 105 % and 120 % of the operational current. Starting from the limiting tripping current, the tripping characteristic moves on to larger tripping currents based on the characteristics of the so-called trip classes (CLASS 10, CLASS 20 etc.). The trip classes describe time-intervals within which the overload relay must trip with 7.2 times the operational current $I_{\rm e}$ for symmetrical three-pole loading from cold.

The tripping times are:

CLASS	Tripping times
10A	2 s to 10 s
10	4 s to 10 s
20	6 s to 20 s
30	9 s to 30 s

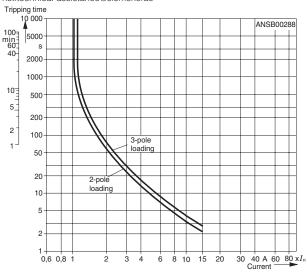
SIRIUS

Overload Relays Thermal Overload Relays

3RU11, 3RU21 up to 100 A, CLASS 10

Description

This is the schematic representation of a characteristic. The characteristics of the individual 3RU thermal overload relays can be requested from Technical Assistance at the e-mail address: nst.technical-assistance@siemens.de



The tripping characteristic of a three-pole 3RU thermal overload relay (see characteristic for symmetrical three-pole loading from cold) is valid when all three bimetal strips are loaded with the same current simultaneously. If, however, only two bimetal strips are heated as a result of phase failure, these two strips would have to provide the force necessary for operating the release mechanism and, if no additional measures were implemented, they would require a longer tripping time or a higher current.
These increased current levels over long periods usually result in damage to the consumer. To prevent damage, the 3RU thermal overload relay features phase failure sensitivity which, thanks to an appropriate mechanical mechanism, results in accelerated tripping according to the characteristic for two-pole loading from cold.

In contrast to a load in the cold state, a load at operating temperature has a lower heat reserve. This fact affects the 3RU thermal overload relay in that following an extended period of loading at operational current $I_{\rm e}$, the tripping time reduces by about a quarter.

Phase failure protection

The 3RU thermal overload relays feature phase failure protection (see "Tripping characteristics") for the purpose of minimizing the heating of the load during single-phase operation as a result of phase failure.

Setting

The 3RU thermal overload relay is adjusted to the rated motor current using a rotary knob. The scale of the rotary knob is calibrated in Amperes.

Manual and automatic resetting

It is possible to switch between manual resetting and automatic resetting by depressing and rotating the blue button (RESET button). When manual resetting is selected, a reset can be performed directly on the device by pressing the RESET button. Remote resetting can be implemented by using the mechanical and electrical RESET modules from the range of accessories (see "Accessories"). When the blue button is set to Automatic RESET, the relay will be reset automatically.

A reset is not possible until the recovery time has elapsed (see "Recovery time").

Recovery time

After tripping due to an overload, it takes a certain length of time for the bimetal strips of the 3RU thermal overload relays to cool down. The relay can only be reset once it has cooled down. This time (recovery time) is dependent on the tripping characteristic and the level of the tripping current.

After tripping due to overload, the recovery time allows the load to cool down.

TEST function

Correct functioning of the ready 3RU thermal overload relay can be tested with the TEST slide. The slide is operated to simulate tripping of the relay. During this simulation, the NC contact (95-96) is opened and the NO contact (97-98) is closed whereby the overload relay checks that the auxiliary circuit is wired correctly. When the 3RU thermal overload relay is set to Automatic RESET, an automatic reset takes place when the TEST slide is released. The relay must be reset using the RESET button when it is set to Manual RESET.

STOP function

When the STOP button is pressed, the NC contact is opened and the series-connected contactor and therefore the load is switched Off. The load is reconnected via the contactor when the STOP button is released.

Status indication

The current status of the 3RU thermal overload relay is indicated by the position of the marking on the "TEST function/switching position indicator" slide. The marking on the slide is on the left at the "O" mark following a trip due to overload or phase failure and at the "I" mark otherwise.

Auxiliary contacts

The 3RU thermal overload relay is equipped with an NO contact for the tripped signal and an NC contact for switching off the contactor.

Connection

All the 3RU thermal overload relays have screw terminals for the main and auxiliary circuits. Once the box terminals have been removed from the main conductor connections of the overload relays of size S3, it is possible to connect busbars.

Alternatively the devices are available with either spring loaded or with ring lug terminals on both the control and the main terminals. For details of various connection possibilities, see the "Technical data" and "Selection and ordering data".

Design and mounting

The 3RU thermal overload relays are suitable for direct mounting on the 3RT contactors. They can also be mounted as single units if the appropriate adapters are used. For details of the mounting possibilities, see the "Selection and ordering data" and the "Technical data".

Operation with frequency converters

The 3RU thermal overload relays are suitable for operation with frequency converters. Depending on the frequency of the converter, a current higher than the motor current may have to be set due to the occurrence of eddy currents and skin effects.

Environmental considerations

The devices are manufactured taking environmental considerations into account and comprise environmentally-friendly and recyclable materials.

Specifications

The 3RU thermal overload relays comply with the requirements of:

- IEC 60 947-1/ DIN VDE 0660 Part 100
- IEC 60 947-4-1/ DIN VDE 0660 Part 102
- IEC 60 947-5-1/ DIN VDE 0660 Part 200
- IEC 60801-2, -3, -4, -5 and
- UL 508/CSA C 22.2.

The 3RU11 thermal overload relays are also safe from touch according to DIN VDE 0106 Part 100 and climate-proof to IEC 721.

Degree of protection "Increased safety" EEx

The 3RU thermal overload relay meets the requirements for overload protection of motors of the "Increased safety" type of protection EEx e IEC 50 019/
DIN VDE 0165, DIN VDE 0170, DIN VDE 171.
KEMA test certificate number Ex-97.Y.3235, DMT 98 ATEX G001, EN 50 019: 1977 + A1 ... A5, Increased Safety "e": Appendix A, Guideline for temperature monitoring of squirrel cage motors during operation.

Accessories

For the 3RU thermal overload relay, there are:

- one adapter for each of the four overload relay sizes S00 to S3 for individual mounting
- S3 for individual mounting

 one electrical remote RESET module for all sizes in three different voltage variants
- one mechanical remote RESET module for all sizes
- one cable release for all sizes for resetting inaccessible devices
- terminal covers

The accessories can also be used for the 3RB solid state overload relay.

Thermal Overload Relays

3RU11, 3RU21 up to 100 A, CLASS 10

Selection and ordering data

Features and technical characteristics

- Auxiliary contacts: 1 NO + 1 NC
- Manual/automatic RESET
- Switching position indication
- CLASS 10

- TEST function
- STOP button
- · Phase failure sensitivity
- Sealable cover: optional in S00, S0 & S2. Integrated in S3

Revised

04/20/15

Ordering information Replace the (••) with the

- Replace the (••) with the letter Number combination from the Terminal types I table
- Replace the (††) with the letter Number combination from the Terminal types II table
- For description, see page 3/8
- For technical data, see pages 3/12-3/15
- For circuit diagrams, see page 3/15
- For dimension drawings, see page 3/16-3/17.

•• Terminal Types I							
Туре	Mounting Type	Ltr					
Screw	Direct to Contactor	В0					
Screw ¹⁾	Stand Alone	B1					
Spring ²⁾	Direct to Contactor	C0					
Spring ^{1) 2)}	Stand Alone	C1					
Ring Lug	Direct to Contactor	JO					
- Imig Lag	Direct to Contactor	00					

†† Terminal Types II						
Туре	Mounting Type	Ltr				
Screw	Direct to Contactor	ВО				
Screw 4)	Stand Alone	B1				
Spring 3)	Direct to Contactor	D0				
Spring 3) 4)	Stand Alone	D1				

SIRIUS







3RU2116-1GC0



3RU2126-4NB0



3RU2136-4RB1



3RU1146-4DB0

Thermal Overload Relays up to 40A Frame Size S00 and S0 ••

3RU2126-1F••

3RU2126-1G••

3RU2126-1H••

3RU2126-1J••

3RU2126-1K••

Setting Range	Order No.	Setting Range	Order No.	Weight approx. (screw/ spring) kg
	e S00: For mou d-alone installa		y to 3RT201 co	ntactors
	3RU2116-0A••		3RU2116-1B••	
0.11 - 0.16		1.4 - 2		
0.14 - 0.2	3RU2116-0B••	1.8 - 2.5	3RU2116-1C••	0.13/0.15
0.18 - 0.25	3RU2116-0C••	2.2 - 3.2	3RU2116-1D••	0.13/0.13
0.22 - 0.32	3RU2116-0D••	2.8 - 4	3RU2116-1E••	
0.28 - 0.4	3RU2116-0E••	3.5 - 5	3RU2116-1F••	
0.35 - 0.5	3RU2116-0F••	4.5 - 6.3	3RU2116-1G••	
0.45 - 0.63	3RU2116-0G••	5.5 - 8	3RU2116-1H••	0.13/0.15
0.55 - 0.8	3RU2116-0H••	7 - 10	3RU2116-1J••	
0.7 - 1	3RU2116-0J••	9 - 12.5	3RU2116-1K••	
0.9 - 1.25	3RU2116-0K••	11 - 16	3RU2116-4A••	0.13/0.15
1.1 - 1.6	3RU2116-1A••			
Frame Size	e S0: For moun	ting directly	to 3RT202 cor	tactors
or for stan	d-alone installa	ation		
1.8 - 2.5	3RU2126-1C••	11 - 16	3RU2126-4A••	
2.2 - 3.2	3RU2126-1D••	14 - 20	3RU2126-4B••	0 4040 00
2.8 - 4	3RU2126-1E••	17 - 22	3RU2126-4C • •	0.16/0.22

20 - 25

23 - 28

27 - 32

30 - 36

34 - 40

3RU2126-4D••

3RU2126-4N••

3RU2126-4E••

3RU2126-4P••

3RU2126-4F••

0.16/0.22

Thermal Overload Relays up to 100A Frame Size S2 and S3 ††

Setting Range	Order No.	Setting Range	Order No.	Weight approx. (screw/ spring) kg
Frame Siz	e S2: For mount	ting directly	to 3RT203 con	tactors 4)
22 - 32	3RU2136-4E††	47 - 57	3RU2136-4Q††	
28 - 40	3RU2136-4F††	54 - 65	3RU2136-4J††	
36 - 45	3RU2136-4G††	62 - 73	3RU2136-4K††	0.34
40 - 50	3RU2136-4H††	70 - 80	3RU2136-4R††	
Frame Siz	e S3: For mount	ting directly	to 3RT104 con	tactors ⁴⁾
10.05		45.00		
18 - 25	3RU1146-4D††	45 - 63	3RU1146-4J††	
22 - 32	3RU1146-4E††	57 - 75	3RU1146-4K††	0.55
28 - 40	3RU1146-4F††	70 - 90	3RU1146-4L††	0.55
36 - 50	3RU1146-4H††	80 - 100	3RU1146-4M††	
			•	

- 1) Not available for size S0 3RU212 with current setting range below 14 A.
- $^{2)}\,\mbox{Size}$ S00 and S0: main and auxiliary conductor terminals are spring-type.
- 3) Size S2 and S3 auxiliary terminals are spring-type only. Main conductor terminals are screw.
- 4) 3RU Overloads in S2 and S3 frame are available preassembled with a terminal bracket for standalone mounting. S2 and S3 overloads can also be customer assembled to the terminal bracket (see Accessories).

3.5 - 5

5.5 - 8

7 - 10

9 - 12.5

4.5 - 6.3



Overload Relays Accessories

3RU and 3RB up to 100 A

Accessories

Accessories					
	Design		for type	Order No.	Weight approx
			Size		kg
Terminal brackets for	stand-alone installation 1)				
000	For separate mounting of the overload r panel mount or snapped onto 35 mm standard mounting rail, size S3 also for 75 mm standard mounti	terminals	S00 S0 S2 S3	3RU29 16-3AA01 3RU29 26-3AA01 3RU29 36-3AA01 3RU19 46-3AA01	0.04 0.05 0.18 0.28
3RU29.36-3AA01		Spring Loaded terminals	S00 S0	3RU29 16-3AC01 3RU29 26-3AC01	0.04 0.06
Mechanical RESET	Resetting plunger, holder, and former	r overload reset adapter	S00 to S2 S3	3RU29 00-1A 3RU19 00-1A	0.038 0.038
	Pushbuttons with extended stroke IP 65 Ø 22 mm, 12 mm hub		S00 to S3	3SB3000-0EA11	0.020
with	Extension plungers For compensation of the distance bewte the unlatching button of the relay	een the pushbutton and	S00 to S3	3SX1 335	0.004
pushbuttor and reset 3RU19 00-1A extension	Complete mechanical reset assembly	,	S00 to S3	3SBES-RESET	
Cable release with ho	Ider for RESET				
	For drilled hole Ø 6.5 mm in the control panel max. control panel thickness 8 mm	Length 400 mm Length 600 mm Length 400 mm Length 600 mm	S00 to S2 S00 to S2 S3 S3	3RU29 00-1B 3RU29 00-1C 3RU1900-1B 3RU1900-1C	0.063 0.073 0.063 0.073
3RU19 00-1					
Module for remote RE	SET, electrical				
	Operating range 0.85 to 1.1 × <i>U</i> _s Power consumption AC 80 VA, DC 70 W ON period 0.2 s to 4 s AC/DC 24 V to 30 V AC/DC 110 V to 127 V AC/DC 220 V to 250 V	S00 to S	3	3RU19 00-2AB71 3RU19 00-2AF71 3RU19 00-2AM71	0.066 0.066 0.066
3RU19 00-2A.71					
Terminal cover					
	Cover for cable lug and bar connection	S3		3RT19 46-4EA1	0.040
	Cover for box terminals	\$2 \$3		3RT29 36-4EA2 3RT19 46-4EA2	0.020 0.025
3RT1946-4EA1					
Sealable covers					
	For covering the rotary setting dials. Order in multiples of 10.		S00 to S2	3RV29 08-0P	0.100
3RV29 08-0P					
Tool for opening Spri	ng Loaded terminal connections				
	Suitable up to a For all SIRIUS devices with spring-type	terminals			
-	• Length: approx. 200 mm; 3.0 × 0.5 mm (green)			3RA2908-1A	0.045
3RA2908-1A					

¹⁾ The accessories are identical to those of the 3RB30/3RB31 solid-state overload relays.

Overload Relays Thermal Overload Relays 3RU11 / 3RU21 up to 100 A, CLASS 10



T1		-1-4-
Ieci	nnıca	data

Technical data						
Туре			3RU21 16	3RU21 26	3RU11 36	3RU11 46
Size			S00	S0	S2	S3
Width			45 mm	45 mm	55 mm	70 mm
General data				•	_	
Release on			overload or phas	se failure		
Trip class	acc. to IEC 60 947-4-1	CLASS	10			
Phase failure sensitivity			Yes			
Overload warning			No			
Resetting and recovery Reset possibilities after tripping Recovery time	on automatic RESET on manual RESET on remote RESET	min min min	Manual, remote and automatic RESET 1) depending on the level of tripping current and the tripping characteristi depending on the level of tripping current and the tripping characteristi depending on the level of tripping current and the tripping characteristi			
Features Indication of status on the device TEST function RESET button STOP button			Yes, using the sl Yes Yes Yes	ide "TEST function/	ON-OFF indicator"	
	ncreased safety" type of protection cording to directive 94/9/EC (ATEX)		DMT 98 ATEX G	001 🐼 II (2) GD,	DMT 98 ATEX G 00)1 N1
For reliable operation of motors of the "Increased safety" type of protection			KEMA test certif DMT 98 ATEX G	icate No. EX-97.Y.3 001	3235	
Ambient temperatures Storage/transport Operation Temperature compensation Permissible rated current at	Internal cabinet temperature of 60 °C Internal cabinet temperature of 70 °C	°C °C °C %	-55 to +80 -40 to +70 up to 60 100 (over +60 °C	C, the current must	-20 to +70 be reduced)	
Repeat terminals Repeat coil terminal Auxiliary switch repeat terminal			Yes Yes	Not required Not required		
Degree of protection	acc. to IEC 60529		IP 20		IP 20 ²⁾	
Shock-hazard protection	acc. to VDE 0106 Part 100		safe from touch			
Shock resistance (sine)	acc. to IEC 60068-2-27	g/ms	15/11 (auxiliary	contacts 95/96 and	d 97/98: 8g/11ms)	
Conducted interference decoupling, burst Conducted interference decoupling, surge Electrostatic discharge Field interference decoupling	acc. to IEC 61 000-4-4: (corresponds to degree of severity 3) acc. to IEC 61 000-4-5: (corresponds to degree of severity 3) acc. to IEC 61 000-4-2: (corresponds to degree of severity 3) acc. to IEC 61 000-4-3: (corresponds to degree of severity 3)	kV kV kV V/m	EMC is not relev	ant for thermal ove ant for thermal ove ant for thermal ove ant for thermal ove	rload relays	
Emitted interference	(corresponds to degree or severity 3)		FMC is not relev	ant for thermal ove	rload relavs	
Resistance to extreme climates	(humidity)	%	90			
Dimensions	· · · · · · · · · · · · · · · · · · ·		see dimensional	drawings		
Site altitude		m			ess please enquire	
Installation angle			The permissible vidual mounting area, adjustmen Individual mount 135° Is 135° Is 1,1 Contactor + ove	installation angles are shown in the dt compensation of ting $I_{\rm e} \times 1.1$ 90° 1.5° rload relay 0°	for mounting onto ingrams. For mounting onto ingrams. For mounting onto ingrams. For mounting with the second seco	
Type of installation/mounting			Direct mounting/ individual mounting with adapter ³⁾	Direct mounting	/ individual mounti	ing with adapter ³⁾

¹⁾ Remote RESET in combination with the appropriate accessories. 2) Terminal compartment: IP 00 degree of protection.

For screwing and snapping onto 35 mm standard mounting rails; size S3 also onto 75 mm standard mounting rails. For further details about adapters, see "Technical data/Adapters for individual mounting"

Technical data

Overload Relays Thermal Overload Relays

3RU11 up to 100 A, CLASS 10

-						
Туре			3RU21 16	3RU21 26	3RU11 36	3RU11 46
Size		S00	S0	S2	S3	
Width			45 mm	45 mm	55 mm	70 mm
Main circuit						
Rated insulation voltage U_i (pollution degree 3)	V	690			1000
Rated impulse withstand vo	Itage <i>U</i> _{imp}	kV	6			8
Rated operational voltage U	e	V	690			1000
Type of current	DC AC		Yes Yes, frequency ra	nge up to 400 Hz		
Operational current		А	0.11– 0.16 to 11 – 16	1.8 – 2.5 to 34 – 40	5.5 – 8 to 40 – 50	18 – 25 to 80 – 100
Power loss per device (max.	.)	W	3.9 to 6.6	3.9 to 6	6 to 9	10 to 16.5
Short-circuit protection	With fuse without contactor		See selection and	ordering data		
	With fuse and contactor		See technical data (short-circuit protection with fuses / circuit-breaker for motor feeders)			
Protective separation betwe main and auxiliary conducti path		V	440	690: Setting ranges ≤ 25 A 440: Setting ranges > 25 A	500	690
Connection of the main	circuit					
Type of connection			Screw connection/ Cage Clamp connection ¹⁾	Screw connection	Screw connection with box terminal	Screw connection with box terminal ²⁾ / bar connection
Screw terminals						<u> </u>
Terminal screw			Pozidrive Size 2			Hexagon socket screw 4 mm
Tightening torque		Nm	0.8 to 1.2	2 to 2.5	3 to 4.5	4 to 6
Conductor cross-section (min./max.), 1 or 2 wires	Solid	mm ²	$2 \times (0.5 \text{ to } 1.5),$ $2 \times (0.75 \text{ to } 2.5),$ $\max. 2 \times$ (0.5 to 4)	2 × (1 to 2.5), 2 × (2.5 to 6), max. 2 × (2.5 to 10)	2 × (0.75 to 16)	2 × (2.5 to 16)
	Finely stranded without end sleeve	mm^2	-			
	Finely stranded with end sleeve	mm^2	$2 \times (0.5 \text{ to } 1.5),$ $2 \times (0.75 \text{ to } 2.5)$	2 × (1 to 2.5), 2 × (2.5 to 6)	$2 \times (0.75 \text{ to } 16),$ $1 \times (0.75 \text{ to } 25)$	$2 \times (2.5 \text{ to } 35),$ 1 × (2.5 to 50)
	Stranded	mm ²	2 × (0.5 to 1.5), 2 × (0.75 to 2.5) max. 2 × (1 to 4)	2 × (1 to 2.5), 2 × (2.5 to 6) max. 2 × (2.5 to 10)	$2 \times (0.75 \text{ to } 25),$ $1 \times (0.75 \text{ to } 35)$	2 × (10 to 50), 1 × (10 to 70)

	stranded with cable lug				
	With connecting bars (max. width)	mm	-	12	
Auxiliary circuit					
Main contacts: Numb	er × (design)		1 × (1 NO + 1 NC)		
Assignment of auxilia	ary contacts		1 NO for signal "Tripped due to overload"; 1 NC for switching off the contactor		
Rated insulation volta	age $U_{\rm i}$ (pollution degree 3)	V	690		
Rated impulse withsta	Rated impulse withstand voltage U_{imp}		KV 6		
Switching capacity of	auxiliary contacts				
NC for AC AC-14/AC-15	Rated operational current I _e at U _e :	A A A A A A A	4 4 4 3 2 0.75 0.75		

AWG

Nm $\,{\rm mm^2}$

 $\, mm^2$

AWG

2 × (20 to 12)

2 × (16 to 8)

 $2 \times (18 \text{ to } 3),$

 $1 \times (18 \text{ to } 1)$

 $2 \times (6 \times 9 \times 0.8)$

Bar connection • Terminal screw

• Tightening torque

• Conductor cross-section (min./max.)

AWG conductor con., solid or stranded

Ribbon cable (No. × width × thickness)

Finely stranded with cable lug Stranded with cable lug

AWG conductor connections, solid or

2 × (10 to 1/0), 1 × (10 to 2/0)

 $M6 \times 20$ 4 to 6

2 × 70

 2×70

2/0

 $2 \times (6 \times 9 \times 0.8)$

^{• 120} V • 125 V • 230 V $\begin{matrix} A & A & A & A \\ A & A & A & A \end{matrix}$ • 400 V • 600 V • 690 V

¹⁾ For conductor cross-sections for Cage Clamp terminals, see "Connection of the auxiliary

²⁾ The box terminal can be removed. After the box terminal has been removed, bar connection and lug connection is possible.

Overload Relays Thermal Overload Relays

White Header on Blue

Technical data



Туре			3RU21 16	3RU21 26	3RU11 36	3RU11 46
Size		S00	S0	S2	S3	
Width			45 mm	45 mm	55 mm	70 mm
NO for AC AC-14/AC-15	Rated operational current I _e at U _e :	A A A A A A	3 3 3 2 1 0.75 0.75			
NC, NO for DC DC-13	Rated operational current <i>I</i> _e at <i>U</i> _e :	A A A A	1 1) 0.22 0.22 0.11			
Conventional thermal current I_{th}		Α	6			
Contact reliability	(suitable for PLC; 17 V, 5 mA)		Yes			
Short-circuit protection With fuse With miniature circuit-breaker	Utilization cat. gL/gG fast (C characteristic)	A A A	6 10 6 ²)			
Safe isolation between auxiliary conducting paths	acc. to DIN VDE 0106 Part 101	V	415			
Connection of the auxiliary	/ circuit					
Type of connection			Screw terminal	or Cage Clamp ter	minal	
Connection characteristics			Screw terminals	S S	Cage Clamp ter	rminals
Terminal screw			Pozidrive Size 2	2	-	
Tightening torque		Nm	0.8 to 1.2		_	
 Conductor cross-sections (min./max.), 1 or 2 wires 	Solid	mm ²	2 × (0.5 to 1.5), 2 × (0.75 to 2.5		2 × (0.25 to 2.5))
	Finely stranded without end sleeve	mm ²	_		$2 \times (0.25 \text{ to } 2.5)$)
	Finely stranded with end sleeve	mm ²	$2 \times (0.5 \text{ to } 1.5)$, $2 \times (0.75 \text{ to } 2.5)$		2 × (0.25 to 1.5))
	Stranded	mm ²	2 × (0.5 to 1.5), 2 × (0.75 to 2.5)		-	
	AWG conductor connections, solid or stranded	AWG	2 × (20 to 14)		2 × (20 to 14)	
🖲, 🗓 and 🕦 ratings						
Auxiliary circuit	Making/breaking capacity		B600, R300			

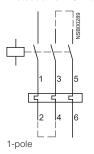
Adapter for individual mod	unting					
Туре			3RU29 16-3AA01	3RU29 26-3AA01	3RU19 36-3AA01	3RU19 46-3AA01
For overload relay			3RU21 16	3RU21 26	3RU11 36	3RU11 46
Fixing type				g and snapping ont 75 mm standard mo	to 35 mm standard ounting rails.	mounting rails;
Connection of the main ci	rcuit					
Type of connection			Screw terminals		Screw connection with box terminal	
Screw terminals						
Terminal screw			Pozidrive Size 2			Hexagon socket screw 4 mm
 Conductor cross-section (min./max.), 1 or 2 wires 	Solid	mm ²	$1 \times (0.5 \text{ to } 2.5),$ max. $1 \times (\text{to } 4)$	$1 \times (1 \text{ to } 6)$, max. $1 \times (\text{to } 10)$	2 × (0.75 to 16)	2 × (2.5 to 16)
	Finely stranded without end sleeve	mm^2	_			
	Finely stranded with end sleeve	mm ²	$1 \times (0.5 \text{ to } 2.5)$	1 × (1 to 6)	2 × (0.75 to 16) 1 × (0.75 to 25)	2 × (2.5 to 35) 1 × (2.5 to 50)
	Stranded	mm ²	$1 \times (0.5 \text{ to } 2.5),$ max. $1 \times (\text{to } 4)$	$1 \times (1 \text{ to } 6)$, max. $1 \times (\text{to } 10)$	$2 \times (0.75 \text{ to } 25),$ 1 × (0.75 to 35)	2 × (10 to 50), 1 × (10 to 70)
	AWG conductor connections, solid or stranded	AWG	1 × (18 to 14)	1 × (14 to 10)	2 × (18 to 3), 1 × (18 to 1)	2 × (10 to 1/0), 2 × (10 to 2/0)
	Ribbon cable (No. × width × thickness)	mm	-	-	$2 \times (6 \times 9 \times 0.8)$	$2 \times (6 \times 9 \times 0.8)$

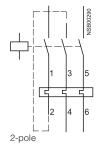
¹⁾ On request. 2) Up to $I_{\rm k} \le$ 0.5 kA; \le 260 V.



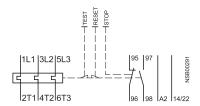
Circuit diagrams

Protection of DC motors

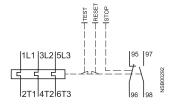




3RU21 16 overload relay



3RU21 26 to 3RU11 46 overload relays



Thermal Overload Relays

3RU11 up to 100 A, CLASS 10

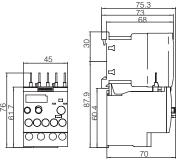


Dimension drawings

Lateral clearance to grounded components: at least 6 mm.

3RU21 16-..B0

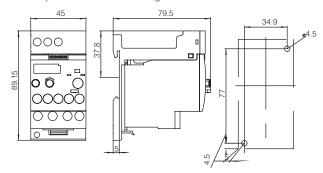
Size S00



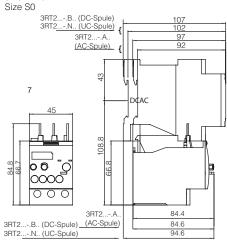
3RU21 16-..B1

Size S00

with adapter for installation as a single unit with accessories



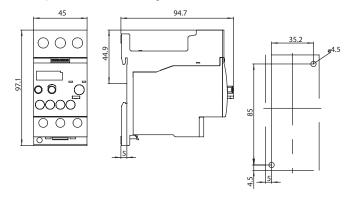
3RU21 26-..B.



3RU21 26-..B1

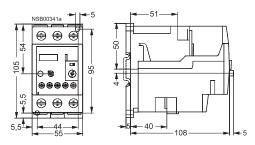
Size S0

with adapter for installation as a single unit



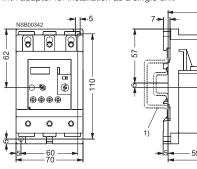
3RU11 36-..B.

with adapter for installation as a single unit



3RU11 46-..B.

with adapter for installation as a single unit



1) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to EN 50023

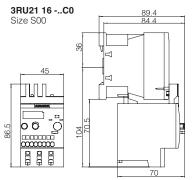
Dimension drawings "Contactor with built-on overload relay" see contactors and contactor combinations.

Thermal Overload Relays

3RU11 up to 100 A, CLASS 10

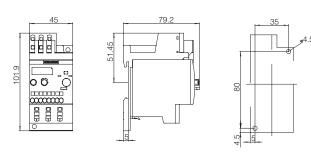
Dimension drawings

Spring Loaded terminalsLateral clearance to grounded components: at least 6 mm.

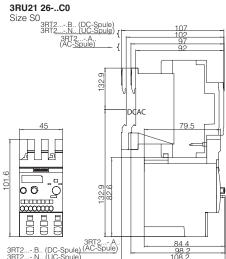


3RU21 16 -..C1

Size S00 with with adapter for installation as a single unit

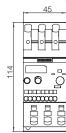


3RU21 26-..C0



3RU21 26-..C1

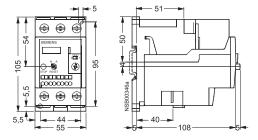
Size S0 with adapter for installation as a single unit





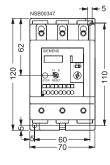
3RU11 36-..D.

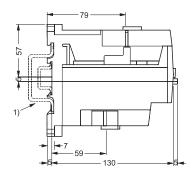
Size S2



3RU11 46-..D.

Size S3





1) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50 022 or 75 mm standard mounting rail acc. to EN 50 023

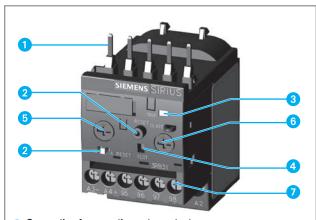
Dimension drawings "Contactor with built-on overload relay" see contactors and contactor combinations.

3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications

Revised 04/20/15

Overview



- 1 Connection for mounting onto contactors: Optimally adapted in electrical, mechanical and design terms to the contactors. The overload relay can be connected directly to these contactor using these pins. Stand-alone installation is possible as
 - an alternative (in conjunction with a terminal bracket for stand-alone installation).
- 2 Selector switch for manual/automatic RESET and RESET button:
 With this switch you can choose between manual and automatic
 RESET. A device set to manual RESET can be reset locally by
 pressing the RESET button. On the 3RB21 a solid-state remote is integrated into the unit.
- 3 Switch position indicator and TEST function of the wiring: Indicates a trip and enables the wiring test.
- 4 Solid state test:
 - Enables a test of all important device components and functions.
- **Motor current setting:**Setting the device to the rated motor current is easy with the large
- Trip class setting/internal ground-fault detection (3RB21 only): Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the starting conditions.
- Connecting terminals (removable terminal block for auxiliary circuits): The generously sized terminals permit connection of two conductors auxiliary circuit can be connected with screw-type terminals or with spring-loaded terminals.

The 3RB and 3RB solid-state overload relays up to 630 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting (see Function) against excessive temperature rise due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set motor rated current. This current rise is detected by the current transformers integrated into the devices and evaluated by corresponding solid-state circuits which then output a pulse to the auxiliary contacts. The auxiliary contacts then switch off the load by means of the contactors control circuit. The break time depends on the ratio between the tripping current and set current I_e and is stored in the form of a long-term stable tripping characteristic (see Characteristic Curves).

In addition to inverse-time delayed protection of loads against excessive temperature rise due to overload, phase unbalance and phase failure, the 3RB21/31 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with wye-delta assemblies). This provides protection of loads against high-resistance short-circuits due to damage to the insulation material, moisture, condensed water etc.

The "tripped" status is signaled by means of a switch position indicator (see Function). Resetting takes place either manually or automatically after the recovery time has elapsed (see Function).

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with important worldwide standards and approvals.

Application

Industries

The 3RB2 / 3RB3 solid-state overload relays are suitable for customers from all industries who want to provide optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to CLASS 30), minimize project completion times, inventories and power consumption, and optimize plant availability and maintenance management.

Application

The 3RB2 / 3RB3 solid-state overload relays have been designed for the protection of three-phase motors in sinusoidal 50/60 Hz voltage networks. The relays are not suitable for the protection of single-phase AC or DC loads.

The 3RU thermal overload relay or the 3RB22/3RB23 solidstate overload relay can be used for single-phase AC loads. For DC loads the 3RU thermal overload relays are available.

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive environments, ageing and temperature changes.

For the temperature range from -25 C to +60 °C, the 3RB2 / 3RB3 solid-state overload relays compensate the temperature according to IEC 60947-4-1.

The 3RB2 / 3RB3 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e according to ATEX guideline 94/9/EC. The relays meet the requirements of EN 60079-7 (Electrical apparatus for potentially explosive atmospheres -Increased safety "e").

The basic safety and health requirements of ATEX guideline 94/9/EG are fulfilled by compliance with

- EN 60947-1
- EN 60947-4-1
- EN 60947-5-1
- EN 60079-14

EU type test certificate for Group II, Category (2) G/D under application. It has the number PTB 09 ATEX 3001.

Accessories

The following accessories are available for the 3RB2/3RB3 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as single units without a terminal bracket)
- One mechanical remote RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Box terminals for sizes S6 and S10/S12
- · Terminal covers for sizes S2 to S10/S12

Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications

Design

Device concept

The 3RB2 / 3RB3 solid-state overload relays are compact devices, i.e. current measurement (transformer) and the evaluation unit are integrated in a single enclosure.

Mounting options

The 3RB2 / 3RB3 solid-state overload relays are suitable for direct and space-saving mounting onto 3RT1 / 3RT2 contactors and 3RW30/3RW31 soft starters as well as for stand-alone installation. For more information on the mounting options, please see Technical Specifications and Selection and Ordering Data

Connection technique

Main circuit

All sizes of the 3RB2 / 3RB3 solid-state overload relays can be connected with screw-type terminals. As an alternative for sizes S3 to S10/S12, the main circuits can be connected via the Busbar. Sizes S2 to S6 of the 3RB20/3RB21 relays are also available with a straight-through transformer. In this case, the cables of the main circuit are routed directly through the feed-through openings of the relay to the contactor terminals.

Auxiliary circuit

Connection of the auxiliary circuit (removable terminal block) is possible with either screw terminals or spring-loaded terminals.

For more information on the connection options, see Technical Specifications and Selection and Ordering Data.

Overload relays in contactor assemblies for Wye-Delta starting

When overload relays are used in combination with contactor assemblies for Wye-Delta starting it must be noted that only 0.58 times the motor current flows through the line contactor. An overload relay mounted onto the line contactor must be set to 0.58 times the motor current.

When 3RB21 / 31 solid-state overload relays are used in combination with contactor assemblies for Wye-Delta starting, the internal ground-fault detection must not be activated.

Operation with frequency converter

The 3RB2 / 3RB3 solid-state overload relays are suitable for frequencies of 50/60 Hz and the associated harmonics. This permits the 3RB2 / 3RB3 overload relays to be used on the incoming side of the frequency converter.

If motor protection is required on the outgoing side of the frequency converter, the 3RN thermistor motor protection devices or the 3RU thermal overload relays are available for this purpose.

3/19

3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications



Function

Basic functions

The 3RB2 / 3RB3 solid-state overload relays are designed for:

- Inverse-time delayed protection of loads from overloading
- Inverse-time delayed protection of loads from phase unbalance
- Inverse-time delayed protection of loads from phase failure
- Protection of loads from high-resistance short-circuits (internal ground-fault detection only with 3RB21 / 31).

Control circuit

The 3RB2 / 3RB3 solid-state overload relays have an internal power supply, i.e. no additional supply voltage is required.

Short-circuit protection

Fuses or motor starter protectors must be used for short-circuit protection. For assignments of the corresponding short-circuit protection devices to the 3RB2 / 3RB3 solid-state overload relays with/without contactor see Technical Specifications and Selection and Ordering Data.

Trip classes

The 3RB20 / 30 solid-state overload relays are available for normal starting conditions with trip CLASS 10 or for heavy starting conditions with trip CLASS 20 (fixed setting in each case).

The 3RB21 / 31 solid-state overload relays are suitable for normal and heavy starting. The required trip class (CLASS 5, 10, 20 or 30) can be adjusted by means of a rotary knob depending on the current starting condition.

For details of the trip classes see Characteristic Curves.

Phase failure protection

The 3RB2 / 3RB3 solid-state overload relays are fitted with phase failure protection (see Characteristic Curves) in order to minimize temperature rise of the load during single-phase operation.

Phase failure protection is not effective for loads with starconnection and a grounded neutral point or a neutral point which is connected to a neutral conductor.

Setting

The 3RB2 / 3RB3 solid-state overload relays are set to the motor rated current by means of a rotary knob. The scale of the rotary knob is shown in amps.

With the 3RB21 / 31 solid-state overload relay it is also possible to select the trip class (CLASS 5, 10, 20 or 30) using a second rotary knob and to switch the internal ground-fault detection on and off.

Manual and automatic reset

In the case of the 3RB2 / 3RB3 solid-state overload relays, a slide switch can be used to choose between automatic and manual resetting.

If manual reset is set, a reset can be carried out directly on the device after a trip by pressing the blue RESET button. Resetting is possible in combination with the mechanical reset options from the accessories range (see Accessories). As an alternative to the mechanical RESET options, the 3RB21 / 31 solid-state overload relays are equipped with an electrical remote RESET which may be utilized by applying a voltage of 24 V DC to the terminals A3 and A4.

If the slide switch is set to automatic RESET, the relay is reset automatically.

The time between tripping and resetting is determined by the recovery time.

Recovery time

With the 3RB2 / 3RB3 solid-state overload relays the recovery time after inverse-time delayed tripping is between 0.5 and 3 minutes depending on the preloading when automatic RESET is set. These recovery times allow the load (e.g. motor) to cool down.

If the button is set to manual RESET, the 3RB2 / 3RB3 devices can be reset immediately after inverse-time delayed tripping.

After a ground fault trip the 3RB21 / 31 solid-state overload relays (with ground-fault detection activated) can be reset immediately without a recovery time regardless of the reset mode set.

TEST function

With motor current flowing, the TEST button can be used to check whether the relay is working correctly (device/solid-state TEST). Current measurement, motor model and trip unit are tested. If these components are OK, the device is tripped in accordance with the table below. If there is an error, no tripping takes place.

Trip class	Required loading with the rated current prior to pressing the test button	Tripping within
CLASS 5	2 min	8 s
CLASS 10	4 min	15 s
CLASS 20	8 min	30 s
CLASS 30	12 min	45 s

Note: The test button must be kept pressed throughout the test.

Testing of the auxiliary contacts and the control current wiring is possible with the switch position indicator slide. Actuating the slide simulates tripping of the relay. During this simulation the NC contact (95-96) is opened and the NO contact (97-98) is closed. This tests whether the auxiliary circuit has been correctly wired.

After a test trip the relay is reset by pressing the RESET button.

Self-monitoring

The 3RB2 / 3RB3 solid-state overload relays have a self-monitoring feature, i.e. the devices constantly monitor their own basic functions and trip if an internal fault is detected.

Display of operating status

The respective operating status of the 3RB2 / 3RB3 solid-state overload relays is displayed by means of the position of the marking on the switch position indicator slide. After tripping due to overload, phase failure, phase unbalance or ground fault (ground fault detection possible only with 3RB21 / 31) the marking on the slide is to the left on the "O" mark, otherwise it is on the "I" mark

Auxiliary contacts

The 3RB2 / 3RB3 solid-state overload relays are fitted with an NO contact for the "tripped" signal, and an NC contact for switching off the contactor.

Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays 3RB20, 3RB21, 3RB30, 3RB31 up to 630A

for standard applications

Selection and ordering data

Conversion aid 3RB10 or 3RB20 --> 3RB20 or 30

Size	Old Order No.	Setting range A	New Order No.	Setting range A
	3RB20 16-□RB0	0.1 0.4	3RB30 16-□RB0	0.1 0.4
	3RB20 16-□NB0	0.32 1.25	3RB30 16-□NB0	0.32 1.25
S00	3RB20 16-□PB0	1 4	3RB30 16-□PB0	1 4
	3RB20 16-□SB0	3 12	—— 3RB30 16-□SB0	3 12
	3RB20 26-□RB0	0.1 0.4	3RB30 26-□RB0	0.1 0.4
	3RB20 26-□NB0	0.32 1.25	3RB30 26-□NB0	0.32 1.25
S0	3RB20 26-□PB0	1 4	3RB30 36-□PB0	1 4
	3RB20 26-□SB0	3 12	3RB30 26-□SB0	3 12
	3RB20 26-□QB0	6 25	3RB30 26-□QB0	6 25
S2	3RB20 36-□QB0	6 25	3RB30 36-□UB0	12 80
52	3RB20 36-□UB0	13 50	3RB30 36-□UB0	12 80
S3	3RB10 46-□UB0	13 50	3RB20 46-□UB0	12.5 50
53	3RB10 46-□EB0	25 100	3RB20 46-□EB0	25 100
S6	3RB10 56-□FW0		3RB20 56-□FW2	
30	3RB10 56-□FG0	30 200	3RB20 56-□FC2	50 200
	3RB10 66-□GG0	55 250	3RB20 66-□GC2	55 250
S10/S12	3RB10 66-□KG0	200 540	3RB20 66-□MC2	160 630
	3RB10 66-□LG0	300 630	SNDZU 00-⊔IVICZ	100 030

Conversion aid 3RB10 / 21 —> 3RB21 / 31

2

CLASS 10 CLASS 20

Size	Old Order No.	Setting range	New Order No.	Setting range	
		A		A	
	3RB21 13-□RB0	0.1 0.4	3RB31 13-4RB0	0.1 0.4	
	3RB21 13-□NB0	0.4 1.6	3RB31 13-4NB0	0.32 1.25	
S00	3ND21 13-11ND0	0.4 1.0	- 3RB31 13-4PB0	1 4	
000	3RB21 13-□PB0	1.5 6	3ND31 13-4FD0	1 4	
			- 3RB31 13-4SB0	3 12	
	3RB21 13-□SB0	3 12			
	3RB21 23-□RB0	0.1 0.4	3RB31 23-RB0	0.1 0.4	
	3RB21 23-□NB0	0.32 1.25	3RB31 23-NB0	0.32 1.25	
S0	3RB21 23-□PB0	1 4	3RB31 23-PB0	1 4	
	3RB21 23-□SB0	3 12	3RB31 23-4SB0	3 12	
	3RB21 23-□QB0	6 25	3RB31 23-4QB0	6 25	
S2	3RB21 33-□QB0	6 25	3RB31 33-4UB0	12 80	
32	3RB21 33-□UB0	13 50	3RB31 33-4UB0	12 80	
S3	3RB10 46-□UB0	12.5 50	3RB21 43-4UB0	12.5 50	
33	3RB10 46-□EB0	25 100	3RB21 43-4EB0	25 100	
S6	3RB10 56-□FW0	— 50 200	3RB21 53-4FW2	— 50 200	
30	3RB10 56-□FG0	30 200	3RB21 53-4FC2	— 50 200	
	3RB10 66-□GG0	55 250	3RB21 63-4GC2	55 250	
S10/S12	3RB10 66-□KG0	200 540	3RB21 63-4MC2	160 630	
	3RB10 66-□LG0	300 630	3ND21 03-4WC2	160 630	
			N1-+-		

Note:

CLASS 10 CLASS 20

CLASS 5, 10, 20 and 30 can be set on the unit

3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications



3RB20 solid-state overload relays and stand-alone installation $^{\!2)3)},$ CLASS 10 or CLASS 20 for direct mounting $^{\!1)2)}$

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC

- · Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring

	Size Contactor ⁴⁾	Set current value of the inverse-time delayed overload trip		Screw Terminal Order Number	Spring Loaded Terminal Order Number	Weight per PU approx.
0: 0001)		А				kg
Size S00 ¹⁾ 3RB30 16-1RB0	S00	0.1 0.4 0.32 1.25 1 4 3 12 4 16		3RB30 16-□RB0 3RB30 16-□NB0 3RB30 16-□PB0 3RB30 16-□SB0 3RB30 16-□TB0	3RB30 16-□RE0 3RB30 16-□RE0 3RB30 16-□PE0 3RB30 16-□SE0 3RB30 16-□TE0	0.172 0.172 0.172 0.172 0.172
Size S0 ¹⁾						
3RB30 26-1QB0	S0	0.1 0.4 0.32 1.25 1 4 3 12 6 25 10 40		3RB30 26-□RB0 3RB30 26-□NB0 3RB30 26-□PB0 3RB30 26-□SB0 3RB30 26-□QB0 3RB30 26-□VB0	3RB30 26-□RE0 3RB30 26-□NE0 3RB30 26-□PE0 3RB30 26-□SE0 3RB30 26-□QE0 3RB30 26-□VE0	0.250 0.250 0.250 0.250 0.250 0.250
Size S2 ¹⁾³⁾⁵⁾						
أحاطما	S2	12 50	with busbar with pass	3RB30 36-□UB0	3RB30 36-□UD0	0.360
			through CT's	3RB30 36-□UW1	3RB30 36-□UX1	0.230
() () () () () ()		20 80	with busbar	3RB30 36-□WB0	3RB30 36-□WD0	0.360
3RB30 36-1UB0			with pass through CT's	3RB30 36-□WW1	3RB30 36-□WX1	0.230
Size S3 1)3)5)						
999 #	S3	12.5 50	with busbar	3RB20 46-□UB0	3RB20 46-□UD0	0.560
		25 100	with busbar	3RB20 46-□EB0	3RB20 46-□ED0	0.560
3RB20 46-1EB0			with pass through CT's	3RB20 46-□EW1	3RB20 46-□EX1	0.450
Size S6 ²⁾⁵⁾						
	S6	50 200	with busbar	3RB20 56- <mark>□</mark> FC2	3RB20 56-□FF2	1.030
3RB20 56-1FW2			with pass through CT's	3RB20 56-□FW2	3RB20 56-□FX2	0.690
Size S10/S12 ²⁾				_		
	S10/S12 and size 14 (3TF68/ 3TF69)	55 250 160 630	with busbar with busbar	3RB20 66-□GC2 3RB20 66-□MC2	3RB20 66-□GF2 3RB20 66-□MF2	1.820 1.820
3RB20 66-1MC2				2 Class 20	2 Class 20	
STIDEO GO TIVIOE				1 Class 10	1 Class 10	

- The relays with an Order No. ending with "0" are designed for direct mounting to the contactor. With the matching terminal brackets (see Accessories) the sizes S00 to S3 can also be installed as stand-alone units.
- The relays with an Order No. ending with "2" are designed for direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.
- The relays with an Order No. ending with "1" are designed for stand-alone installation.
- 4) Observe maximum rated operational current of the devices.
- The relays with an Order No. with "X" in 10th position are equipped with a straight-through transformer.

For accessories, see pages 3/49-3/50. For description, see pages 3/18-3/20. For technical data, see pages 3/24-3/29. For dimension drawings, see page 3/30. For schematic diagrams, see page 3/31.



Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications

3RB21 / 3RB31 solid-state overload relays for direct mounting¹⁾²⁾ and stand-alone installation²⁾³⁾, CLASS 5, 10, 20 and 30 adjustable

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- İnternal ground fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC

- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring

	Size Contactor ⁴⁾	Set current valu of the inverse-t overload trip		Screw Terminal Order Number	Spring Loaded Terminal Order Number	Weight per PU approx.
		A				kg
Size S00 ¹⁾						
Land	S00	0.1 0.4		3RB31 13-4RB0	3RB31 13-4RE0	0.175
		0.32 1.25		3RB31 13-4NB0	3RB31 13-4NE0	0.175
©u o o o		1 4		3RB31 13-4PB0	3RB31 13-4PE0	0.175
GOOGGE		3 12		3RB31 13-4SB0	3RB31 13-4SE0	0.175
3RB31 13-4RB0		4 16		3RB31 13-4TB0	3RB31 13-4TE0	0.175
Size S0 ¹⁾						
LtLlt	S0	0.1 0.4		3RB31 23-4RB0	3RB31 23-4RE0	0.215
-4-4-4		0.32 1.25		3RB31 23-4NB0	3RB31 23-4NE0	0.215
@112 -		1 4		3RB31 23-4PB0	3RB31 23-4PE0	0.215
ecceci.		3 12		3RB31 23-4SB0	3RB31 23-4SE0	0.215
ceeeee		6 25		3RB31 23-4QB0	3RB31 23-4QE0	0.215
3RB31 23-4QB0		10 40		3RB31 23-4VB0	3RB31 23-4VE0	0.215
Size S2 ¹⁾³⁾⁵⁾	0.0		dale le cele en			0.000
	S2	12 50	with busbar	3RB31 33-4UB0	3RB31 33-4UD0	0.360
-			with pass through CT's	3RB31 33-4WB0	3RB31 33-4WD0	0.230
- u		20 80	with busbar	3RB31 33-4UW1	3RB31 33-4UX1	0.360
3RB31 33-4WB0			with pass through CT's	3RB31 33-4WW1	3RB31 33-4WX1	0.230
Size S3 ¹⁾³⁾⁵⁾						
	S3	12.5 50	with busbar	3RB21 43-4UB0	3RB21 43-4QD0	0.560
		25 100	with busbar	3RB21 43-4EB0	3RB21 43-4ED0	0.560
3RB21 43-4EB0			with pass through CT's	3RB21 43-4EW1	3RB21 43-4EX1	0.450
Size S6 ²⁾⁵⁾						
00000	S6	50 200	with busbar	3RB21 53-4FC2	3RB21 53-4FF2	1.030
0.00			with pass through CT's	3RB21 53-4FW2	3RB21 53-4FX2	0.690
3RB21 53-4FC2						
Size S10/S12 ²⁾						
	\$10/\$12 and size 14 (3TF68/ 3TF69)	55 250 160 630		3RB21 63-4MC2	3RB21 63-4GF2 3RB21 63-4MF2	1.820 1.820
3RB21 63-4MC2						

- The relays with an Order No. ending with "0" are designed for direct mounting to the contactor. With the matching terminal brackets (see Accessories) the sizes S00 to S3 can also be installed as stand-alone units.
- 2) The relays with an Order No. ending with "2" are designed for direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.
- The relays with an Order No. ending with "1" are designed for stand-alone installation.
- 4) Observe maximum rated operational current of the devices.
- The relays with an Order No. with "X" in 10th position are equipped with a straight-through transformer.

For accessories, see pages 3/49-3/50. For description, see pages 3/18-3/21. For technical data, see pages 3/24-3/29. For dimension drawings, see page 3/30. For schematic diagrams, see page 3/31.

Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays 3RB20, 3RB21, 3RB30, 3RB31 up to 630A

for standard applications



Technical specifications

Technical specifications							
Туре		3RB30 16, 3RB31 13	3RB30 26, 3RB31 23	3RB20 36, 3RB21 33	3RB20 46, 3RB21 43	3RB20 56, 3RB21 53	3RB20 66, 3RB21 63
Size		S00	S0	S2	S3	S6	S10/S12
Width		45 mm	45 mm	55 mm	70 mm	120 mm	145 mm
General data							
Trips in the event of			ase failure, and t (for 3RB21/31		ice		
Trip class according to IEC 60947-4-1	CLASS	10 / 20 / 5, 10	, 20 and 30 adj	ustable (depen	ding on the ver	sion)	
Phase failure sensitivity		Yes					
Overload warning		No					
Reset and recovery							
Reset options after tripping		Manual, autor	matic and remot	te RESET (depe	ending on the v	ersion)	
Recovery timeFor automatic RESETFor manual RESETFor remote RESET	min. min. min.	Appox. 3 min Immediately Immediately					
Features							
 Display of operating status on device TEST function RESET button STOP button 		Yes, test of ele Test of auxiliar the switch po Self-monitorin Yes	s of switch posi ectronics by pre ry contacts and isition indicator	essing the butto wiring of contr	on Test	it by actuating	
• STOP bullori		No		_			
Explosion protection – Safe operation of motors with"Increased safety" type of protection EC type test certificate number according to directive 94/9/E0	PTB 09 ATEX						
Ambient temperatures		4000					
Storage/transport Operation Temperature compensation Permissible rated current at	$^{\circ}$	-40 +80 -25 +60 +60					
- Temperature inside control cabinet 60 $^{\circ}$ C, stand-alone installation - Temperature inside control cabinet 60 $^{\circ}$ C, mounted on contactor	%	100	100 ¹⁾	100 100	100 100	100 70	100 or 90 ²⁾ 70
- Temperature inside control cabinet 70 °C	%	On request		On request	On request		
Repeat terminals • Coil repeat terminal		Yes	Not required				
Auxiliary contact repeat terminal		Yes	Not required				
Degree of protection according to IEC 60529		IP20		IP20 ³⁾			
Touch protection according to IEC 61140		Finger-safe				Finger-safe, for busbar connection with cover	Finger-safe with cover
Shock resistance with sine according to IEC 60068-2-27	7 <i>9</i> /ms	15/12 (signali	ng contact 97/9	8 in position "tr	ipped": 4/11a/m	ns)	
Electromagnetic compatibility (EMC) Interference immunity Conductor-related interference Burst according to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)					
- Surge according to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	·	n), 1 (line to line	,			
Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	· ·	ge), 6 (contact d	discharge)			
Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3) Floating regarding according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10	anita D "	on to EN EEC 1	(CICDD 44)	d EN EE000 (0)	2DD 00)
Electromagnetic compatibility (EMC) – Emitted interference		Degree or sev	remy b according	19 10 EN 33011	(CIOFR II) an	d EN 55022 (CIS	Dr N 22)
Resistance to extreme climates – air humidity	%	95		100			
Dimensions		See dimensio	nal drawings				
Installation altitude above sea level	m	Up to 2000					
Mounting position		Any					
Type of mounting		Direct mounting	nstallation with	Direct mounti Stand-alone i			

- 1) Permissible rated current in case of heavy starting Size S0 at 10 A up to 40 A

 - CLASS 20, le max = 32 A

 - CLASS 30, le max = 25 A

- 2) 90 % for relay with current setting range 160A to 630A3) Terminal compartment: degree of protection IP00.



Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays 3RB20, 3RB21, 3RB30, 3RB31 up to 630A

for standard applications

Туре		3RB30 16, 3RB31 13	3RB30 26, 3RB31 23	3RB20 36, 3RB21 33	3RB20 46, 3RB21 43
Size Width		S00	S0 45 mm	S2	S3 70 mm
		45 mm	45 mm	55 mm	70 mm
Main circuit	.,			1)	
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	690		690/1000 ¹⁾	1000
Rated impulse withstand voltage U _{imp}	kV	6		6/8 ²⁾	8
Rated operational voltage U _e	V	690			1000
Type of current					
Direct current		no			
Alternating current		Yes, 50/60 Hz ± 5	0.4	0.05.	10.5 50.
Set current	Α	0.1 0.4 to 4 16	0.1 0.4 to 10 40	6 25 to 12.5 50	12.5 50 to 25 100
Power loss per unit (max.)	W	0.05 0.2		0.05	
Short-circuit protection				1.0	
- With fuse without contactor		See Selection and Or	dering Data		
- With fuse and contactor		See Technical Specifi	cations (short-circuit pro	otection with fuses for n	notor feeders)
Protective separation between main and auxiliary conducting path according to IEC 60947-1 (pollution de	V egree 2)	690 for grounded net	works, otherwise 600 V		
Connection for main circuit					
Electrical connection version		Screw terminal		Screw terminal with box terminal / straight-through transformer	Screw terminal with box terminal / bus connection / straight-through transformer
Screw terminal					
Terminal screw		Pozidriv size 2	0.05	0 45	Allen screw 4 mm
Tightening torqueConductor cross-sections (min./max.)	Nm	0.8 1.2	2 2.5	3 4.5	4 6
- Solid	mm ²	$2 \times (0.5 \dots 1.5)^{3)}$ $2 \times (0.75 \dots 2.5)^{3)}$ $2 \times (0.05 \dots 4)^{3)}$	2 × (1 2.5) ³⁾ 2 × (2.5 10)	2 × (1 16)	2 × (2.5 16)
- Finely stranded with end sleeve (DIN 46228 T1)	mm ²	$2 \times (0.5 \dots 1.5)^{3)}$ $2 \times (0.75 \dots 2.5)^{3)}$	$2 \times (1 \dots 2.5)^{3)}$ $2 \times (2.5 \dots 6)^{3)}$ max. 1 x 10	2 × (1 16), 1 × (1 25)	2 × (2.5 35), 1 × (2.5 50)
- Stranded	mm ²			2 × (max. 25), 1 × (1 35)	2 × (10 50), 1 × (10 70)
- AWG cables, solid or stranded	AWG	2 × (20 16) ³⁾ 2 × (18 14) ³⁾ 2 × 12	2 × (16 12) ³⁾ 2 × (14 8) ³⁾	2 × (max. 4), 1 × (18 2)	2 × (10 1/0), 2 × (10 2/0)
- Ribbon cable conductors (number x width x circumference)	mm			$2 \times (6 \times 9 \times 0.8)$	$2 \times (6 \times 9 \times 0.8)$
Busbar connections					
Terminal screw					M 6 × 20
Tightening torque Conductor cross section (min /max)	Nm				4 6
Conductor cross-section (min./max.) Finely stranded with cable lug	mm ²				2 × 70
- Stranded with cable lug	mm ²				3 × 70
- AWG connections, solid or stranded, with cable lug	AWG				2/0
- With connecting bar (max. width)	mm				12
Straight-through transformers • Diameter of opening	mm	_		15	18
· · · · · · · · · · · · · · ·					

¹⁾ For version with straight-through transformer up to 1000 VAC.

²⁾ For version with straight-through transformer up to 8 kV.

³⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

Overload Relays 3RB2 /3RB3 Solid-State Overload Relays 3RB20, 3RB21, 3RB30, 3RB31 up to 630A

for standard applications



Туре		3RB20 56, 3RB21 53	3RB20 66, 3RB21 63
Size		S6	S10/S12
Width		120 mm	145 mm
Main circuit			
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	1000	
Rated impulse withstand voltage U_{imp}	kV	8	
Rated operational voltage $U_{\rm e}$	V	1000	
Type of current	v	1000	
Direct current		No	
Alternating current		Yes, 50/60 Hz ± 5 (other frequencies on requ	est)
Set current	Α	50 200	55 250 to
			160 630
Power loss per unit (max.)	W	0.05	
Short-circuit protection			
- With fuse without contactor		See Selection and Ordering Data	
- With fuse and contactor		See Technical Specifications (short-circuit pro	otection with fuses for motor feeders)
Safe isolation between main	V	690 ¹⁾	
and auxiliary conducting path according to IEC 60947-	1		
Connection for main circuit			
Electrical connection version		Screw terminal with box terminal/	Screw terminal
		Bus connection / Straight-through transformer	with box terminal/ Bus connection
Screw terminal		Stargit through transformer	240 CONTROCTOR
Terminal screw		4 mm Allen screw	5 mm Allen screw
Tightening torque	Nm	10 12	20 22
Conductor cross-sections (min./max.), 1 or 2 conductor			
- Solid	mm ²		
- Finely stranded without end sleeve	mm ²	With 3RT19 55-4G box terminal:	2 × (50 185),
- I lifely strainted without end sleeve	111111	$2 \times (1 \times \text{max. } 50, 1 \times \text{max. } 70),$	front clamping point only:
		1 × (10 70)	1 × (70 240)
		With 3RT19 56-4G box terminal:	rear clamping point only:
		2 × (1 × max. 95, 1 × max. 120), 1 × (10 120)	1 × (120 185)
- Finely stranded with end sleeve	mm ²		2 × (50 185),
,		$2 \times (1 \times \text{max. } 50, 1 \times \text{max. } 70),$	front clamping point only:
		1 × (10 70)	1 × (70 240)
		With 3RT19 56-4G box terminal: $2 \times (1 \times \text{max. } 95, 1 \times \text{max. } 120),$	rear clamping point only: 1 × (120 185)
		1 × (10 120)	1 × (120 100)
- Stranded	mm ²		2 × (70 240),
		2 × (max. 70),	front clamping point only:
		1 × (16 70) With 3RT19 56-4G box terminal:	1 × (95 300) rear clamping point only:
		2 × (max. 120),	1 × (120 240)
	,	1 × (16 120)	- /
- AWG conductors, solid or stranded	AWG	With 3RT19 55-4G box terminal:	$2 \times (2/0 \dots 500 \text{ kcmil}),$ front clamping point only:
		2 × (max. 1/0), 1 × (6 2/0)	front clamping point only: $1 \times (3/0 \dots 600 \text{ kcmil})$
		With 3RT19 56-4G box terminal:	rear clamping point only:
		2 × (max. 3/0),	1 × (250 kcmil 500 kcmil)
- Ribbon cable conductors	mm	1 x (6 250 kcmil) With 3RT19 55-4G box terminal:	$2 \times (20 \times 24 \times 0.5),$
(number x width x circumference)	111111	$2 \times (6 \times 15.5 \times 0.8),$	$1 \times (6 \times 9 \times 0.8 \dots 20 \times 24 \times 0.5)$
		$1 \times (3 \times 9 \times 0.8 \dots 6 \times 15.5 \times 0.8)$	
		With 3RT19 56-4G box terminal:	
		$2 \times (10 \times 15.5 \times 0.8),$ $1 \times (3 \times 9 \times 0.8 \dots 10 \times 15.5 \times 0.8)$	
Busbar connections		(
Terminal screw		M 8 × 25	M 10 × 30
Tightening torque	Nm	10 14	14 24
Conductor cross-section (min./max.)	0		(23)
- Finely stranded with cable lug	mm ²	16 95 ²⁾	50 240 ³⁾
 Stranded with cable lug AWG connections, solid or stranded, with cable lug 	mm ² AWG	25 120 ²⁾ 4 250 kcmil	70 240 ³⁾ 2/0 500 kcmil
 Avg connections, solid or stranded, with cable lug With connecting bar (max. width) 	mm	4 250 KCMII 15	2/0 500 kcmii 25
Straight-through transformers			
Diameter of opening	mm	24.5	
Conductor cross-section (max.)			
- NYY	mm ²	120	
- H07RN-F	mm ²	70	
1) 5		0) 14/1	

¹⁾ For grounded networks, otherwise 600 V.

²⁾ When connecting cable lugs according to DIN 46235, use the 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 mm² to ensure phase spacing.

When connecting cable lugs according to DIN 46234 for conductor cross-sections from 240 mm² as well as DIN 46235 for conductor cross-sections from 185 mm², use the 3RT19 56-4EA1 terminal cover to ensure phase spacing.



Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays 3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications

Type		3RB30 16, 3RB31 13	3RB30 26, 3RB31 23	3RB20 36, 3RB21 33	3RB20 46, 3RB21 43	3RB20 56, 3RB21 53	3RB20 66, 3RB21 63
Size Width		S00 45 mm	S0 45 mm	S2 55 mm	S3 70 mm	S6 120 mm	S10/S12 145 mm
Auxiliary circuit		45 11111	45 11111	55 IIIII	70 11111	120 111111	145 11111
Number of NO contacts		1					
Number of NC contacts		1					
Auxiliary contacts – assignment			signal "tripped",				
Advinary contacts – assignment			ching off the cor	ntactor			
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	300					
Rated impulse withstand voltage U _{imp}	kV	4					
Auxiliary contacts – Contact rating							
 NC contact with alternating current AC-14/AC-15 Rated operational current I_e at U_e: 							
- 24 V	Α	4					
- 120 V	A	4					
- 125 V - 250 V	A A	4					
- 250 V	A	3					
NO contact with alternating current AC-14/AC-15: Rated operational current $I_{\rm e}$ at $U_{\rm e}$: - 24 V	А	4					
- 24 V - 120 V	A	4					
- 125 V	Α	4					
- 250 V	Α	3					
		1)					
• NC NO contact with direct current DC 12:		1)					
 NC, NO contact with direct current DC-13: Rated operational current I_e at U_e: 							
- 24 V - 60 V	A A	2 0.55					
- 60 V - 110 V	A	0.33					
- 125 V	A	0.3					
- 250 V	Α	0.11					
$ullet$ Continuous thermal current I_{th}	Α	5					
Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes					
Short-circuit protection							
With fuse							
- gL/gG operational class	Α	6					
Protective separation between main and auxiliary conducting path according to IEC 60947-	V	300					
and durinary conducting pain according to 120 00047	•						
CSA, UL, and UR rated data							
Auxiliary circuit – switching capacity		3RB30	B600, R300	B300, R300			
		3RB31	B300, R300				
Connection of the auxiliary circuit							
Connection type		Screw termina	al or spring-load	led terminals			
Screw terminal							
Terminal screw		Pozidriv size	2				
Tightening torque	Nm	0.8 1.2					
• Conductor cross-sections (min./max.), 1 or 2 conductors							
- Solid	mm ²	$1 \times (0.5 \dots 4),$	2 × (0.5 2.5)				
 Finely stranded without end sleeve Finely stranded with end sleeve 	mm ² mm ²	1 × (0.5 2.5), 2 × (0.5 1.5)					
- Stranded	mm ²	(0.0 2.0), 2 ^ (0.0 1.0)					
- AWG conductors, solid or stranded		2 × (20 14)					
Spring-loaded terminals							
Conductor cross-sections (min./max.), 1 or 2 conductors	3						
- Solid	mm ²	$2 \times (0.25 \dots 1)$.5)				
- Finely stranded without end sleeve	mm ²	(0.05 4	5)				
 Finely stranded with end sleeve Stranded 	mm ² mm ²	2 × (0.25 1 2 × (0.25 1					
- Stranded - AWG conductors, solid or stranded		2 × (0.25 1 2 × (24 16)					
J. Soriadotoro, Soria Si Statiada	, 0	= / (= 1 /0)					

3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications



Short-circuit protection with fuses for motor starters

For short-circuit currents up to 50 kA at 400 to 690 V

Overload relays	Contactor	CLASS	CLASS								690 V		
on taken		5 and 10	5 and 10		20			30			Fuse links ¹⁾ LV HRC Type 3NA DIAZED Type 5SB NEOZED Type 5SE gL/gG operational class		
Setting range	Туре	Rated of 400 V	perational 500 V	current I _e 690 V	AC-3 in A 400 V	at 500 V	690 V	400 V	500 V	690 V	Type of coo	rdination ²⁾ 2	
Size S00													
0.1 0.4 A	3RT20 15	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	35	4	
0.32 1.25 A	3RT20 15	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	35	6	
1 4 A	3RT20 15 3RT20 16 3RT20 17	4 4 4	35 35 35	20 20 20									
4 16 A	3RT20 16 3RT20 17 3RT20 18	9 12 16	6.5 9 12.4	5.2 6.3 8.9	9 10 12.9	6.5 9 11.6	5.2 6.3 8.1	9 9 11.6	6.5 9 11.6	5.2 6.3 8.1	35 35 50	20 20 25	
Size S0													
3 12 A	3RT20 23 3RT20 24 3RT20 25	9 12 12	6.5 12 12	5.2 9 12	9 12 12	6.5 12 12	5.2 9 12	 12 12	 12 12	9 12	63 63 63	25 25 25	
10 40	3RT20 24 3RT20 25 3RT20 26 3RT20 27 3RT20 28	12 17 25 32 38	12 17 18 32 32	9 13 13 21 21	12 16 16 18.6 22.4	12 16 16 18.6 22.4	9 13 13 15.1 18.2	12 14 14 16.2 19.6	12 14 14 16.2 19.6	9 13 13 15.1 18.2	63 63 100 125 125	25 25 35 50 50	
Size S2										-	_		
ô 25 A	3RT10 34 3RT10 35	25 25	25 25	20 24	22.3 25	22.3 25	20 24	19.1 25	19.1 25	19.1 24	125 125	50 63	
12.5 50 A	3RT10 34 3RT10 35 3RT10 36	32 40 50	32 40 50	20 24 24	22.3 29.4 32.7	22.3 29.4 32.7	20 24 24	19.1 26.5 26.5	19.1 26.5 26.5	19.1 24 24	125 125 160	63 63 80	
Size S3													
12.5 50 A	3RT10 44 3RT10 45	50 50	50 50	47 50	49 50	49 50	47 50	41.7 45	41.7 45	41.7 45	200 200	125 160	
25 100 A	3RT10 44 3RT10 45 3RT10 46 3RT10 54 3RT10 55	65 80 95 100	65 80 95 100	47 58 58 100	49 53 59 81.7 100	49 53 59 81.7 100	47 53 58 81.7 100	41.7 45 50 69 90	41.7 45 50 69 90	41.7 45 50 69 90	200 200 200 355 355	125 160 160 315 315	
Size S6													
50 200 A	3RT10 54 3RT10 55 3RT10 56	115 150 185	115 150 185	115 150 170	81.7 107 131	81.7 107 131	81.7 107 131	69 90 111	69 90 111	69 90 111	355 355 355	315 315 315	
Size S10/S12													
55 250 A	3RT10 64 3RT10 65 3RT10 66	225 250 250	225 250 250	225 250 250	160 188 213	160 188 213	160 188 213	135 159 180	135 159 180	135 159 180	500 500 500	400 400 400	
160 630 A	3RT10 64 3RT10 65 3RT10 66 3RT10 75 3RT10 76	225 265 300 400 500	225 265 300 400 500	225 265 280 400 450	160 188 213 284 355	160 188 213 284 355	160 188 213 284 355	 180 240 300	 180 240 300	 180 240 300	500 500 500 630 630	400 400 400 400 500	
	3RT12 64 3RT12 65 3RT12 66 3RT12 75 3RT12 76	225 265 300 400 500	225 265 300 400 500	225 265 300 400 500	225 265 300 400 500	225 265 300 400 500	225 265 300 400 500	173 204 231 316 385	173 204 231 316 385	173 204 231 316 385	500 500 500 800 800	500 500 500 800 800	
	3TF68 ³⁾ 3TF69 ³⁾	630 630	630 630	630 630	440 572	440 572	440 572	376 500	376 500	376 500	800 800	500 ⁴⁾ 630 ⁴⁾	

¹⁾ Please observe operational voltage.

Type of coordination 2: the contactor or starter must not endanger persons or the installation in the event of a short-circuit.

²⁾ Coordination and short-circuit equipment according to EN 60947-4-1: Type of coordination 1: the contactor or starter must not endanger persons or the installation in the event of a short-circuit. They do not need to be suitable for further operation without repair and the renewal of parts.

They must be suitable for further operation. There is a risk of contact welding.

³⁾ Contactor cannot be mounted.

⁴⁾ Please ensure that the maximum AC-3 operational current has sufficient safety clearance from the rated current of the fuses.



Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays

3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications

Characteristic curves

The tripping characteristics show the relationship between the tripping time and tripping current as multiples of the set current $I_{\rm e}$ and are given for symmetrical three-pole and two-pole loads from the cold state.

The smallest current used for tripping is called the minimum tripping current. According to IEC 60947-4-1, this current must be within specified limits. The limits of the total tripping current for the 3RB20/3RB21 solid-state overload relays for symmetrical three-pole loads are between 105 % and 120 % of the set current.

The tripping characteristic starts with the minimum tripping current and continues with higher tripping currents based on the characteristics of the so-called trip classes (CLASS 10, CLASS 20 etc.). The trip classes describe time intervals within which the overload relays have to trip with 7.2 times the set current I_P from the cold state for symmetrical three-pole loads.

The tripping times according to IEC 60947-4-1, tolerance band E, are as follows for:

Trip class	Tripping time
CLASS 5	3 5 s
CLASS 10	5 10 s
CLASS 20	10 20 s
CLASS 30	20 30 s

The tripping characteristic for a three-pole overload relay from the cold state (see illustration 1) only apply if all three phases are simultaneously loaded with the same current. In the event of a phase failure the 3RB20/3RB21 solid-state overload relays switch off the contactor more quickly in order to minimize heating of the load in accordance with the tripping characteristic for two-pole loads from the cold state (see illustration 2). With phase unbalance the devices switch off depending on the reason for the unbalance between the two characteristic curves.

Compared with a cold load, a load at operating temperature obviously has a lower temperature reserve. The tripping time of the 3RB2/3RB3 solid-state overload relays is reduced therefore to about 30 % when loaded with the set current $I_{\rm e}$ for an extended period.

Tripping characteristics for 3-pole loads

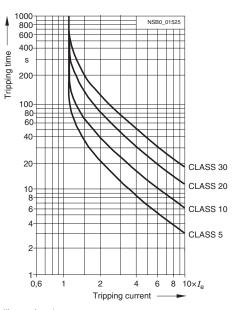


Illustration 1

Tripping characteristics for 2-pole loads

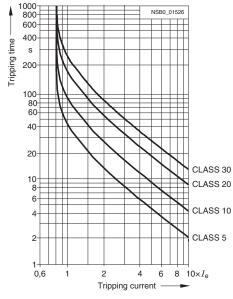


Illustration 2

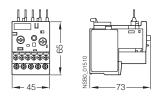
The above illustrations are schematic representations of characteristic curves.

Overload Relays 3RB2 / 3RB3 Solid-State Overload Relays

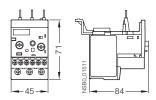
3RB20, 3RB21, 3RB30, 3RB31 up to 630A for standard applications



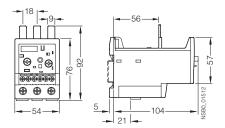
Dimensional drawings



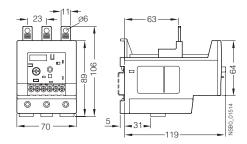
3RB30 16, 3RB31 13, size S00



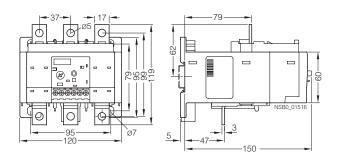
3RB30 26, 3RB31 23, size S0



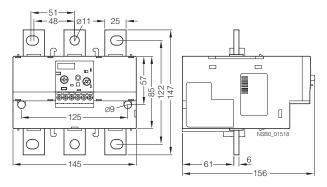
3RB20 36, 3RB21 33, size S2



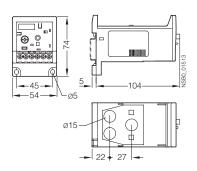
3RB20 46, 3RB21 43, size S3



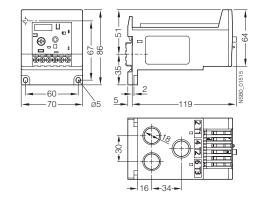
3RB20 56, 3RB21 53, size S6



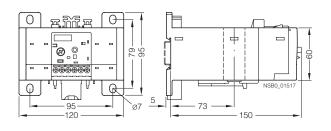
3RB20 66, 3RB21 63, size S10/S12



3RB20 36, 3RB21 33, size S2 with straight-through transformer



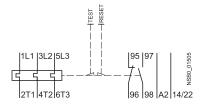
3RB20 46, 3RB21 43, size S3 with straight-through transformer



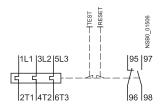
3RB20 56, 3RB21 53, size S6 with straight-through transformer

for standard applications

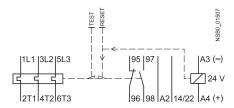
Schematics



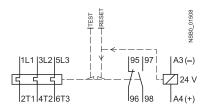
3RB30 16 overload relays



3RB30 26 to 3RB20 66 overload relays



3RB31 13 overload relays

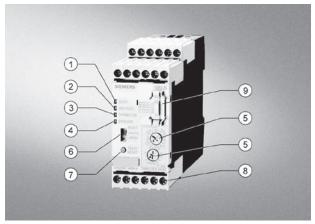


3RB31 23 to 3RB21 63 overload relays

3RB2 Solid-State Overload Relays

3RB22, 3RB23 for high-feature applications

Overview



3RB22/3RB23 evaluation module

(1) Green "Ready" LED:

A continuous green light signals that the device is working correctly.

(2) Red "Ground Fault" LED:

A continuous red light signals a ground fault.

(3) Red "Thermistor" LED:

A continuous red light signals an active thermistor trip.

(4) Red "Overload" LED:

A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).

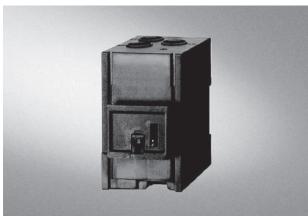
- (5) Motor current and trip class adjustment: Setting the device to the motor current and to the required trip class dependent on the starting conditions is easy with the two rotary knobs.
- (6) Selector switch for manual/automatic RESET:
 With this switch you can choose between manual and automatic RESET
- (7) Test/RESET button:

Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.

(8) Connecting terminals (removable terminal block): The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw-type terminals and alternatively with spring-loaded terminals.

(9)3RB29 85 function expansion module:

Enables more functions to be added, e.g. internal ground fault detection and/or an analog output with corresponding signals.



3RB29 06 current measuring module

The modular, solid-state overload relays with external power supply type 3RB22 (with monostable auxiliary contacts) and type 3RB23 (with bistable auxiliary contacts) up to 630 A (up to 820 A possible with a series transformer) have been designed for inverse-time delayed protection of loads with normal and heavy starting (see Function) against excessive temperature rises due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set motor rated current. This current rise is detected by means of a current measuring module and electronically evaluated by a special evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of the contactors control circuit. The break time depends on the ratio between the tripping current and set current I_e and is stored in the form of a long-term stable tripping characteristic (see Characteristic Curves). The "tripped" status is signaled by means of a continuous red "Overload" LED.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. This warning can also be used as a signal through auxiliary contacts.

In addition to the described inverse-time delayed protection of loads against excessive temperature rise, the 3RB22/3RB23 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by failsafe connection of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices signal the contactor to switch off, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuous red "Thermistor" LED.

To also protect the loads against high-resistance short-circuits due to damage to the insulation, humidity, condensed water, etc., the 3RB22/3RB23 solid-state overload relays offer the possibility of internal ground fault monitoring in conjunction with a function expansion module; not possible in conjunction with a contactor assembly for Wye-Delta starting). In the event of a ground fault the 3RB22/3RB23 relays trip instantaneously. The "tripped" status is signaled by means of a red "Ground Fault" LED. Signaling through auxiliary contacts is also possible.

After tripping due to overload, phase unbalance, phase failure, thermistor tripping or ground fault, the relay may be reset manually or automatically after the recovery time has elapsed (see Function).

In conjunction with a function expansion module the motor current measured by the microprocessor can be output in the form of an analog signal 4 ... 20 mA DC for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers. With an additional AS-Interface analog module the current values can also be transferred over the AS-i bus system.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with important worldwide standards and approvals.

3RB22, 3RB23 for high-feature applications

Benefits

The most important features and benefits of the 3RB22/3RB23 solid-state overload relays are listed in the overview table (see Overload Relays, General Data).

Application

Industries

The 3RB22/3RB23 solid-state overload relays are suitable for customers from all industries who want to provide optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to CLASS 30), minimize project completion times, inventories and power consumption, and optimize plant availability and maintenance management.

Application

The 3RB22/3RB23 solid-state overload relays have been designed for the protection of three-phase asynchronous and single-phase AC motors.

If single-phase AC motors are to be protected by the 3RB22/3RB23 solid-state overload relays, the main circuits of the current measuring modules must be series-connected.

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive environments, ageing and temperature changes.

For the temperature range from -25 C to +60 °C, the 3RB22/3RB23 solid-state overload relays compensate the temperature according to IEC 60947-4-1.

Configuration notes for use of the devices below –25 $^{\circ}\text{C}$ or above +60 $^{\circ}\text{C}$ on request.

"Increased safety" type of protection EEx e according to ATEX guideline 94/9/EC

The 3RB22/3RB23 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e. The relays meet the requirements of EN 60079-7 (Electrical apparatus for potentially explosive atmospheres – Increased safety "e").

When using 3RB23 solid-state overload relays for the protection of EEx e motors, separate monitoring of the control supply voltage is recommended.

The basic safety and health requirements of ATEX guideline 94/9/EG are fulfilled by compliance with

- EN 60947-1
- EN 60947-4-1
- EN 60947-5-1
- EN 60079-14

EU type test certificate for Group II, Category (2) G/D under application. Number on request.

Accessories

The following accessories are available for the 3RB22/3RB23 solid-state overload relays:

- A sealable cover for the evaluation module
- Box terminal blocks for the current measuring modules size S6 and S10/S12
- Terminal covers for the current measuring modules size S6 and S10/S12
- Push-in lugs for screw (panel) mounting the size S00 to S3 current measuring modules

3RB22, 3RB23 for high-feature applications Revised 09/30/14

3RB22/3RB23 solid-state overload relays for full motor protection with screw connection or spring-loaded terminals for stand-alone installation, CLASS 5, 10, 20 and 30 adjustable

Features and technical specifications:

- Overload protection, phase failure protection and unbalance
- External power supply 24 ... 240 V AC/DC
 Auxiliary contacts 2 NO +2 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- 4 LEDs for operating and status displays

- · TEST function and self-monitoring
- Internal ground fault detection with function expansion module
- Screw connection or spring-loaded terminals for auxiliary, control and sensor circuits
- Input for PTC sensor circuit
- Analog output with function expansion module

	Size Contactor	Version	Connection type	Order No.	Weight per PU approx.
					kg
Evaluation module					
000000	S00 S12	Monostable	Screw connection	3RB22 83-4AA1	0.300
00000			Spring-loaded terminals	3RB22 83-4AC1	0.300
		Bistable	Screw connection	3RB23 83-4AA1	0.300
			Spring-loaded terminals	3RB23 83-4AC1	0.300
3RB2. 83-4AA1					
3RB2. 83-4AC1					
Function expansion	on modules				
	_	Analog Basic 1 module ¹⁾ Analog output DC 4 20 mA, with overload warning		3RB29 85-2AA0	0.030
		Analog Basic 1 GF module ¹⁾²⁾ Analog output DC 4 20 mA, with internal ground fault detection and overload warning		3RB29 85-2AA1	0.030
		Analog Basic 2 GF module ¹⁾²⁾ Analog output DC 4 20 mA, with internal ground fault detection and ground fault signaling		3RB29 85-2AB1	0.030
		Basic 1 GF module ²⁾ with internal ground fault detection and overload warning		3RB29 85-2CA1	0.030
		Basic 2 GF module ²⁾ with internal ground fault detection and ground fault signaling		3RB29 85-2CB1	0.030

- 1) The analog signal 4 ... 20 mA DC can be used for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.
- 2) The following information on ground fault protection refers to sinusoidal residual currents at 50/60 Hz:
 - With a motor current of between 0.3 and 2 times the set current $I_{\rm e}$ the unit will trip at a ground fault current equal to 30% of the set current.
 - With a motor current of between 2 and 8 times the set current $I_{\rm e}$ the unit will trip at a ground fault current equal to 15% of the set current.
 - The trip delay amounts to between 0.5 and 1 second.

Note: Analog input modules, e. g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22/3RB23 relay.

For accessories, see page 3/35 For description, see pages 3/32-3/33 For technical data, see pages 3/36-3/44. For dimension drawings, see pages 3/45-3/46. For schematic diagrams, see page 3/47.

3RB22, 3RB23 for high-feature applications

2

2

Current measuring modules for direct mounting¹⁾ and stand-alone installation¹⁾²⁾

	Size Con-tactor ³⁾	Set current value of the inverse-time delayed over A	rload trip	Order No.	Weight per PU approx. kg
Size S00/S0 ²⁾⁴⁾					
3RB29 06-2.G1	S00/S0	0.3 3 2.4 25		3RB29 06-2BG1 3RB29 06-2DG1	0.100 0.150
Size S2/S3 ²⁾⁴⁾					
3RB29 06-2JG1	S2/S3	10 100		3RB29 06-2JG1	0.350
Size S6 ¹⁾⁴⁾					
3RB29 56-2TG2	S6	20 200	with pass through CT's with busbar	3RB29 56-2TG2 3RB29 56-2TH2	0.600 1.000
Size S10/S12 ¹⁾	0.17(0.17				
3RB29 66-2WH2	S10/S12 and size 14 (3TF68/ 3TF69)	63 630		3RB29 66-2WH2	1.750

- The current measuring modules with an Order No. ending with "2" are designed for direct mounting and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.
- The current measuring modules with an Order No. ending with "1" are designed for stand-alone installation.
- 3) Observe maximum rated operational current of the devices.
- 4) The modules with an Order No. with "G" in 11th position are equipped with a straight-through transformer.

	Size Contactor	Version	Order No.	Weight per PU approx.
				kg
Connecting cables	(essential a	ccessory)		
	S00 S12	For connection between evaluation module and current measuring module		
		• Length 0.1 m	3RB29 87-2B	0.010
		• Length 0.5 m	3RB29 87-2D	0.020
3RB29 87-2.				

For description, see pages 3/36-3/37 For technical data, see pages 3/39-3/42. For dimension drawings, see pages 3/45-3/46. For schematic diagrams, see page 3/47,

Overload Relays

3RB2 Solid-State Overload Relays

3RB22, 3RB23 for high-feature applications

Design

Device concept

The 3RB22/3RB23 solid-state overload relays are based on a modular device concept. Each device always comprises an evaluation module, which is independent of the motor current, and a current measuring module, which is dependent on the motor current. The two modules are electrically interconnected by a connection cable through the system interface.

The basic functionality of the evaluation module can be optionally expanded with corresponding function expansion modules. The function expansion modules are integrated in the evaluation module for this purpose through a simple plug connection.

Mounting options

Current measuring modules

The current measuring modules size S00/S0 and S2/S3 are designed for stand-alone installation. By contrast, the current measuring modules size S6 and S10/S12 are suitable for stand-alone installation or direct mounting.

Evaluation modules

The evaluation modules can be mounted either on the current measuring module (only sizes S00/S0 and S2/S3) or separately.

Connection technique

Main circuit (current measuring module)

For sizes S00/S0, S2/S3 and S6, the main circuit can also be connected by the straight-through transformer method. In this case, the cables of the main circuit are routed directly through the feed-through openings of the relay to the contactor terminals.

For sizes S6 and S10/S12, the main circuit can be connected with the help of the Busbar. In conjunction with the corresponding box terminals, screw terminals are also available.

Auxiliary circuit (evaluation module)

Connection of the auxiliary circuit (removable terminal block) is possible with either screw terminals or spring-loaded terminals.

Overload relays in contactor assemblies for Wye-Delta starting

When overload relays are used in combination with contactor assemblies for Wye-Delta starting it must be noted that only 0.58 times the motor current flows through the line contactor. An overload relay mounted onto the line contactor must be set to 0.58 times the motor current.

When 3RB22/3RB23 solid-state overload relays are used in combination with contactor assemblies for Wye-Delta starting, the function expansion modules for internal ground-fault detection must not be used.

Operation with frequency converter

The 3RB22/3RB23 solid-state overload relays are suitable for frequencies of 50/60 Hz and the associated harmonics. This permits the 3RB22/3RB23 overload relays to be used on the incoming side of the frequency converter.

If motor protection is required on the outgoing side of the frequency converter, the 3RN thermistor motor protection devices or the 3RU11 thermal overload relays are available for this purpose.

Function

Basic functions

The 3RB22/3RB23 solid-state overload relays are designed for:

- Inverse-time delayed protection of loads from overloading
- Inverse-time delayed protection of loads from phase unbalance
- Inverse-time delayed protection of loads from phase failure
- Temperature-dependent protection of loads by connecting a PTC sensor circuit
- Protection of loads from high-resistance short-circuits (internal ground-fault detection; detection of fault currents > 30 % of the set current I_e)
- Output of an overload warning
- Output of an analog signal 4 to 20 mA DC as image of the flowing motor current

The basic functions of the evaluation modules in conjunction with function expansion modules are listed in the following table:

		B 1 ()
Evaluation module	Function expan- sion module	Basic functions
3RB22 83-4AA1	None	Inverse-time delayed protection,
3RB22 83-4AC1		temperature-dependent protection, electrical remote RESET,
3RB23 83-4AA1		overload warning
3RB23 83-4AC1	3RB29 85-2CA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning
	3RB29 85-2CB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground fault signal
	3RB29 85-2AA0	Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning, analog output
	3RB29 85-2AA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning, analog output
	3RB29 85-2AB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground fault signal, analog output

Control circuit

The 3RB22/3RB23 solid-state overload relays require an external power supply (24–240 V AC/DC), i.e. an additional supply voltage is necessary.

Short-circuit protection

Fuses or motor starter protectors must be used for short-circuit protection. For assignments of the corresponding short-circuit protection devices to the 3RB22/3RB23 solid-state overload relays with/without contactor see Technical Specifications and Selection and Ordering Data.

Trip classes

The 3RB22/3RB23 solid-state overload relays are suitable for normal and heavy starting. The required trip class (CLASS 5, 10, 20 or 30) can be adjusted by means of a rotary knob depending on the current starting condition.

For details of the trip classes see Characteristic Curves.

3RB22, 3RB23 for high-feature applications

Phase failure protection

The 3RB22/3RB23 solid-state overload relays are fitted with phase failure protection (see Characteristic Curves) in order to minimize temperature rises of the load during single-phase operation.

Setting

The 3RB22/3RB23 solid-state overload relays are set to the motor rated current by means of two rotary knobs.

- The upper rotary knob (CLASS/I_{emax}) is divided into 4 ranges: 1 A, 10 A, 100 A and 1000 A. The zone must be selected which corresponds to the rated motor current and the current measuring module to be used with it. With the range selected the required trip class (CLASS 5, 10, 20 or 30) can be determined.
- The lower rotary knob with percent scale (10 % ... 100 %) is then used to set the rated motor current in percent of the range selected with the upper rotary button.

Example

- Rating of induction motor = 45 kW (50 Hz, 400 V AC)
- Rated motor current = 80 A
- Required trip class = CLASS 20
- Selected transformer: 10 to 100 A

Solution

- Step 1: Use the upper rotary knob (CLASS) to select the 100 A range
- Step 2: Within the 100 A range set the trip class CLASS 20
- Step 3: Set the lower rotary knob to 80 % (= 0.8) of 100 A × 0.8 = 80 A.

If the current which is set on the evaluation module does not correspond to the current range of the connected current transformer, an error will result.

Manual and automatic reset

In the case of the 3RB22/3RB23 solid-state overload relays, a slide switch can be used to choose between automatic and manual resetting.

If manual reset is set, a reset can be carried out directly on the device after a trip by pressing the blue TEST/RESET button. A remote RESET can be carried out electrically by jumpering the terminals Y1 and Y2.

If the slide switch is set to automatic RESET, the relay is reset automatically.

The time between tripping and resetting is determined by the recovery time.

Recovery time

With the 3RB22/3RB23 solid-state overload relays the recovery time after inverse-time delayed tripping is approx. 3 minutes regardless of the selected reset mode. The recovery time allows the load to cool down.

However, in the event of temperature-dependent tripping by means of a connected PTC thermistor sensor circuit, the device can only be manually or automatically reset once the winding temperature at the installation location of the PTC thermistor has fallen 5 Kelvin below its response temperature.

After a ground fault trip the 3RB22/3RB23 solid-state overload relay trips can be reset immediately without a recovery time.

TEST function

The combined TEST/RESET button can be used to check whether the relay is working correctly. The test can be aborted at any time by letting go of the TEST/RESET button.

LEDs, the device configuration (this depends on which expansion module is plugged in) and the device hardware are tested while the button is kept pressed for 6 seconds. Simultaneously and for another 18 seconds a direct current proportional in size to the maximum phase of the main current is fed in at the terminals I(+) and I(-). By comparing the analog signal, which is to be measured, with the main current, the accuracy of the current measurement can be determined. In this case 4 mA corresponds to 0 % and 20 mA to 125 % of the set current. After 24 seconds the auxiliary contacts are switched and the feeder switch off as the result, bringing the test to an end.

After a test trip a faultless relay is reset by pressing the TEST/RESET button. If a hardware fault is detected, the device trips and cannot be reset.

Self-monitoring

The 3RB22/3RB23 solid-state overload relays have a self-monitoring feature, i.e. the devices constantly monitor their own basic functions and trip if an internal fault is detected.

Display of the operating status

The particular operating status of the 3RB22/3RB23 solid-state overload relays is displayed by means of four LEDs:

- Green "Ready" LED: A continuous green light signals that the overload relay is ready for operation. The 3RB22/3RB23 overload relays are not ready (LED "OFF") if there is no control supply voltage or if the function test was negative.
- Red "Ground fault" LED: A continuous red light signals a ground fault.
- Red "Thermistor" LED: A continuous red light signals a temperature-dependent trip.
- Red "Overload" LED: A continuous red light signals an inversetime delayed trip; a flickering red light signals an imminent inverse-time delayed trip (overload warning).

Auxiliary contacts

The 3RB22/3RB23 solid-state overload relays have two outputs, each with one NO contact and one NC contact. Their basic assignment/function may be influenced by function expansion modules.

The 3RB22 and 3RB23 differ with respect to the tripping characteristics of their auxiliary contacts – monostable or bistable:

The monostable 3RB22 solid-state overload relays will enter the "tripped" state if the control supply voltage fails (> 200 ms), and return to the original state they were in before the control supply voltage failed when the voltage returns. These devices are therefore especially suited for plants in which the control voltage is not strictly monitored.

The bistable 3RB23 overload relays do not change their "tripped" or "not tripped" status if the control voltage fails. The auxiliary contacts only switch over in the event of an overload and if the supply voltage is present. These devices are therefore especially suited for plants in which the control voltage is monitored separately.

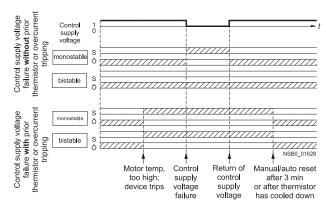
Response if the control supply voltage fails

If the control supply voltage fails for more than 0.2 s, the output relays respond differently depending on the version: Monostable or bistable.

3RB22, 3RB23 for high-feature applications

Response of the output relays in the event of	Monostable 3RB22	Bistable 3RB23
Failure of the control supply voltage	The device trips	No change of the switching status of the auxiliary contacts
Return of the control supply voltage without previous tripping	The device resets	No change of the switching status of the auxiliary contacts
Return of the control supply voltage after previous tripping	The device remains tripped Reset: For overload tripping, after 3 minutes For thermistor tripping, after the temperature has fallen 5 K below the response temperature For ground-fault tripping, immediately	The device remains tripped Reset: For overload tripping, after 3 minutes For thermistor tripping, after the temperature has fallen 5 K below the response temperature For ground-fault tripping, immediately

Monostable and bistable responses of the output relays



Contactor open

3RB22, 3RB23 for standard applications

Technical specifications

Technical specifications		
Type – Overload relay of complete system		3RB22, 3RB23
Size		S00 S10/S12
General data		
Trips in the event of		Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (with corresponding function expansion module) and activation of the thermistor motor protection (with closed PTC sensor circuit)
Trip class according to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
Phase failure sensitivity		Yes
Overload warning		Yes, from 1.125 x $I_{\rm e}$ for symmetrical loads and from 0.85 x $I_{\rm e}$ for unsymmetrical loads
Reset and recovery Reset options after tripping Recovery time		Manual, automatic and remote RESET
- For automatic RESET	min	 For tripping due to overcurrent: 3 (stored permanently) For tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature
- For manual RESET	min	 For tripping due to a ground fault: no automatic RESET For tripping due to overcurrent: 3 (stored permanently) For tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature
- For remote RESET	min	 For tripping due to a ground fault: immediately For tripping due to overcurrent: 3 (stored permanently) For tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature For tripping due to a ground fault: immediately
Features		
Display of operating status on device		Yes, with 4 LEDs: Green "Ready" LED, Red "Ground Fault" LED, Red "Thermistor" LED and Red "Overload" LED
TEST function		Yes, test of LEDs, electronics, auxiliary contacts and wiring of control current circuit by pressing the button TEST/RESET / Self-monitoring
RESET button STOP button		Yes, with the TEST/RESET button No
For safe operation of motors		
with type of protection "Increased Safety" EU type test certificate number according to guideline 94/9/EU (ATEX)		1)
Ambient temperatures		
Storage/transport	°C	-40 +80
Operation	°C	-25 +60
Temperature compensation	°C	+60
Permissible rated current		
- Temperature inside cubicle 60 °C	%	100
Repeat terminals		
Coil repeat terminal		Not required
Auxiliary contact repeat terminal		Not required
Degree of protection according to IEC 60529		IP20 ²⁾
Touch protection according to IEC 61140		Finger-safe ²⁾
Shock resistance with sine according to IEC 60068-2-27	<i>g</i> /ms	15/11
Electromagnetic compatibility (EMC) – Interference immunity		
 Conductor-related interference Burst according to IEC 61000-4-4 (corresponds to degree of severity 3) 	kV	2 (power ports), 1 (signal ports)
- Surge according to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)
Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)
 Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3) 	V/m	10
Electromagnetic compatibility (EMC) – Emitted interference		Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)
Resistance to extreme climates – air humidity	%	100
Dimensions		See dimensional drawings
Installation altitude above sea level	m	Up to 2000
Mounting position		Any
Type of mounting		Evaluation module: Stand-alone installation, current measuring module size S00 to S3: Stand-alone installation, current measuring module size S6 and S10/S12: Stand-alone installation and mounting onto contactors
		·

¹⁾ On request.

²⁾ Current measuring modules size S6 and S10/S12 with busbar connection in conjunction with cover.

3RB22, 3RB23 for standard applications

Type – Overload relay of current measuring module	•	3RB29 S00/S0	3RB29	3RB29 S6	3RB29
Size			S2/S3		S10/S12
Width		45 mm	55 mm	120 mm	145 mm
Main circuit					
Rated insulation voltage U _i (pollution degree 3)	V	690		1000	
Rated impulse withstand voltage U_{imp}	kV	6		8	
Rated operational voltage $U_{\rm e}$	V	690		1000	
Type of current					
Direct current		No			
Alternating current		Yes, 50/60 H	z ± 5 % (other	frequencies on request)	
Set current	Α	0.3 3; 2.4 25	10 100	20 200	63 630
Power loss per unit (max.)	W	0.5		_	
Short-circuit protection					
With fuse without contactor		See Selectio	n and Ordering	Data	
With fuse and contactor		See Technica	al Specification	s (short-circuit protection with fuses	for motor feeders)
Safe isolation between main and auxiliary	V	690 ¹⁾			
conducting path according to IEC 60947-1					
Connection for main circuit					
Electrical connection version		Straight-throutransformers		Screw terminal with box terminal / bus connection	Screw terminal with box terminal /
		transformore		/ straight-through transformer	bus connection
Screw terminal					
Terminal screw				4 mm Allen screw	5 mm Allen screw
Tightening torque Conductor cross sections (min /max)				10 12	20 22
 Conductor cross-sections (min./max.), 1 or 2 conductors 					
- Solid	mm ²				
- Finely stranded without end sleeve	mm^2			With 3RT19 55-4G box terminal:	2 × (50 185),
				$2 \times (1 \times \text{max. } 50, 1 \times \text{max. } 70),$	front clamping point only:
				1 × (10 70)	1 × (70 240)
				With 3RT19 56-4G box terminal: $2 \times (1 \times \text{max. } 95, 1 \times \text{max. } 120),$	rear clamping point only: 1 × (120 185)
				1 × (10 120)	. x (120 100)
- Finely stranded with end sleeve	mm ²			With 3RT19 55-4G box terminal:	2 × (50 185),
				2 × (1 × max. 50, 1 × max. 70), 1 × (10 70)	front clamping point only: 1 × (70 240)
				With 3RT19 56-4G box terminal:	rear clamping point only:
				$2 \times (1 \times \text{max. } 95, 1 \times \text{max. } 120),$	1 × (120 185)
	0			1 × (10 120)	
- Stranded	mm ²			With 3RT19 55-4G box terminal: $2 \times (\text{max. } 70)$,	2 × (70 240),
				1 × (16 70)	front clamping point only: 1 × (95 300)
				With 3RT19 56-4G box terminal:	rear clamping point only:
				2 × (max. 120),	1 × (120 240)
- AWG conductors, solid or stranded	AWG			1 x (16 120) With 3RT19 55-4G box terminal:	2 × (2/0 500 kcmil),
- Awa conductors, solid or stranded	AWG			2 × (max. 1/0),	front clamping point only:
				1 × (6 2/0)	1 × (3/0 600 kcmil)
				With 3RT19 56-4G box terminal:	rear clamping point only:
				2 × (max. 3/0), 1 × (6 250 kcmil)	1 × (250 kcmil 500 kcmil)
- Ribbon cable conductors	mm			With 3RT19 55-4G box terminal:	$2 \times (20 \times 24 \times 0.5),$
(number x width x circumference)				$2 \times (6 \times 15.5 \times 0.8),$	$1 \times (6 \times 9 \times 0.8 \dots)$
				$1 \times (3 \times 9 \times 0.8 \dots 6 \times 15.5 \times 0.8)$	$20 \times 24 \times 0.5$)
				With 3RT19 56-4G box terminal: $2 \times (10 \times 15.5 \times 0.8)$,	
				$1 \times (3 \times 9 \times 0.8)$	
				10 × 15.5 × 0.8)	
Busbar connections					
Terminal screw				M8 × 25	M10 × 30
Tightening torque Conductor cross section (min /max)	Nm			10 14	14 24
 Conductor cross-section (min./max.) Solid with cable lug 	mm ²			16 95 ²⁾	50 240 ³⁾
- Stranded with cable lug	mm^2			25 120 ²⁾	70 240 ³⁾
- AWG connections, solid or stranded, with cable lug				4 250 kcmil	2/0 500 kcmil
- With connecting bar (max. width)	mm			15	25
Straight-through transformers	pa	7.5	14	05	
Diameter of openingConductor cross-section (max.)	mm	7.5	14	25	
NYY	mm ²	4)	4)	120	
- H07RN-F	mm^2	4)	4)	70	

¹⁾ For grounded networks, otherwise 600 V.

When connecting cable lugs according to DIN 46235, use the 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 mm² to ensure phase spacing.

³⁾ When connecting cable lugs according to DIN 46234 for conductor cross-sections from 240 mm² as well as DIN 46235 for conductor cross-sections from 185 mm², use the 3RT19 56-4EA1 terminal cover to ensure phase spacing.

⁴⁾ On request.

Overload Relays 3RB2 Solid-State Overload Relays 3RB22, 3RB23 for

standard applications

Type – Overload relay of evaluation module		3RB22, 3RB23
Size		S00 S10/S12
Width		45 mm
Auxiliary circuit		
Number of NO contacts		2
Number of NC contacts		2
Auxiliary contacts – assignment		1 NO for the signal "tripped due to overload and/or thermistor", 1 NC for switching off the contactor 1 NO for the signal "tripped due to ground fault", 1 NC for switching off the contactor or 1) 1 NO for the signal "tripped due to overload and/or thermistor and/or ground fault", 1 NC for switching off the contactor 1 NO for overload warning, 1 NC for switching off the contactor
Rated insulation voltage <i>U</i> _i (degree of pollution 3)	V	300
Rated impulse withstand voltage U _{imp}	kV	4
Auxiliary contacts – Contact rating		
• NC contact with alternating current AC-14/AC-15 Rated operational current $I_{\rm e}$ at $U_{\rm e}$:	Δ.	
- 24 V - 120 V	A A	6
- 120 V - 125 V	A	6
- 250 V	A	3
- 400 V	Α	1.5
- 600 V	Α	2)
 690 V NO contact with alternating current AC-14/AC-15: 	Α	2)
Rated operational current $I_{\rm e}$ at $U_{\rm e}$:		
- 24 V	A	6
- 120 V - 125 V	A A	6
- 250 V	A	3
- 400 V	Α	1.5
- 600 V	Α	2)
- 690 V	Α	2)
• NC, NO contact with direct current DC-13: Rated operational current $I_{\rm e}$ at $U_{\rm e}$:	٨	
- 24 V - 60 V	A A	2 0.55
- 110 V	A	0.25
- 125 V	Α	0.3
- 250 V	Α	0.2
$ullet$ Continuous thermal current $I_{ m th}$	Α	6 ¹⁾
Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes
Short-circuit protection		
With fuse		
- gL/gG operational class - Quick	A A	6 2)
With miniature circuit-breaker (C-characteristic)	Α	1.6
Safe isolation between main and auxiliary conducting path according to IEC 60947-1	V	300
CSA, UL, and UR rated data		
Auxiliary circuit – switching capacity		B300, R300
Connection of the auxiliary circuit		
Connection type		Screw terminal or spring-loaded terminals
Screw terminal		
Terminal screw		Pozidriv size 2
Tightening torque	Nm	0.8 1.2
	1 4111	
 Conductor cross-section (min./max.), 1 or 2 conductors Solid 	mm^2	1 × (0.5 4), 2 × (0.5 2.5)
- Finely stranded without end sleeve	mm ²	(J. C. 1. 1); E. N. (J. C. 1. E. C.)
- Finely stranded with end sleeve	mm ²	1 × (0.5 2.5), 2 × (0.5 1.5)
- Stranded	mm ²	
- AWG conductors, solid or stranded	AWG	2 × (20 14)
The assignment of auxiliary contacts may be influenced by fuexpansion modules. On request.	ınction	

2) On request.

Overload Relays 3RB2 Solid-State Overload Relays 3RB22, 3RB23 for

standard applications

Time Overland value of avaluation and dist		20000 20000
Type – Overload relay of evaluation module		3RB22, 3RB23
Size		S00 S10/S12
Width		45 mm
Connection of the auxiliary circuit		
Spring-loaded terminals		
 Conductor cross-section (min./max.), 1 or 2 conductors Solid 	mm ²	2 × (0.25 1.5)
- Finely stranded without end sleeve	mm ²	2 × (0.25 1.5)
- Finely stranded with end sleeve	mm ²	2 × (0.25 1.5)
- Stranded	mm ²	2 × (0.25 1.5)
- AWG conductors, solid or stranded	AWG	2 × (24 16)
Control and sensor circuit as well as analog output		
Rated insulation voltage <i>U</i> _i (degree of pollution 3) ¹⁾	V	300
Rated impulse withstand voltage U_{imp}^{-1}	kV	4
Rated control supply voltage $U_s^{1)}$		
• AC 50/60 Hz	V	24 240
• DC	V	24 240
Operating range ¹⁾		0.05
• AC 50/60 Hz		$0.85 \times U_{\text{S min}} \le U_{\text{S}} \le 1.1 \times U_{\text{S max}}$
• DC		$0.85 \times U_{\text{S min}} \le U_{\text{S}} \le 1.1 \times U_{\text{S max}}$
Rated output power ¹⁾	14/	0.5
• AC 50/60 Hz	W	0.5
• DC	W	0.5
Mains buffering time ¹⁾	ms	200
Thermistor motor protection (PTC thermistor detector) ²⁾ • Summation cold resistance	l ₁ O	245
	kΩ	≤ 1.5 3.4 3.8
Operating value	kΩ kΩ	
Return value Pennance time following ground foult detection	K22	1.5 1.65
Response time following ground fault detection • Internal ³⁾	me	500 1000
Analog output ³⁾	ms	300 1000
Output signal	mA	4 20
Measuring range	шА	0 to $1.25 \times I_{\rm p}$
Weasuring range		4 mA corresponds to 0 \times $I_{\rm e}$
		16.8 mA corresponds to 1.0 × $I_{\rm e}$
Connection for the control and concer eigenit		20 mA corresponds to 1.25 \times $I_{\rm e}$
Connection for the control and sensor circuit as well as the analog output		
Connection type		Screw terminal or spring-loaded terminals
Screw terminal		
Terminal screw		Pozidriv size 2
Tightening torque	Nm	0.8 1.2
Conductor cross-section (min./max.), 1 or 2 conductors		
- Solid	mm ²	1 × (0.5 4), 2 × (0.5 2.5)
- Finely stranded without end sleeve	mm ²	
 Finely stranded with end sleeve Stranded 	mm ² mm ²	1 × (0.5 2.5), 2 × (0.5 1.5)
AWG conductors, solid or stranded	AWG	2 × (20 14)
Spring-loaded terminals		
Conductor cross-section (min./max.), 1 or 2 conductors		
- Solid	mm ²	2 × (0.25 1.5)
- Finely stranded without end sleeve	mm ²	
 Finely stranded with end sleeve Stranded 	mm ² mm ²	2 × (0.25 1.5) 2 × (0.25 1.5)
AWG conductors, solid or stranded	AWG	2 × (0.23 1.3) 2 × (24 16)
1) Control circuit.		

¹⁾ Control circuit.

²⁾ Sensor circuit.

³⁾ In conjunction with corresponding function expansion module.

3RB22, 3RB23 for standard applications

Short-circuit protection with fuses for motor feeders

For short-circuit currents up to 50 kA at 400 to 690 V

Overload relays	Contactor	CLASS 5 and 10	CLASS 5 and 10 20 30					30 Fuse links ¹⁾ LV HRC Type 3NA DIAZED Type 5SB				
Setting range	Туре	Rated of	perational 500 V	current $I_{ m e}$	AC-3 in A 400 V	at 500 V	690 V	400 V	500 V	690 V	NEOZED	Type 5SE ational class
Size S00/S0												
0.3 3 A	3RT20 15 3RT20 16	3	3	3	3	3	3	3	3	3	35 35	20 20
2.4 25 A	3RT20 15 3RT20 16 3RT20 17 3RT20 23 3RT20 24	7 9 12 9 12	5 6.5 9 6.5 12	4 5.2 6.3 5.2 9	7 9 10 9 12	5 6.5 9 6.5 12	4 5.2 6.3 5.2 9	7 9 9 12	5 6.5 9 12	4 5.2 6.3 9	35 35 35 63	20 20 20 25 25
	3RT20 25 3RT20 26 3RT10 34 3RT10 35	17 25 25 25	17 18 25 25	13 13 20 24	16 16 22.3 25	16 16 22.3 25	13 13 20 24	14 14 19.1 25	14 14 19.1 25	13 13 19.1 24	63 100 125 125	25 35 63 63
Size S2/S3												
10 100 A	3RT10 34 3RT10 35 3RT10 36 3RT10 44 3RT10 45 3RT10 46 3RT10 54 3RT10 55	32 40 50 65 80 95 100	32 40 50 65 80 95 100	20 24 24 47 58 58 100	22.3 29.4 32.7 49 53 59 81.7	22.3 29.4 32.7 49 53 59 81.7	20 24 24 47 53 58 81.7	19.1 26.5 26.5 41.7 45 50 69 90	19.1 26.5 26.5 41.7 45 50 69 90	19.1 24 24 41.7 45 50 69 90	125 125 160 200 200 200 355 355	63 63 80 125 160 160 315 315
Size S6												
20 200 A	3RT10 54 3RT10 55 3RT10 56	115 150 185	115 150 185	115 150 170	81.7 107 131	81.7 107 131	81.7 107 131	69 90 111	69 90 111	69 90 111	355 355 355	315 315 315
Size S10/S12 160 630 A	3RT10 64 3RT10 65 3RT10 66 3RT10 75 3RT10 76 3RT12 64 3RT12 66 3RT12 75 3RT12 75 3RT12 76 3TF68 ³⁾ 3TF69 ³⁾	225 265 300 400 500 225 265 300 400 500 630 630	225 265 300 400 500 225 265 300 400 500 630 630	225 265 280 400 450 225 265 300 400 500 630 630	160 188 213 284 355 225 265 300 400 500 440 572	160 188 213 284 355 225 265 300 400 500 440 572	160 188 213 284 355 225 265 300 400 500 440 572	135 159 180 240 300 173 204 231 316 385 376 500	135 159 180 240 300 173 204 231 316 385 376 500	135 159 180 240 300 173 204 231 316 385 376 500	500 500 500 630 630 500 500 500 800 800	400 400 400 500 500 500 500 500 800 800 500 ⁴⁾ 630 ⁴⁾

¹⁾ Please observe operational voltage.

Type of coordination 1: the contactor or starter must not endanger persons or the installation in the event of a short-circuit. They do not need to be suitable for further operation

without repair and the renewal of parts.

Type of coordination 2: the contactor or starter must not endanger

persons or the installation in the event of a short-circuit. They must be suitable for further operation.

There is a risk of contact welding.

3) Contactor cannot be mounted.

²⁾ Coordination and short-circuit equipment according to EN 60947-4-1:

⁴⁾ Please ensure that the maximum AC-3 operational current has sufficient safety clearance from the rated current of the fuses.

Overload Relays

3RB2 Solid-State Overload Relays

3RB22, 3RB23 for standard applications

Characteristic curves

The tripping characteristics show the relationship between the tripping time and tripping current as multiples of the set current $I_{\rm e}$ and are given for symmetrical three-pole and two-pole loads from the cold state.

The smallest current used for tripping is called the minimum tripping current. According to IEC 60947-4-1, this current must be within specified limits. The limits of the minimum tripping current for the 3RB22/3RB23 solid-state overload relays for symmetrical three-pole loads are between 105 % and 120 % of the set current.

The tripping characteristic starts with the minimum tripping current and continues with higher tripping currents based on the characteristics of the so-called trip classes (CLASS 10, CLASS 20 etc.). The trip classes describe time intervals within which the overload relays have to trip with 7.2 times the set current $I_{\rm e}$ from the cold state for symmetrical three-pole loads.

The tripping times according to IEC 60947-4-1, tolerance band E, are as follows for:

Trip class	Tripping time
CLASS 5	3 5 s
CLASS 10	5 10 s
CLASS 20	10 20 s
CLASS 30	20 30 s

The tripping characteristic for a three-pole overload relay from the cold state (see illustration 1) only apply if all three phases are simultaneously loaded with the same current. In the event of a phase failure or a current unbalance of more than 40 %, the 3RB22/3RB23 solid-state overload relays switch off the contactor more quickly in order to minimize heating of the load in accordance with the tripping characteristic for two-pole loads from the cold state (see illustration 2).

Compared with a cold load, a load at operating temperature obviously has a lower temperature reserve. The tripping time of the 3RB22/3RB23 solid-state overload relays are reduced therefore to about 30 % when loaded with the set current $I_{\rm e}$ for an extended period.

Tripping characteristics for 3-pole loads

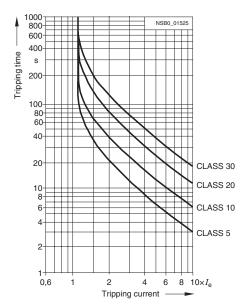


Illustration 1
Tripping characteristics for 2-pole loads

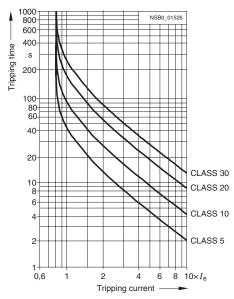
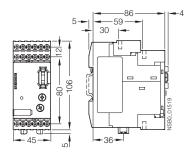


Illustration 2

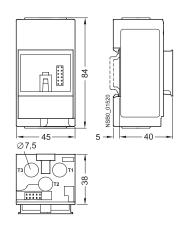
The above illustrations are schematic representations of characteristic curves. The characteristic curves of the individual 3RB22/3RB23 solid-state overload relays can be requested from Technical Assistance at the following e-mail address:

Technical-assistance@siemens.com

Dimensional drawings



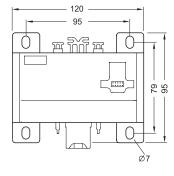
3RB22 83-4, 3RB23 83-4 evaluation module

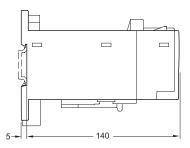


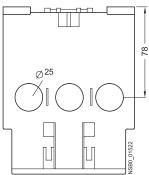
55 67 Ø14

3RB29 06-2BG1, 3RB29 06-2DG1 current measuring module

3RB29 06-2JG1 current measuring module



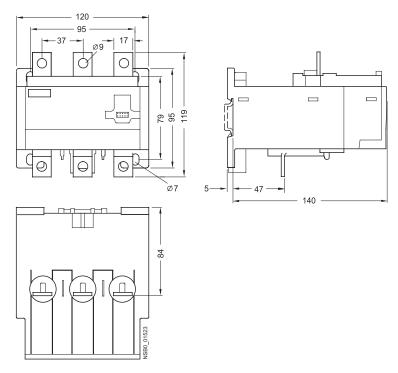




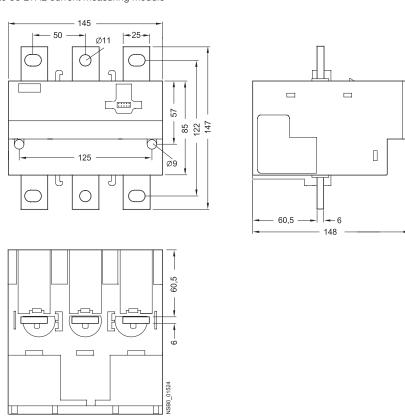
3RB29 56-2TG2 current measuring module

Overload Relays 3RB2 Solid-State Overload Relays 3RB22, 3RB23 for

standard applications



3RB29 56-2TH2 current measuring module



3RB29 66-2WH2 current measuring module

3RB22, 3RB23 for standard applications

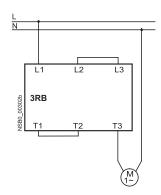
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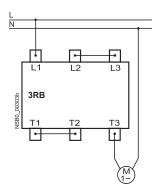
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Schematics

Protection of single-phase motors

(not in conjunction with internal ground-fault detection)

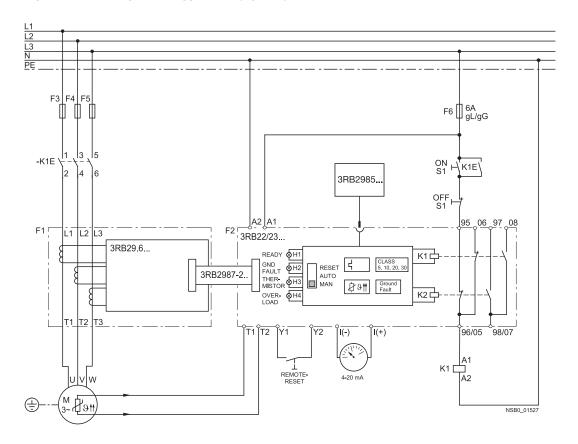




3RB29 06-2.G1, 3RB29 56-2TG2

3RB29 56-2TH2, 3RB29 66-2WH2

Schematic representation of a possible application (3-phase)



Overload Relays 3RB2 Solid-State Overload Relays 3RB22, 3RB23 for

standard applications

Connections

Evaluation module	Function expan-	Basic functions	In	Inputs				
	sion module		Α	1/A2	T1/T2	Y1/Y2		
3RB22 83-4AA1 3RB22 83-4AC1 3RB23 83-4AA1	None	Inverse-time delayed temperature-depend electrical remote RE overload warning	dent protection, 24	ower supply 4 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET		
8RB23 83-4AC1	3RB29 85-2CA1	Inverse-time delayer temperature-depend internal ground-fault electrical remote RE overload warning	dent protection, 24 detection,	ower supply 4 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET		
	3RB29 85-2CB1	Inverse-time delayer temperature-depend internal ground-fault electrical remote RE ground fault signal	dent protection, 24 detection,	ower supply 4 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET		
	3RB29 85-2AA0	Inverse-time delayed temperature-depend electrical remote RE overload warning, a	dent protection, 24	ower supply 4 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET		
	3RB29 85-2AA1	Inverse-time delayed temperature-depend internal ground-fault electrical remote RE overload warning, a	dent protection, 24 detection, SET,	ower supply 4 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET		
	3RB29 85-2AB1	Inverse-time delayer temperature-depend internal ground-fault electrical remote RE ground fault signal,	dent protection, 24 detection, SET,	ower supply 4 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET		
Evaluation module	Function expan- sion module	Outputs	05/00 NO	97/98 NO	OF/OC NO	07/08 NO		
BRB22 83-4AA1 BRB22 83-4AC1 BRB23 83-4AA1 BRB23 83-4AC1	None	I(-)/I(+) No	95/96 NC Switching off the contactor (inverse-time delayed/tempe ature-dependent protection)	Signal "tripped"	05/06 NC Overload warning	Overload warning		
	3RB29 85-2CA1	No	Switching off the contactor (inverse-time delayed/tempe ature-dependent protection + ground fault)		Overload warning	Overload warning		
	3RB29 85-2CB1	No	Switching off the contactor (inverse-time delayed/tempe ature-dependent protection)		Switching off the contactor (ground fault)	Signal "ground fault trip"		
	3RB29 85-2AA0	Analog signal	Switching off the contactor (inverse-time delayed/tempe ature-dependent protection)		Overload warning	Overload warning		
	3RB29 85-2AA1	Analog signal	Switching off the contactor (inverse-time delayed/tempe ature-dependent protection + ground fault)		Overload warning	Overload warning		
	3RB29 85-2AB1	Analog signal	Switching off the contactor (inverse-time delayed/tempe ature-dependent protection)		Switching off the contactor (ground fault)	Signal "ground fault trip"		

Accessories

2

Overview

Overload relays for standard applications

The following accessories are available for the 3RB2/3RB3 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as single units without a terminal bracket)
- One mechanical RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Box terminal blocks for sizes S6 and S10/S12
- Terminal covers for sizes S2 to S10/S12

Overload relays for high-feature applications

The following accessories are available for the 3RB22/3RB23 solid-state overload relays:

- A sealable cover for the evaluation module
- Box terminal blocks for the current measuring modules size S6 and S10/S12
- Terminal covers for the current measuring modules size S6 and S10/S12
- Push-in lugs for screw mounting the size S00 to S3 current measuring modules

Selection and ordering data

	Version		Size	Order No.	Weight per PU approx.
					kg
Terminal brackets for	r stand-alone installation ^{1) 2)}				
***	For separate mounting of the overload relay panel mount or snapped onto 35 mm standard mounting rail, size S3 also for 75 mm standard mounting rail	Screw terminals	\$00 \$0 \$2 \$3	3RU29 16-3AA01 3RU29 26-3AA01 3RU29 36-3AA01 3RU19 46-3AA01	0.04 0.05 0.18 0.28
Record .		Spring Loaded terminals	S00 S0	3RU29 16-3AC01 3RU29 26-3AC01	0.04 0.06
3RU29.6-3AA01	2)				
Mechanical RESET 1)	- /				
	Resetting plungers, holders and formers		S00 to S2	3RB39 80-0A	0.030
and the			S3 to S12	3RU19 00-1A	0.038
	Pushbuttons with extended stroke (12 mm), IP65, Ø 22 mm		S3 to S12	3SB30 00-0EA11	0.021
	Extension plungers For compensation of the distance between a pus and the unlatching button of the relay	shbutton	S3 to S12	3SX1 335	0.004
3RU19 00-1A with pushbutton and extension plunger	Complete mechanical reset assembly		S3 to S12	3SBES-RESET	
Cable releases with h	nolder for RESET 1) 2)				
	For holes with Ø 6.5 mm in the mounting plate; max. control panel thickness 8 mm				
	• Length 400 mm		S00 to S2	3RB39 80-0B	0.060
1997	• Length 600 mm		S00 to S2	3RB39 80-0C	0.073
346	• Length 400 mm		S3 to S12	3RU19 00-1B	0.063
	• Length 600 mm		S3 to S12	3RU19 00-1C	0.073
3RU19 00-1.					

- 1) Accessories with a prefix of 3RB39 are intended for 3RB20/3RB30 overload relays only.
- Only for 3RB20/3RB21. The accessories are identical to those of the 3RU1/3RU2 thermal overload relays.

Revised04/20/15

Accessories

	Version	Size	Order No.	List Price \$	Pack Units	Weight per PU approx. kg
Sealable covers						
	For covering the setting knobs					
-(-	• For 3RB30/3RB31	S00 to S2	3RB39 84-0		10 units	0.003
	• For 3RB20/3RB21	S3 to S12	3RB29 84-0		10 units	0.020
0PP0004.0	 For 3RB22 to 3RB24 	_	3RB29 84-2		10 units	0.050
3RB3984-0 Terminal covers						
Terminar covers	Covers for cable lugs and rail connection					
994	• Length 100 mm	S6	3RT19 56-4EA1			0.067
	• Length 120 mm	S10/S12	3RT19 66-4EA1			0.124
3RT19 46-4EA1	Covers for box terminals • Length 20.6 mm ¹⁾	S2	3RT29 36-4EA2			0.016
3H119 40-4EA1	• Length 20.8 mm ⁻¹)	S2 S3	3RT19 46-4EA2			0.016
1 11-11-123	• Length 25 mm	S6	3RT19 46-4EA2			0.023
TO TO THE STATE OF	Length 20 mm	S10/S12	3RT19 66-4EA2			0.028
acata //		,-				
3RT19 36-4EA2	Covers for screw connections between contactor and overload relay,	S6	3RT19 56-4EA3			0.021
The figures show	without box terminals	S10/S12	3RT19 66-4EA3			0.062
mounting on the contactor	or (1 unit required per combination)					
Box terminal blocks						
	For round and ribbon cables					
	up to 70 mm ² 2/0 AWG	S6 ²⁾	3RT19 55-4G			0.237
	up to 120mm ² 4/0 AWG	S6	3RT19 56-4G			0.270
	up to 240mm ² 500 mcm	S10/S12	3RT19 66-4G			0.676
	For conductor cross-sections, see LV 1 T "Technical Specifications"					
	see EV 11 Teermieal opeemeations					
ELGIO)						
3RT19 54G						
Push-in lugs						
	For screw fixing of 3RB22/3RB23		3RP19 03		10 units	0.002
	overload relays					
3RP19 03						
0	For screw mounting of 3RB29 06 current measuring modules	S00 S3	3RB19 00-0B		10 units	0.100
	(2 units are required per module)					
3DD 10 00 0D						
3RB19 00-0B						

For more accessories (tools for spring-loaded terminals and labeling plates), see page 3/57.

Only for 3RB20/3RB21. The accessories are identical to those of the 3RU11 thermal overload relays.

²⁾ In the scope of supply for 3RT10 54-1 contactors (55 kW).

Accessories

Overview

Overload relays for standard applications

The following accessories are available for the 3RB20/3RB21 solid-state overload relays:

- One terminal bracket each for the overload relays size S00 and S0 (sizes S2 to S12 can be installed as stand-alone installation without a terminal bracket)
- One mechanical remote RESET module for all sizes
- One cable release for resetting devices which are difficult to access (for all sizes)
- One sealable cover for all sizes
- Box terminal blocks for sizes S6 and S10/S12
- Terminal covers for sizes S2 to S10/S12

Overload relays for High-Feature applications

The following accessories are available for the 3RB22/3RB23 solid-state overload relays:

- A sealable cover for the evaluation module
- Box terminal blocks for the current measuring modules size \$6 and \$10/\$12
- Terminal covers for the current measuring modules size S6 and S10/S12

Technical specifications

Terminal brackets for stand-alone installation

Туре		3RB29 13-0AA1	3RB29 23-0AA1			
For overload relay		3RB20 16, 3RB21 13	3RB20 26, 3RB21 23			
Size		S00	S0			
Type of mounting		For screw and snap-on mounting onto TH35	standard mounting rail			
Connection for main circuit						
Connection type		Screw terminal				
Screw terminal						
Terminal screw		Pozidriv size 2				
Tightening torque	Nm	0.8 1.2	2 2.5			
• Conductor cross-section (min./max.), 1 or 2 conductors						
- Solid	mm ²	1 × (0.5 2.5), Max. 1 × (4)	1 × (1 6), Max. 1 × (10)			
- Finely stranded without end sleeve	mm ²					
- Finely stranded with end sleeve mm ²		1 × (0.5 2.5)	1 × (1 6)			
- Stranded	mm ²	1 × (0.5 2.5), Max. 1 × (4)	1 × (1 6), Max. 1 × (10)			
- AWG conductors, solid or stranded	AWG	1 × (18 14)	1 × (14 10)			

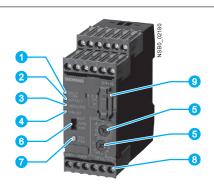
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Overload Relays

3RB24 Solid-State Overload Relays

3RB24 for IO-Link, up to 630 A for High-Feature applications

Overview



- Green LED "DEVICE/IO-Link: A continuous green light signals that the device is working correctly, a green flickering light signals the communication through IO-Link.
- Red LED "GND FAULT": A continuous red light signals an active ground-fault trip.
- Red LED "THERMISTOR": A continuous red light signals an active thermistor trip.
- 4 Red LED "OVERLOAD": A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).
- Motor current and trip class setting: Setting the device to the motor current and to the required trip class dependent on the start-up conditions is easy with the two rotary switches.
- Selector switch for manual/automatic RESET:
 With this switch you can choose between manual and automatic RESET
- Test/RESET button: Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.
- Connecting terminals (removable terminal block):
 The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw connection and alternatively with spring-type connection.
- 9 Plug-in point for operator panel: enables connection of the 3RA69 35-0A operator panel.

SIRIUS 3RB24 evaluation module

The modular electronic overload relay 3RB24, which is powered via IO-Link (with monostable auxiliary contacts) up to 630 A (up to 820 A possible with a series transformer) have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",) against excessive temperature rises due to overload, phase unbalance or phase failure. It comprises an evaluation unit, a current measuring module and a connecting cable. The evaluation module 3RB24 also offers an motor starter function: The contactors, which are connected via the auxiliary contacts, can also be actuated for operation via IO-Link. In this way, direct, reversing and star-delta starters up to 630 A (or 830 A) can be connected to the controller wirelessly via the IO-Link controller.

An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current.

This current rise is detected by means of the current measuring module (see page 7/134) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The

break time depends on the ratio between the tripping current and current setting $I_{\rm e}$ and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support \rightarrow "Characteristic Curves"). The "tripped" status is signaled by means of a continuously illuminated red "OVERLOAD" LED and also reported as a group fault via IO-Link.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. This warning can also be reported to the higher-level PLC via IO-Link at the 3RB24 overload relay.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB24 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by connection with broken-wire interlock of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices switch off the contactor, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuously illuminated "THERMISTOR" LED and also reported as a group fault via IO-Link.

To the loads against incomplete ground faults due to damage to the insulation, humidity, condensation, etc., to protect the electronic overload relay 3RB24 offer the possibility of internal ground-fault detection (for details see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", not possible in conjunction with contactor assembly for wye-delta starting). In the event of a ground fault, the 3RB24 relays trip instantaneously.

The "tripped" status is signaled by means of a flashing red LED "Ground Fault" and reported at the overload relay 3RB24 as a group fault via IO-Link.

The reset after overload, phase unbalance, phase failure, thermistor or ground-fault tripping is performed manually by key on site, via IO-Link or by electrical remote RESET or automatically after the cooling time (motor model) or for thermistor protection after sufficient cooling. Power cuts in devices due to function monitoring (broken wire or short circuit on the thermistor) can only be reset on-site ("Function" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",). In conjunction with a function expansion module, the motor current measured by the microprocessor can be output in the form of an analog signal DC 4 to 20 mA for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

The current values can be transmitted to the higher-level controller via IO-Link.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials

They comply with all important worldwide standards and approvals.

Type of protection "increased safety EEx e and explosionproof enclosure EEx d" in accordance with ATEX Directive 94/9/EC

The electronic overload relay 3RB24 (monostable) are suitable for the overload protection of explosion-proof motors of types of protection EEx e and EEx d.

They comply with the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d"); see www.siemens.com/sirius/atex.

EC type test certificate for Group II, Category (2) $\mbox{G/D}$ has been submitted. On request.

3RB24 for IO-Link, up to 630 A for High-Feature applications

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	
						-					
Solid-state overload relays	3 R B										
SIRIUS 2nd generation		2									
Device series											
Size, rated operational current and power											
Version of the automatic RESET, electrical remote RESET											
Trip class (CLASS)											
Setting range of the overload release											
Connection methods											
Installation type											
Example	3 R B	2	4	8	3	-	4	Α	Α	1	

Note:

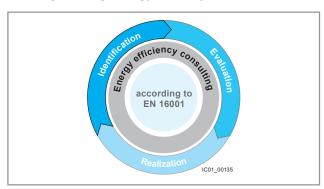
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

The most important features and benefits of the 3RB24 solid-state overload relays for IO-Link are listed in the overview table (see "General Data", page 3/2 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB24 solid-state overload relays for IO-Link contribute to energy efficiency throughout the plant as follows:

- Transmission of current values
- Reduced inherent power loss
- Less heating of the control cabinet
- · Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB24 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB24 solid-state overload relays have been designed for the protection of three-phase asynchronous and single-phase AC motors.

In addition to protection function, these devices can be used together with contactors as direct or reversing starters (star-delta (wye-delta) start also possible), which are controlled via IO-Link. This makes it possible to directly control drives via IO-Link from a higher-level controller or on site via the optional hand-held device lamps and also, for example, to return current values directly via IO-Link.

If single-phase AC motors are to be protected by the 3RB24 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Schematics" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link",).

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from -25 C to +60 °C, the 3RB24 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below –25 $^{\circ}\text{C}$ or above +60 $^{\circ}\text{C}$ on request.

Overload Relays

3RB24 Solid-State Overload Relays

3RB24 for IO-Link, up to 630 A for High-Feature applications

Selection and ordering data

3RB24 solid-state overload relays (evaluation module) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable

Туре	3RB24 83-4A.1
Features and technical specifications	
Overload protection, phase failure protection and unbalance protection	✓
Supplied from an external voltage	✓ 24 V DC through IO-Link
Direct-on-line or reversing starters (wye-delta starting also possible) controllable through IO-Link	✓
Auxiliary contacts	1 CO and 1 NO in series
Manual and automatic RESET	✓
Remote-RESET	√ (electrically or via IO-Link)
4 LEDs for operating and status displays	✓
TEST function and self-monitoring	✓
Internal ground-fault detection	✓
Screw or spring-type terminals for auxiliary, control and sensor circuits	✓
Input for PTC sensor circuit	✓
Analog output	✓
IO-Link-specific functions	
Connection of direct-on-line, reversing and star-delta starters to the controller via IO-Link	✓
On-site controlling of the starter using the hand-held device	✓
 Accessing process data (e.g. current values in all three phases) via IO-Link 	✓
 Accessing parameterization and diagnostics data (e.g. tripped signals) via IO-Link 	✓

✓ Available

 $\begin{array}{ll} PU \text{ (UNIT, SET, M)} = 1 \\ PS^* & = 1 \text{ unit} \\ PG & = 41G \end{array}$





3RB24 83-4AA1

3RB24 83-4AC1

Size of contactor	Version	Screw terminals	+	Spring-type terminals	$\stackrel{\otimes}{\square}$
		Order No.	Price per PU	Order No.	Price per PU
Evaluation module	es				
S00 S12	Monostable	3RB24 83-4AA1		3RB24 83-4AC1	

Notes:

 Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 relay. Current measuring modules and related connecting cables see page 3/55, accessories see pages 3/56 and 3/57.

Current measuring modules for

3RB22, 3RB23, 3RB24

3RB24 Solid-State Overload Relays

Selection and ordering data

Current measuring modules for mounting onto contactor¹⁾ and stand-alone installation¹⁾²⁾ (essential accessories)

	Size contactor ³⁾	Rating for induction motor, ⁴⁾	Current set- ting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG ⁵)	For over- load relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	Pack Units	PG
0)0)		kW	Α	А							
Sizes S00/S0 ²⁾⁶⁾											
	S00/S0	0.09 1.1 1.1 11	0.3 3 2.4 25	20 63	3RB22 to 3RB24	>	3RB29 06-2BG1 3RB29 06-2DG1		1	1 unit 1 unit	41G 41G
3RB29 06-2.G1 Sizes S2/S3 ²⁾⁶⁾											
	S2/S3	5.5 45	10 100	315	3RB22 to 3RB24	>	3RB29 06-2JG1		1	1 unit	41G
3RB29 06-2JG1 Size S6 ¹⁾⁶⁾											
- T	S6 with busbar connection	11 90	20 200	315	3RB22 to 3RB24		3RB29 56-2TH2		1	1 unit	41G
3RB29 56-2TG2	For mounting to S6 contactors with box terminals				3RB22 to 3RB24	•	3RB29 56-2TG2		1	1 unit	41G
Sizes S10/S12 ¹⁾	040/040	07 450	00 000	000	ODDOO!	Ţ	ODDOO OS OWIES			at consta	440
3RB29 66-2WH2	\$10/\$12 and size 14 (3TF68/ 3TF69)	37 450	63 630	800	3RB22 to 3RB24		3RB29 66-2WH2		1	1 unit	41G

Note:

The connecting cable between the current measuring module and the evaluation module is not included in the scope of supply; please order separately.

- 1) The current measuring modules with an Order No. ending with "2" are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.
- 2) The current measuring modules with an Order No. ending with "1" are designed for stand-alone installation.
- 3) Observe maximum rated operational current of the devices.
- $^{\rm 4)}$ Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.
- 5) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" se
 - "Configuration Manual for Configuring SIRIUS Selection Data for Load Feeders in Fuseless and Fused Designs"
 - "Configuration Manual for Configuring SIRIUS Innovations Selection Data for Load Feeders in Fuseless and Fused Designs".
- $^{\rm 6)}$ The modules with an Order No. with " $\mbox{\it G}$ " in penultimate position are equipped with a straight-through transformer.

Accessories

	Size of contactor	Version	For over- load relays	DT	Order No. Pri per F	PU	PU (UNIT, SET, M)	Pack Units	PG
Connecting cabl	es (necess	ary accessories)							
		For connection between evaluation module and current measuring module							
	S00 S3	Length 0.1 m (only for mounting of the evaluation mod- ule directly onto the current measuring module)	3RB24, 3RB29	•	3RB29 87-2B		1	1 unit	41F
3RB29 87-2.	S00 S12	• Length 0.5 m	3RB24, 3RB29	•	3RB29 87-2D		1	1 unit	41F

Additional general accessories see page 3/57.

Accessories for 3RB22, 3RB23, 3RB24

Overview

Overload relays for High-Feature applications

The following optional accessories are available for the 3RB22 to 3RB24 solid-state overload relays:

- Operator panel for the evaluation modules 3RB24
- Manual 3RB24
- Sealable cover for the evaluation modules 3RB22 to 3RB24
- Terminal covers for the 3RB29 current measuring modules sizes S6 and S10/S12
- Box terminal blocks for the 3RB29 current measuring modules sizes S6 and S10/S12
- Push-in lugs for screw fixing for 3RB22 to 3RB24 evaluation modules and 3RB29 06 current measuring modules

Selection and ordering data

Accessories for overload relay 3RB24

	Version	For over- load relays	DT		Price r PU	PU (UNIT, SET, M)	Pack Units	PG
Operator panels for e	valuation modules							
3RA69 35-0A	Operator panels (set) 1 set comprises: 1 x operator panel 1 x 3RA69 36-0A enabling module 1 x 3RA69 33-0B interface cover 1 x fixing terminal Note: The connecting cable between the evaluation module and the operator panel is not included in the scope of supply; please order separately.	3RB24	Α	3RA69 35-0A		1	1 unit	42F
	Connecting cable Length 2 m (round), for connecting the evaluation module to the operator panel	3RB24	>	3UF79 33-0BA00-0		1	1 unit	42J
	Enabling modules (replacement)	3RB24	Α	3RA69 36-0A		1	1 unit	42F
	Interface covers	3RB24	Α	3RA69 33-0B		1	5 units	42F

¹⁾ The manual is also available as a free PDF download on the Internet at www.siemens.com/sirius/support → "Manuals/Operating Instructions".

Additional general accessories see next page.

Accessories for 3RB22, 3RB23, 3RB24

General accessories

	Version	Size	For over- load relays	Order No.	PU (UNIT, SET, M)	Pack Units
Sealable covers for	evaluation modules					
3RB29 84-2	For covering the setting knobs		3RB22 to 3RB24	3RB29 84-2	1	10 units
Terminal covers for	current measuring modules					
	Covers for cable lugs and busbar connections					
	Length 100 mm	S6	3RB29 56	3RT19 56-4EA1	1	1 unit
	Length 120 mm	S10/S12	3RB29 66	3RT19 66-4EA1	1	1 unit
	Covers for box terminals					
	Length 25 mm	S6	3RB29 56	3RT19 56-4EA2	1	1 unit
	Length 30 mm	S10/S12	3RB29 66	3RT19 66-4EA2	1	1 unit
	Covers for screw terminals between contactor and overload relay, without box terminals (1 unit required per combination)	S6 S10/S12	3RB29 56 3RB29 66	3RT19 56-4EA3 3RT19 66-4EA3	1	1 unit 1 unit
Box terminal blocks	for current measuring modules					
	For round and ribbon cables	1)				
D n	• Up to 70 mm ²	S6 ¹⁾	3RB29 56	3RT19 55-4G	1	1 unit
[6] [6] [6]	• Up to 120 mm ²	S6	3RB29 56	3RT19 56-4G	1	1 unit
3RT19 54G	Up to 240 mm ² Technical specifications for conductor cross Manual for Protection Equipment—3RU1, 3RB2 Overload Relays*.	S10/S12 ss-sections s	3RB29 66 ee "Reference	3RT19 66-4G	1	1 unit
Push-in lugs for eva	luation modules and current measur	ing modul	es			
3RP19 03	For screw fixing the evaluation modules		3RB22 to 3RB24	3RP19 03	1	10 units
3RB19 00-0B	For screw fixing the current measuring modules (2 units per module)	S00 S3	3RB29 06	3RB19 00-0B	100	10 units

¹⁾ In the scope of supply for 3RT10 54-1 contactors (55 kW).

	Version	Size	Color	For over- load relays	Order No.	PU (UNIT, SET, M)	Pack Units
Tools for opening spi	ring-type terminals	;					
					Spring-type Content terminals		
3RA29 08-1A	Screwdrivers For all SIRIUS devices with spring- type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary cir- cuit connec- tion: 3RB2	3RA29 08-1A	1	1 unit
Blank labels							
	Unit labeling plates ¹⁾	20 mm x 7 mm	Titanium gray	3RB24	3RT29 00-1SB20	100	340 units
3RT19 00-1SB20	for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB22, 3RB23	3RT19 00-1SB20	100	340 units

PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see "Appendix" → "External Partners").

Overload Relays 3RB24 Solid-State Overload Relays 3RB24 for IO-Link, up to 630 A for High-Feature applications

Type – Overload relay of evaluation modules		3RB24 83-4A.1
Size of contactor		S00 S10/S12
General data		000 010/012
Trips in the event of		Overload, phase failure and phase unbalance (> 40 % according to NEMA),
		+ ground fault (connectable and disconnectable) and activation of the thermistor motor protection (with closed PTC sensor circuit)
Trip class acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
Phase failure sensitivity		Yes
Overload warning		Yes, from 1.125 x $I_{\rm e}$ for symmetrical loads and from 0.85 x $I_{\rm e}$ for unsymmetrical loads
Reset and recovery		
Reset options after tripping		Manual and automatic RESET, electrical remote RESET or through IO-Link
Recovery time For outerwatio RECET.	min	for tripping due to everous entry 2 (stored permanently)
- For automatic RESET	111111	 for tripping due to overcurrent: 3 (stored permanently) for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature for tripping due to a ground fault: no automatic RESET
- For manual RESET	min	 for tripping due to overcurrent: 3 (stored permanently) for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature
For remote DECET	ma in	- for tripping due to a ground fault: Immediately
- For remote RESET	min	 for tripping due to overcurrent: 3 (stored permanently) for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature for tripping due to a ground fault: Immediately
Features		5
Display of operating state on device		Yes, with 4 LEDs - Green LED "DEVICE/IO-Link" - Red "Ground Fault" LED - Red "Thermistor" LED
• TEST function		 Red "Overload" LED Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit b pressing the button TEST/RESET / self-monitoring
RESET button STOP button		Yes, with the TEST/RESET button No
Explosion protection – Safe operation of motors with "increased		
safety EEX e and explosion-proof enclosure EEx d" type of protection		
EC type test certificate number according to directive 94/9/EC (ATEX)		On request
Ambient temperatures		
• Storage/transport	°C	-40 +80
 Operation Temperature compensation 	°C	-25 +60 +60
Permissible rated current	O	
- Temperature inside control cabinet 60 °C	%	100
- Temperature inside control cabinet 70 °C	%	On request
Repeat terminals		No.
Coil repeat terminals Auxiliary contact repeat terminal		Not required Not required
Degree of protection acc. to IEC 60529		IP20: Current measuring modules in sizes S6 and S10/S12 with busbar
3		connection in conjunction with the cover
Touch protection acc. to IEC 61140		Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover
Shock resistance with sine acc. to IEC 60068-2-27	g/ms	15/11
Electromagnetic compatibility (EMC) – Interference immunity		
 Conductor-related interference Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3) 	kV	2 (power ports), 1 (signal ports)
- Surge acc. to IEC 61000-4-4 (corresponds to degree of severity 3)		2 (line to earth), 1 (line to line)
Electrostatic discharge according to IEC 61000-4-2	kV	8 (air discharge), 6 (contact discharge)
(corresponds to degree of severity 3) • Field-related interference according to IEC 61000-4-3	V/m	10
(corresponds to degree of severity 3)	v/ill	
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)
Resistance to extreme climates – air humidity	%	100
Dimensions		"Dimensional drawings" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link".
Installation altitude above sea level	m	Up to 2000
Mounting position		Any
Type of mounting		Ohan al alama in shalladian
 Evaluation modules Current measuring module 	Size	Stand-alone installation S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

Overload Relays 3RB24 Solid-State Overload Relays 3RB24 for IO-Link, up to 630 A for High-Feature applications

Type – Overload relay of evaluation modules		3RB24 83-4A.1
Size of contactor		S00 S10/S12
Dimensions of evaluation modules (W x H x D)	mm	45 x 111 x 95
* _ w _ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
Auxiliary circuit		
Number of auxiliary switches		1 CO contact, 1 NO contact connected in series internally
Auxiliary contacts – assignment		1 CO contact for selecting the contactor (for reversing starter function), actuated by the control system
		1 NO contact for normal switching duty, actuated by the control system (opens automatically when tripping occurs)
Rated insulation voltage <i>U</i> _i (pollution degree 3)	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Auxiliary contacts – contact rating		
\bullet NC contact with alternating current AC-14/AC-15, rated operational current $I_{\rm e}$	at U _e	
- 24 V - 120 V	A	6
- 120 V - 125 V	A A	6
- 250 V	A	3
\bullet NO contact with alternating current AC-14/AC-15, rated operational current $I_{\rm e}$	at U _e	
- 24 V	A	6
- 120 V - 125 V	A A	6 6
- 250 V	Α	3
$ullet$ NC contact, NO contact with direct current DC-13, rated operational current $I_{ m c}$		
- 24 V - 60 V	A A	2 0.55
- 60 V - 110 V	A	0.3
- 125 V	Α	0.3
- 250 V	Α	0.2
$ullet$ Conventional thermal current I_{th}	Α	5
Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes
Short-circuit protection		
With fuse, operational class gG	Α	6
With miniature circuit breaker, C characteristic	А	1.6
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	300
CSA, UL, UR rated data		
Auxiliary circuit – switching capacity		B300, R300
Conductor cross-sections of the auxiliary circuit		
Connection type		Screw terminals
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 × 0.5
Prescribed tightening torque	Nm	0.8 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm ²	1 × (0.5 4), 2 × (0.5 2.5)
Finely stranded without end sleeve	mm ²	
Finely stranded with end sleeve	mm ²	1 × (0.5 2.5), 2 × (0.5 1.5)
• Stranded	mm ²	
AWG cables, solid or stranded	AWG	2 × (20 14)
Connection type	71110	Spring-type terminals
Connection type		
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm ²	2 × (0.25 1.5)
Finely stranded without end sleeve	mm^2	-
• Finely stranded with end sleeve	mm^2	2 × (0.25 1.5)
Stranded	mm^2	2 × (0.25 1.5)
AWG cables, solid or stranded	AWG	2 × (24 16)
		,

Overload Relays 3RB24 Solid-State Overload Relays 3RB24 for IO-Link, up to 630 A

for High-Feature applications

Type – Overload relay of evaluation modules		3RB24 83-4A.1
Size of contactor		S00 S10/S12
Control and sensor circuit as well as the analog output		
Rated insulation voltage <i>U</i> _i (pollution degree 3) ¹⁾	V	300
Rated impulse withstand voltage U_{imp}^{-1}	kV	4
Rated control supply voltage $U_{\rm S}^{-1}$		
• DC	V	24 through IO-Link
Operating range ¹⁾		
• DC		$0.85 \times U_{\text{s min}} \leq U_{\text{s}} \leq 1.1 \times U_{\text{s max}}$
Rated power ¹⁾		
• DC	W	0.5
Mains buffering time ¹⁾	ms	200
Thermistor motor protection (PTC thermistor detector) ²⁾		
Summation cold resistance	kΩ	≤1.5
Response value	kΩ	3.4 3.8
Return value	kΩ	1.5 1.65
Ground-fault detection		The information refers to sinusoidal residual currents at 50/60 Hz.
Tripping value I_{Δ} - For $0.3 \times I_{\rm e} < I_{\rm motor} < 2.0 \times I_{\rm e}$ - For $2.0 \times I_{\rm e} < I_{\rm motor} < 8.0 \times I_{\rm e}$		$> 0.3 \times I_{\rm e}$ $> 0.15 \times I_{\rm motor}$
Response time t _{trip}	ms	500 1 000
Analog output ³⁾		
Output signal	mA	4 20
Measuring range		0 1.25 \times $I_{\rm e}$ 4 mA corresponds to 0 \times $I_{\rm e}$ 16.8 mA corresponds to 1.0 \times $I_{\rm e}$ 20 mA corresponds to 1.25 \times $I_{\rm e}$
• Load, max.	Ω	100
Conductor cross-sections for the control and sensor circuit as well as the analog output		
Connection type		Screw terminals
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected	ed	
• Solid	mm ²	$1 \times (0.5 \dots 4), 2 \times (0.5 \dots 2.5)$
Finely stranded without end sleeve	mm^2	_
Finely stranded with end sleeve	mm ²	1 × (0.5 2.5), 2 × (0.5 1.5)
Stranded	mm^2	_
AWG cables, solid or stranded	AWG	2 × (20 14)
Connection type		Spring-type terminals
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected	ed	
• Solid	mm ²	2 × (0.25 1.5)
Finely stranded without end sleeve	mm ²	_
Finely stranded with end sleeve	mm ²	2 × (0.25 1.5)
- Otro	2	0 (0.05 4.5)

 mm^2

2 × (0.25 ... 1.5)

AWG 2 × (24 ... 16)

• AWG cables, solid or stranded

Stranded

¹⁾ Control circuit.

²⁾ Sensor circuit.

³⁾ Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 overload relay.

Current measuring modules for 3RB22, 3RB23, 3RB24

Overview



The current measuring modules are designed as system components for connecting to evaluation units 3RB22 to 3RB24. Using these evaluation units the motor current is measured and the measured value sent to the evaluation unit for evaluation. The current measuring modules in sizes S00 to S3 up to 55 mm wide are equipped with straight-through transformers and can be snap-fitted under the evaluation units. The larger evaluation units are installed directly on the contactor or as stand-alond units.

SIRIUS 3RB29 06 current measuring module

Technical specifications

Type – Overload relays: Current measuring modules			3RB29 06		3RB29 56	3RB29 66
Size of contactor			S00/S0	S2/S3	S6	S10/S12
Dimensions of current measuring modules (W x H x D)	W	mm	45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Main circuit						
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	1 000			
Rated impulse withstand voltage $U_{\rm imp}$		kV	6		8	
Rated operational voltage U _e		V	1 000			
Type of current						
Direct current			No			
Alternating current			Yes, 50/60 H	z±5 %		
Current setting		А	0.3 3; 2.4 25	10 100	20 200	63 630
Power loss per unit (max.)		W	0.5			
Short-circuit protection						
With fuse without contactor			See "Selectio	n and orderin	ng data" on page 3/55	i.
With fuse and contactor			See			
			Load - "Con	l Feeders in F figuration Mai	useless and Fused D	IRIUS Innovations - Selection
Protective separation between main and auxilia acc. to IEC 60947-1 (pollution degree 2)	ry conducting paths	V	690 for groun	nded networks	s, otherwise 600	

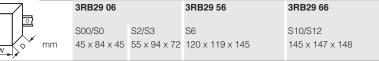
Overload Relays

3RB24 Solid-State Overload Relays

Current measuring modules for 3RB22, 3RB23, 3RB24

Type - Overload relays: Current measuring modules

Size of contactor



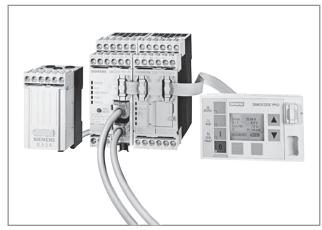
			02,00		
Dimensions of current measuring modules (W x H x D)	w mm	45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Conductor cross-sections of the main circuit	,				
Connection type			v terminals wi	th box terminal	
		Screv			
Terminal screw	mm	_		4 mm Allen screw	5 mm Allen screw
Operating devices	mm	_		4 mm Allen screw	5 mm Allen screw
Prescribed tightening torque	Nm	_		10 12	20 22
Conductor cross-sections (min./max.), 1 or 2 conductor					
• Solid	mm ²	_		_	
Finely stranded without end sleeve	mm ²	_		With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 70)	2 × (50 185), rear clamping point only: 1 × (70 240)
				With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 120)	Rear clamping point only: 1 × (120 185)
Finely stranded with end sleeve	mm ²	_		With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 70)	2 × (50 185), rear clamping point only: 1 × (70 240)
				With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 120)	Rear clamping point only: 1 x (120 185)
Stranded	mm ²	-		With 3RT19 55-4G box terminal: 2 × (max. 70), 1 × (16 70)	2 × (70 240), rear clamping point only: 1 × (95 300)
AWG cables, solid or stranded	AWG	_		With 3RT19 56-4G box terminal: 2 × (max. 120), 1 × (16 120) With 3RT19 55-4G	Rear clamping point only: 1 × (120 240) 2 × (2/0 500 kcmil),
d casts, some of stranged	7.11.0			box terminal: 2 × (max. 1/0), 1 × (6 2/0)	rear clamping point only: 1 × (3/0 600 kcmil)
				With 3RT19 56-4G box terminal: 2 × (max. 3/0), 1 × (6 250 kcmil)	Rear clamping point only: 1 × (250 kcmil 500 kcmil)
Ribbon cables (number x width x thickness)	mm	_		With 3RT19 55-4G box terminal: $2 \times (6 \times 15.5 \times 0.8)$, $1 \times (3 \times 9 \times 0.8 \dots 6 \times 15.5 \times 0.8)$ With 3RT19 56-4G	2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 20 × 24 × 0.5)
				box terminal: $2 \times (10 \times 15.5 \times 0.8)$, $1 \times (3 \times 9 \times 0.8$ $10 \times 15.5 \times 0.8)$	
Connection type		Busbar cor	nnections		
Terminal screw		_		M8 × 25	M10 x 30
Prescribed tightening torque	Nm	_		10 14	14 24
Conductor cross-sections (min./max.), 1 or 2 conductor				4)	2)
Solid with cable lug	mm ²	_		16 95 ¹⁾	50 240 ²⁾
Stranded with cable lug	mm ²	_		25 120 ¹⁾	70 240 ²⁾
AWG cable, solid or stranded, with cable lug	AWG	_		4 250 kcmil	2/0 500 kcmil
with connecting bar (max. width)	mm	_		17	25
Connection type			rough transfor		
Diameter of opening	mm	7.5	14	25	_

When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm² and more, the 3RT19 56-4EA1 terminal cover must be used to ensure phase spacing.

When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm² and more as well as to DIN 46235 with conductor cross-sections of 185 mm² and more, the 3RT19 56-4EA1 terminal cover must be used for to keep the phase clearance.

SIMOCODE pro 3UF7 motor management and control devices

Overview



SIMOCODE pro V PROFINET with current/voltage measuring module, fail-safe expansion module and operator panel with display

SIMOCODE pro is a flexible, modular motor management system for motors with constant speeds in the low-voltage performance range. It optimizes the connection between the PLC and the motor starter, increases plant availability and allows significant savings to be made during startup, operation and maintenance of a system.

When SIMOCODE pro is installed in the control panel, it is the intelligent interface between the higher-level automation system and the motor feeder and includes the following:

- Multi-functional, electronic full motor protection which is independent of the automation system
- Integrated control functions instead of hardware for the motor control
- · Detailed operating, service and diagnostics data
- Open communication through PROFIBUS DP, PROFINET and OPC UA
- Safety relay function for the fail-safe disconnection of motors up to SIL 3 (IEC 61508, IEC 62061) or PL e with Category 4 (EN ISO 13849-1)
- SIMOCODE ES is the software package for SIMOCODE pro parameterization, start-up and diagnostics.

Two series

SIMOCODE pro is structured into two functionally tiered series:

- SIMOCODE pro C, as a compact system for direct-on-line starters and reversing starters or the actuation of a circuit breaker
- SIMOCODE pro V, as a variable system with all control functions and with the possibility of expanding the inputs, outputs and functions of the system at will using expansion modules

Expansion	SIMOCODE pro C	SIMOCODE pro V				
possibilities	Basic unit 1	Basic unit 2 ¹⁾	Basic unit 3 PROFINET			
Operator panels	✓	✓	✓			
Operator panels with display	_	✓	✓			
Current measuring modules	✓	✓	✓			
Current/voltage measuring modules	_	✓	✓			
Decoupling modules	_	✓	✓			
Expansion modules (max. 5):						
 Digital modules 	_	2	2			
 Fail-safe digital modules²⁾ 	_	1	1			
 Analog modules 	_	1	2			
Ground-fault modules	_	1	1			
 Temperature modules 	_	1	2			

- ✓ Available
- Not available

1)When an operator panel with display and/or a decoupling module is used, more restrictions on the number of expansion modules connectable per basic unit must be observed, see page 3/68.

2)The fail-safe digital module can be used instead of one of the two digital modules.

Per feeder each system always comprises one basic unit and one separate current measuring module. The two modules are connected together electrically through the system interface with a connection cable and can be mounted mechanically connected as a unit (one behind the other) or separately (side by side). The motor current to be monitored is decisive only for the choice of the current measuring module.

An operator panel for mounting in the control cabinet door is optionally connectable through a second system interface on the basic unit. Both the current measuring module and the operator panel are electrically supplied by the basic unit through the connection cable. More inputs, outputs and functions can be added to basic unit 2 and basic unit 3 by means of optional expansion modules, thus supplementing the inputs and outputs already existing on the basic unit. With the DM-F Local and DM-F PROFIsafe fail-safe digital modules it is also possible to integrate the fail-safe disconnection of motors in the SIMOCODE pro V motor management system.

All modules are connected by connection cables. The connection cables are available in various lengths. The maximum distance between the modules (e.g. between the basic unit and the current measuring module) must not exceed 2.5 m. The total length of all the connection cables in a single system may be up to 3 m with basic unit 1. With basic units 2 and 3 the total length for each system interface may be up to 3 m.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

Order No. scheme

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th
					-	1			0	0	-	0
SIMOCODE pro motor management system	3 U F 7											
Type of unit/module												
Functional version of the unit/module												
Connection type of the current transformer												
Voltage version												
Example	3 U F 7	0	1	0	_	1	Α	В	0	0	-	0

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the selection and ordering data.

Benefits

General customer benefits

- Integrating the whole motor feeder into the process control by means of PROFIBUS DP, PROFINET or OPC UA significantly reduces the wiring outlay between the motor feeder and the PLC
- Decentralization of the automated processes by means of configurable control and monitoring functions in the feeder saves resources in the automation system and ensures full functionality and protection of the feeder even if the I&C or bus system fails
- The acquisition and monitoring of operating, service and diagnostics data in the feeder and process control system increases plant availability as well as maintenance and service-friendliness
- The high degree of modularity allows users to perfectly implement their plant-specific requirements for each motor feeder
- The SIMOCODE pro system offers functionally graded and space-saving solutions for each customer application
- The replacement of the control circuit hardware with integrated control functions decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of electronic full motor protection permits better utilization of the motors and ensures long-term stability of the tripping characteristic and reliable tripping even after years of service

Multi-functional, electronic full motor protection for rated motor currents up to 820 A

SIMOCODE pro offers comprehensive protection of the motor feeder by means of a combination of different, multi-step and delayable protection and monitoring functions:

- Current-dependent electronic overload protection (CLASS 5 to 40)
- Thermistor motor protection
- Phase failure/unbalance protection
- · Stall protection
- Monitoring of adjustable limit values for the motor current
- Voltage and power monitoring
- Monitoring of the power factor (motor idling/load shedding)
- · Ground-fault monitoring
- Temperature monitoring, e.g. over PT100/PT1000
- Monitoring of operating hours, downtime and number of starts etc.

Recording of measuring curves

SIMOCODE pro can record measuring curves and is therefore able, for example, to present the progression of motor current during motor start-up.

Flexible motor control implemented with integrated control functions (instead of comprehensive hardware interlocks)

Many predefined motor control functions have already been integrated into SIMOCODE pro, including all necessary logic operations and interlocks:

- · Overload relays
- Direct-on-line and reversing starters
- Wye/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing switch); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Actuation of a circuit breaker
- Soft starter actuation (also with direction reversal)

These control functions are predefined in SIMOCODE pro and can be freely assigned to the inputs and outputs of the device (including PROFIBUS/PROFINET).

These predefined control functions can also be flexibly adapted to each customized configuration of a motor feeder by means of freely configurable logic modules (truth tables, counters, timers, edge evaluation, etc.) and with the help of standard functions (power failure monitoring, emergency start, external faults, etc.), without additional auxiliary relays being necessary in the control circuit.

SIMOCODE pro eliminates the need for additional hardware and wiring in the control circuit which results in a high level of standardization of the motor feeder in terms of its design and circuit diagrams.

SIMOCODE pro 3UF7 motor management and control devices

Detailed operating, service and diagnostics data

SIMOCODE pro makes different operating, service and diagnostics data available and helps to detect potential faults in time and to prevent them by means of preventative measures. In the event of a malfunction, a fault can be diagnosed, localized and rectified very guickly – there are no or very short downtimes.

Operating data

- Motor switching state derived from the current flow in the main circuit
- All phase currents
- · All phase voltages and phase-to-phase voltages
- Active power, apparent power and power factor
- Phase unbalance and phase sequence
- Time to trip
- Motor temperature
- · Remaining cooling time etc.

Service data

- · Motor operating hours
- Motor stop times
- · Number of motor starts
- Number of overload trips
- Interval for mandatory testing of the enabling circuits
- · Energy consumed
- Internal comments stored in the device etc.

Diagnostics data

- · Numerous detailed early warning and fault messages
- Internal device fault logging with time stamp
- Time stamping of freely selectable status, alarm or fault messages etc.

Easy operation and diagnostics

Operator panels

The operator panel is used to control the motor feeder and can replace all conventional pushbuttons and indicator lights to save space. It makes SIMOCODE pro or the feeder directly operable in the control cabinet. It features all the status LEDs available on the basic unit and externalizes the system interface for simple parameterization or diagnosis on a PC/PG.

Operator panels with display

As an alternative to the 3UF7 20 standard operator panel for SIMOCODE pro V there is also an operator panel with display: the 3UF7 21 is thus able in addition to indicate current measured values, operational and diagnostics data or status information of the motor feeder at the control cabinet. The pushbuttons of the operator panel can be used to control the motor. Also, when SIMOCODE pro V PROFINET is used it is possible to set parameters such as rated motor current, limit values, etc. directly using the operator panel with display.

Communications

SIMOCODE pro has either an integrated PROFIBUS DP interface (SUB-D or terminal connection) or a PROFINET interface (2 x RJ45).

Fail-safe disconnection through PROFIBUS or PROFINET with the PROFIsafe profile is also possible in conjunction with a failsafe controller (F-CPU) and the DM-F PROFIsafe fail-safe digital module.

SIMOCODE pro for PROFIBUS

SIMOCODE pro for PROFIBUS supports for example:

- Cyclic services (DPV0) and acyclic services (DPV1)
- · Extensive diagnostics and process alarms
- Time stamp with high timing precision (SIMATIC S7) for SIMOCODE pro V
- DPV1 communication after the Y-Link

SIMOCODE pro for PROFINET

SIMOCODE pro for PROFINET supports for example:

- Line and ring bus topology thanks to an integrated switch
- Media redundancy via MRP protocol
- Operating, service and diagnostics data via standard web browser
- OPC UA server for open communication with visualization and control system
- NTP-synchronized time
- Interval function and measured values for energy management via PROFlenergy
- Module exchange without PC memory module through proximity detection
- Extensive diagnostics and maintenance alarms

Notes on safety

For connection of an internal system to an external system, suitable protective measures must be taken to ensure safe operation of the plant (including IT security, e. g. network segmentation).

More information see www.siemens.com/industrialsecurity.

For SIMOCODE pro motor management and control devices with communication function see page 3/69 onwards.

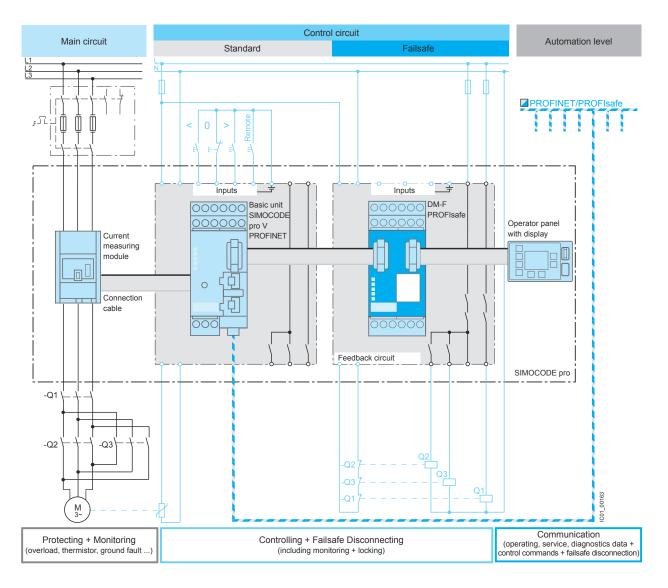
Accessories see page 3/73 onwards.

Autonomous operation

An essential feature of SIMOCODE pro is independent execution of all protection and control functions even if communication with the I&C system breaks down. If the bus or automation system fails, the full functionality of the feeder is ensured or a predefined response can be initiated, e.g. the feeder can be shut down in a controlled manner or certain configured control mechanisms can be performed (e.g. the direction of rotation can be reversed).

SIMOCODE 3UF Motor Management and Control Devices

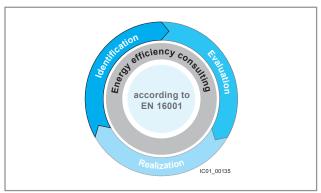
SIMOCODE pro 3UF7 motor management and control devices



SIMOCODE pro combines all essential functions, including safety functions, through PROFINET/PROFIsafe for the motor feeder

SIMOCODE pro 3UF7 motor management and control devices

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for efficient industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS Industrial Controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The SIMOCODE pro 3UF7 motor management system contributes to energy efficiency throughout the plant as follows:

• Energy consumption:

Clear display of the energy consumption of a motor feeder or process element by means of the acquisition and transmission of all operating and consumption date, such as current, voltage, active and reactive power, energy consumption, motor temperature etc.

Energy management:

Evaluation of energy measured values (e.g. limit value monitoring) with exporting of local or central actions (= forwarding to higher-level)

PROFlenergy:

SIMOCODE pro V PROFINET supports the PROFlenergy functions. Reduced energy consumption thanks to automatic disconnection in the intervals and forwarding of the measured values for higher-level energy management systems.

Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e.g. steel or cement industry) and where it is important to prevent plant downtimes through detailed operating, service and diagnostics data or to localize the fault very quickly in the event of a fault.

SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers in the process industry and for power plant technology.

Applications

Protection and control of motors in hazardous areas for types of protection EEx e/d according to ATEX guideline 94/9/EC

- With heavy starting (paper, cement, metal and water industries)
- In high-availability plants (chemical, oil, raw material processing industries, power plants)

Safety technology for SIMOCODE pro

The safe disconnection of motors, in the process industry in particular, is becoming increasingly important as a result of new and revised standards and requirements in the safety technology field.

With the DM-F Local and DM-F PROFIsafe fail-safe expansion modules it is easy to integrate functions for fail-safe disconnection into the SIMOCODE pro V motor management system while retaining service-proven concepts. The strict separation of safety functions and operational functions proves particularly advantageous for planning, configuring and construction. Seamless integration in the motor management system leads to greater transparency for diagnostics and during operation of the system.

Suitable components for this purpose are the DM-F Local and DM-F PROFIsafe fail-safe expansion modules, depending on the requirements:

- the DM-F Local fail-safe digital module for when direct assignment between a fail-safe hardware shutdown signal and a motor feeder is required, or
- the DM-F PROFIsafe fail-safe digital module for when a fail-safe controller (F-CPU) creates the signal for the disconnection and transmits it in a fail-safe manner through PROFIBUS/PROFIsafe or PROFINET/PROFIsafe to the motor management system

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

More information

Configuration instructions when using an operator panel with display and/or a decoupling module with SIMOCODE pro V, basic unit 2

If you want to use an operator panel with display and/or a decoupling module in the SIMOCODE pro V system, then the following configuration instructions concerning the type and number of connectable expansion modules must be observed.

The following tables show the maximum possible configuration of the expansion modules for the various combinations.

The DM-F Local and DM-F PROFIsafe fail-safe expansion modules behave in this connection like digital modules for standard applications.

Use of an operator panel with display

Digital modules	Digital modules	Analog modules	Ground-fault modules				
Only operator panel with display for basic unit 2 (24 V DC or 110 240 V AC/DC)							
Max. 4 expans	Max. 4 expansion modules can be used						
Operator panel with display and current/voltage measurement with basic unit 2 (110 240 V AC/DC)							
				neasurement			
with basic u		240 V AC/DC		neasurement			
with basic u	unit 2 (110 2	240 V AC/DC		neasurement			

Not available

Use of a decoupling module (voltage measurement in insulated networks)

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules					
Basic units	2 (24 V DC)								
√ 1)	√ 1)	✓	/	✓					
Basic unit 2	Basic unit 2 (110 240 V AC/DC)								
✓	✓	_	✓	✓					
√ 1)	√ 1)	✓	/	_					
✓	_	✓	/	_					
√	_	✓	_	✓					

- ✓ Available
- Not available
- 1) No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

Use of a decoupling module (voltage measurement in insulated networks) in combination with an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules	
Basic units	2 (24 V DC)				
✓	_	✓	✓	✓	
✓	✓	_	1	1	
Basic unit 2	(110 240 \	/ AC/DC)			
√ ²⁾	_	✓	✓	✓	
✓	✓	_	_	_	
√ 1)	√ 1)	√ 3)	_	_	
	_	_	1	1	

- ✓ Available
- Not available
- $^{1)}\,$ No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).
- 2) No bistable relay outputs and no more than 3 of 5 relay outputs active simultaneously (> 3 s).
- 3) Analog module output is not used.

Protective separation

All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, Annex N. That is, they are designed with double creepage distances and clearances. In the event of a fault, therefore, no parasitic voltages can be formed in neighboring circuits. The instructions of Test Report No. 2668 must be complied with.

Types of protection EEx e and EEx d

The overload protection and the thermistor motor protection of the SIMOCODE pro system comply with the requirements for overload protection of explosion-protected motors to the type of protection:

- EEx d "flameproof enclosure" e.g. according to IEC 60079-1
- EEx e "increased safety" e.g. according to IEC 60079-7

When using SIMOCODE pro devices with a 24 V DC control voltage, electrical separation must be ensured using a battery or a safety transformer according to IEC 61558-2-6. EC type test certificate: BVS 06 ATEX F 001 Test report: BVS PP 05.2029 EG.

Selection data for type-tested assemblies/load feeders

Configuration tables according to type of coordination "1" or "2" can be found in the following manuals:

- Manual "Configuring SIRIUS", Order No.: 3ZX1012-0RA21-0AB0
- Manual "Configuring SIRIUS Innovations", Order No.: 3ZX1012-0RA21-1AB0
- System manual for SIMOCODE pro

System manual

The SIMOCODE pro system manual describes the motor management system and its functions in detail. It provides information on configuration, start-up, servicing and maintenance. A typical example of a reversing starter application is used to teach the user quickly and practically how to use the system. In addition to help on how to identify and rectify faults in the event of a malfunction, the manual also contains special information for servicing and maintenance. For selection of equipment and for planning, it is recommended to consult the system manual.

A detailed description of the DM-F Local and DM-F PROFIsafe fail-safe expansion modules is provided in the system manual "SIMOCODE pro Safety Fail-Safe Digital Modules", which can be downloaded from the Internet.

Internet

More information see www.siemens.com/simocode.

SIMOCODE pro 3UF7 motor management and control devices

	Version	Current setting	Width	DT	Screw terminals		PU	PS*	Weight
		3				Price	(UNIT, SET, M)		per PU approx.
		А	mm		Order No.	Price per PU	,,		
DE pro									
	PROFIBUS DP interface, 1: 4 I/3 O freely assignable, input for thermistor connec monostable relay outputs,	2 Mbit/s, RS 485 tion,							
	rated control supply voltag • 24 V DC • 110 240 V AC/DC	e U _s :		>	3UF7 000-1AB00-0 3UF7 000-1AU00-0		1	1 unit 1 unit	0.350 0.350
A.00-0 A.00-0	SIMOCODE pro V, basic u PROFIBUS DP interface, 1: 4 I/3 O freely assignable, input for thermistor connec monostable relay outputs, can be expanded by expai rated control supply voltag • 24 V DC • 110 240 V AC/DC SIMOCODE pro V PROFINE ETHERNET/PROFINET IO,	2 Mbit/s, RS 485 tion, nsion modules, e $U_{\rm S}$:			3UF7 010-1AB00-0 3UF7 010-1AU00-0		1 1	1 unit 1 unit	0.350 0.350
I-1A.00-0	OPC UA- server and web s 2 x connection to bus throu 4 I/3 O freely assignable, input for thermistor connec monostable relay outputs, can be expanded by expai rated control supply voltag • 24 V DC • 110 240 V AC/DC	igh RJ45, tion, nsion modules,			3UF7 011-1AB00-0 3UF7 011-1AU00-0		1 1	1 unit 1 unit	0.350 0.350
	Current measuring modu	les							
	 Straight-through transformers 	0.3 3 2.4 25	45 45	>	3UF7 100-1AA00-0 3UF7 101-1AA00-0		1 1	1 unit 1 unit	0.100 0.150
	Busbar connections	10 100 20 200	55 120	•	3UF7 102-1AA00-0 3UF7 103-1AA00-0		1	1 unit 1 unit	0.350 0.600
1AA00-0	Buspar connections	20 200 63 630	120 145	•	3UF7 103-1BA00-0 3UF7 104-1BA00-0		1	1 unit 1 unit	1.000 1.750
	Current/voltage measurin For SIMOCODE pro V Voltage measuring up to 60 if required in connection with	90 ²⁾ th a decoupling mod							0.450
	 Straight-through transformers 	0.3 3 2.4 25 10 100	45 45		3UF7 110-1AA00-0 3UF7 111-1AA00-0		1 1	1 unit 1 unit	0.150 0.200
10.14400.0		20 200	55 120	-	3UF7 112-1AA00-0 3UF7 113-1AA00-0		1	1 unit 1 unit	0.400 0.700
10-1AA00-0	Busbar connections	20 200 63 630	120 145	•	3UF7 113-1BA00-0 3UF7 114-1BA00-0		1	1 unit 1 unit	1.000 1.750
	Decoupling modules For connecting upstream fr module on the system inter detection in insulated, high grounded systems and in s	face when using vol -resistance or asym	tage metrically	Α	3UF7 150-1AA00-0		1	1 unit	0.150

When using an operator panel with display, the product version must be E07 or higher (from 08/2012).

²⁾ Voltage measurement on ungrounded or high resistance grounded systems (HRG) require a decoupling module (3UF7 150-1AA00-0).

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

	Version	DT	Screw terminals	(1)	PU	PS*	Weight
			Order No.	Price per PU	(UNIT, SET, M)		per PU approx.
SIMOCODE pro (cont	inued)			•			
3UF7 200-1AA00-0	Operator panels Installation in control cabinet door or front plate, for plugging into basic unit, 10 LEDs for status indication and user-assignable buttons for controlling the motor	•	3UF7 200-1AA00-0		1	1 unit	0.100
3UF7 210-1AA00-0	Operator panel with display for SIMOCODE pro V Installation in control cabinet door or front plate, for plugging into basic unit 2 and basic unit 3, 7 LEDs for status indication and user-assignable buttons for controlling the motor, multilingual display, e.g. for indication of measured values, status information or fault messages	•	3UF7 210-1AA00-0		1	1 unit	0.150

SIMOCODE pro 3UF7 motor management and control devices

Selection and ordering data

Version	DT	Screw terminals	(1)	PU (UNIT,	PS*	Weight per PU
		Order No.	Price per PU	SET, M)		approx.

Expansion modules for SIMOCODE pro V

With SIMOCODE pro V, it is possible to expand the type and number of inputs and outputs in steps. Each expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro V using a connection cable; through the second system interface, further expansion modules or the operator panel can be con-

The power supply for the expansion modules is provided by the connection cable through basic unit 2 or basic unit

Note:

Please order connection cable separately, see page 3/73.



3UF7 300-1AU00-0

Digital modules

Up to two digital modules can be used to add additional binary inputs and relay outputs to the basic unit. The input circuits of the digital modules are supplied from an external power supply.

4 binary inputs and 2 relay outputs,

Up to 2 digital modules can be connected

3UF7 400-1AA00-0

Relay outputs	Input voltage
Monostable	24 V DC
	110 240 V AC/DC

Bistable 24 V DC

110 ... 240 V AC/DC Analog modules

Basic unit can be optionally expanded with analog inputs and outputs (0/4 ... 20 mA) by means of the analog

2 inputs (passive) for input and 1 output for output of 0/4 ... 20 mA signals, max. 1 analog module can be connected per basic unit 2 and max. 2 analog modules per basic unit 3





3UF7 300-1AB00-0

3UF7 300-1AU00-0

3UF7 310-1AB00-0

3UF7 310-1AU00-0

0.150



1 unit

1 unit

1 unit

1 unit

0.150

0.150

0.150

0.150



3UF7 500-1AA00-0

Ground-fault modules

Instead of ground-fault monitoring using the current measuring modules or current/voltage measuring modules, it may be necessary, especially in high-impedance grounded networks, to implement ground-fault monitoring for smaller ground fault currents using a summation current trans-

1 input for connecting a 3UL22 summation current transformer, up to 1 ground-fault module can be connected

31	IF7	50	0-1	Δ.	ΔΛ	n-	n

3UF7 700-1AA00-0

0.150 1 unit

1 unit

0.150

Temperature modules



Sensor types: PT100/PT1000, KTY83/KTY84 or NTC

3 inputs for connecting up to 3 analog temperature sensors, up to 1 temperature module can be connected per basic unit 2 and max. 2 temperature modules per basic



3UF7 700-1AA00-0

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

Selection and orde	ering data						
	Version	DT	Screw terminals	(1)	PU (UNIT,	PS*	Weight per PU
			Order No.	Price per PU	SET, M)		approx.
Fail-safe expansion	n modules for SIMOCODE pro V						
	Thanks to the fail-safe expansion modules, SIMOCODE pro V can be expanded with the function of a safety relay for the fail-safe disconnection of motors. A maximum of 1 fail-safe digital module can be connected; it can be used instead of a digital module.						
	The fail-safe expansion modules are equipped likewise with two system interfaces at the front for making the connection to other system components. Unlike other expansion mod- ules, power is supplied to the modules through a separate terminal connection.						
	Note:						
	Please order connection cable separately, see page 3/73.						
	DM-F Local fail-safe digital modules 1)						
000000	For fail-safe disconnection using a hardware signal						
B B	2 relay enabling circuits, joint switching; 2 relay outputs, common potential disconnected fail-safe; inputs for sensor circuit, start signal, cascading and feedback circuit, safety function adjustable using DIP switches Rated control supply voltage $U_{\rm S}$:						
	• 24 V DC		3UF7 320-1AB00-0		1	1 unit	0.150
000000	• 110 240 V AC/DC		3UF7 320-1AU00-0		1	1 unit	0.150
3UF7 320-1AB00-0							
	DM-F PROFIsafe fail-safe digital modules ¹⁾						
000000	For fail-safe disconnection using PROFIBUS/PROFIsafe or PROFINET/PROFIsafe						
	2 relay enabling circuits, joint switching; 2 relay outputs, common potential disconnected fail-safe; 1 input for feedback circuit; 3 binary standard inputs Rated control supply voltage $U_{\rm S}$:						
	• 24 V DC		3UF7 330-1AB00-0		1	1 unit	0.150
000000	• 110 240 V AC/DC		3UF7 330-1AU00-0		1	1 unit	0.150
3UF7 330-1AB00-0							

¹⁾ Only possible with basic unit 2, product version E07 and higher (from 05/2011) or basic unit 3

SIMOCODE pro 3UF7 motor management and control devices

Accessories							
	Version	DT	Order No.	List Price \$ per PU	PU I (UNIT, SET, M)	PS*	Weight per PU approx.
Connection cables	s (essential accessory)						kg
3UF7 932-0AA00-0	Connection cables In different lengths for connecting basic unit, current measuring module, current/voltage measuring module, operator panel or expansion modules or decoupling module: • Length 0.025 m (flat) • Length 0.1 m (flat) • Length 0.3 m (flat)		3UF7 930-0AA00-0 3UF7 931-0AA00-0 3UF7 935-0AA00-0		1 1 1	1 unit 1 unit 1 unit	0.010 0.010 0.020
	 Length 0.5 m (flat) Length 0.5 m (round) Length 1.0 m (round) Length 2.5 m (round) 	•	3UF7 932-0AA00-0 3UF7 932-0BA00-0 3UF7 937-0BA00-0 3UF7 933-0BA00-0		1 1 1 1	1 unit 1 unit 1 unit 1 unit	0.020 0.050 0.100 0.150
PC cables and ada		<u> </u>	0017 300-0DA00-0			Tunt	0.100
	For PC/PG communication with SIMOCODE pro through the system interface, for connecting to the serial interface of the PC/PG	•	3UF7 940-0AA00-0		1	1 unit	0.150
	USB PC cables For connecting to the USB interface of a PC/PG, for communication with SIMOCODE pro through the system interface	•	3UF7 941-0AA00-0		1	1 unit	0.150
3UF7 940-0AA00-0	USB/serial adapters To connect an RS 232 PC cable to the USB port of a PC		3UF7 946-0AA00-0		1	1 unit	0.150
Memory modules							
The state of the s	Memory modules for SIMOCODE pro C and SIMOCODE pro V For saving the complete parameter assignment of a SIMOCODE pro C or SIMOCODE pro V system	•	3UF7 900-0AA00-0		1	1 unit	0.010
3UF7 900-0AA00-0	Memory modules for SIMOCODE pro V PROFINET For saving the complete parameter assignment of a SIMOCODE pro V PROFINET system	•	3UF7 901-0AA00-0		1	1 unit	0.010
Interface covers 3UF7 950-0AA00-0	For system interface	•	3UF7 950-0AA00-0		1	5 units	0.100
Addressing plugs							
3UF7 910-0AA00-0	For assigning the PROFIBUS addresses without using a PC/PG On SIMOCODE pro through the system interface		3UF7 910-0AA00-0		1	1 unit	0.030
Door adapters							
3UF7 920-0AA00-0	For external connection of the system interface Outside, for example, a control cabinet		3UF7 920-0AA00-0		1	1 unit	0.030
Adapters for operation of the second of the	ator panel The adapter enables the smaller 3UF7 20 operator panel from SIMOCODE pro to be used in a front panel cutout in which previously, e. g. after a change of system, a larger 3UF5 2 operator panel from SIMOCODE-DP had been used; degree of protection IP54		3UF7 922-0AA00-0		1	1 unit	0.150

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

	Version	DT	Order No.	List Price \$ per PU	PU (UNIT, SET, M)	PS*	Weight per PU approx.
					IVI)		kg
Labeling strips							
= -	 For pushbuttons of the 3UF7 20 operator panel For pushbuttons of the 3UF7 21 operator panel with 		3UF7 925-0AA00-0 3UF7 925-0AA01-0		100	400 units 600 units	15.000 15.000
EDALOS	display						
100 100 100 100 100 100 100 100 100 100	For LEDs of the 3UF7 20 operator panel Note: Pre-punched labeling strips for user-specific printing using the free inscription software "SIRIUS Label Designer" on a laser printer. Note the software version! Download from		3UF7 925-0AA02-0		100	1200 units	15.000
3UF7 925-0AA02-0	http://www.siemens.com/simocode.						
Push-in lugs							
	For screw fixing e. g. on mounting plate, 2 units required per device						
3RB19 00-0B	 Can be used with 3UF7 1.0, 3UF7 1.1 and 3UF7 1.2 	•	3RB19 00-0B		100	10 units	0.100
311519 00-05	 Can be used with 3UF7 0, 3UF7 3, 3UF7 4, 3UF7 5 and 3UF7 7 	•	3RP19 03		1	10 units	0.002
Terminal covers	and corr r						
-	Covers for cable lugs and busbar connections						
	 Length 100 mm, can be used for 3UF7 1.3-1BA00-0 	•	3RT19 56-4EA1		1	1 unit	0.070
	• Length 120 mm, can be used for 3UF7 1.4-1BA00-0	•	3RT19 66-4EA1		1	1 unit	0.130
3RT19 56-4EA1	Covers for box terminals		00740 50 4540			4	0.000
1-11-11-12	 Length 25 mm, can be used for 3UF7 1.3-1BA00-0 Length 30 mm, can be used for 3UF7 1.4-1BA00-0 		3RT19 56-4EA2 3RT19 66-4EA2		1	1 unit 1 unit	0.030 0.040
3RT19 56-4EA2	Covers for screw terminals between contactor and current measuring module or current/voltage measuring module for direct mounting		511110 GO 12A2			T dilli	0.010
3HT19 30-4LA2	• Can be used for 3UF7 1.3-1BA00-0	•	3RT19 56-4EA3		1	1 unit	0.020
	• Can be used for 3UF7 1.4-1BA00-0	•	3RT19 66-4EA3		1	1 unit	0.060
Box terminal block							
/	For round and ribbon cables • Up to 70 mm ² , can be used for 3UF7 1.3-1BA00-0		0DT40 55 40			d tk	0.000
Пр	 Up to 120 mm², can be used for 3UF7 1.3-1BA00-0 Up to 120 mm², can be used for 3UF7 1.3-1BA00-0 		3RT19 55-4G 3RT19 56-4G		1	1 unit 1 unit	0.230 0.260
	• Up to 240 mm ² , can be used for 3UF7 1.4-1BA00-0		3RT19 66-4G		1	1 unit	0.676
3RT19 54G							
Bus terminations							
	Bus termination module with separate supply voltage terminating the bus following the last unit on the bus line. Supply voltage: • 115/230 V AC • 24 V DC	for	3UF1 900-1KA00 3UF1 900-1KB00		1 1	1 unit 1 unit	0.286 0.192
System manuals							
Cycles facilities in house the 2004	SIMOCODE pro						
sirius	languages: • English		3UF7 970-0AA00-0		1	1 unit	0.850
3UF7 970-0AA01-0							

SIMOCODE pro 3UF7 motor management and control devices

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	Weight per PU approx. kg.
SIMOCODE ES 200							
The state of the s	Floating license for one user Engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), communication through system interface • License key on USB stick, Class A • License key download, Class A	>	3ZS1 312-4CC10-0YA5 3ZS1 312-4CE10-0YB5		1 1	1 unit 1 unit	0.230 0.230
3ZS1 312-4CC10-0YA5	-0						
SIMOCODE ES 200							
	Floating license for one user Engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
	 License key on USB stick, Class A 		3ZS1 312-5CC10-0YA5		1	1 unit	0.230
	License key download, Class A		3ZS1 312-5CE10-0YB5		1	1 unit	0.230
	Upgrade for SIMOCODE ES 2004 and later Floating license for one user, engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), license key on USB stick, Class A, communication through system interface, integrated graphics editor	А	3ZS1 312-5CC10-0YE5		1	1 unit	0.230
	Powerpack for SIMOCODE ES 2007 Basic	•	3ZS1 312-5CC10-0YD5		1	1 unit	0.230
	Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface, integrated graphics editor		2704 242 2004 204				0.000
	Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, type of delivery: on CD incl. electronic documentation, communication through system interface, integrated graphics editor	•	3ZS1 312-5CC10-0YL5		1	1 unit	0.230
SIMOCODE ES 200	7 Premium						
	Floating license for one user Engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager • License key on USB stick, Class A		3ZS1 312-6CC10-0YA5		1	1 unit	0.230
	License key download, Class A		3ZS1 312-6CE10-0YB5		1	1 unit	0.230
	Upgrade for SIMOCODE ES 2004 and later	Α	3ZS1 312-6CC10-0YE5		1	1 unit	0.230
	Floating license for one user, engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), license key on USB stick, Class A, communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager						
	Powerpack for SIMOCODE ES 2007 Standard	Α	3ZS1 312-6CC10-0YD5		1	1 unit	0.230
	Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or the system interface, integrated graphics editor, STEP7 Object Manager						
	Software Update Service	•	3ZS1 312-6CC10-0YL5		1	1 unit	0.230
	For 1 year with automatic extension, assuming the current software version is in use, engineering software, type of delivery: on CD incl. electronic documentation, communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager						
Notes:							

Notes

Please order PC cable separately, see page 3/73.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	Weight per PU approx. kg.
SIMOCODE pro F	function Block Library for SIMATIC PCS 7						
100 CONT. CO	Engineering software V7 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply:		3UF7 982-0AA10-0		1	1 unit	0.240
sirius	AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 version V 7.0/V 7.1						
3UF7 982-0AA00-0	Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system						
	Runtime license V7		3UF7 982-0AA11-0		1	1 unit	0.001
	For execution of the AS modules in an automation system (single license)						
	Required for using the AS modules of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant						
	Type of delivery: one license for one automation system, without software and documentation						
	Upgrade for PCS 7 function block library SIMOCODE pro, V 6.0 or V 6.1 to version SIMOCODE pro V 7.0/V 7.1	•	3UF7 982-0AA13-0		1	1 unit	0.240
	For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French						
	Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 version V 7.0 or V 7.1						
	Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system						
	Engineering software migration V7-V8	•	3UF7 982-0AA20-0		1	1 unit	0.212
	For upgrading (migrating) an existing engineering software V7 of the SIMOCODE pro Function Block Library for PCS 7						
	Conditions of use: Availability of the engineering software V7 (license) of the SIMOCODE pro Function Block Library for PCS 7 for the PCS 7 version V 7.0 or V 7.1						
	The engineering software migration V7-V8 can be installed directly onto a system with PCS 7 version V 8.0; installation of the previous version is unnecessary.						
	For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French						
	Scope of delivery: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 version V 8.0						
	Type of delivery: software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses						
Vote:							

Note:

Programming and Operating Manual SIMOCODE pro Library for PCS 7 see

http://support.automation.siemens.com/WW/view/en/49963525.

SIMOCODE pro 3UF7 motor management and control devices

Current measuring modules or current/voltage measuring i	modules	5				
Туре		3UF7 1.0	3UF7 1.1	3UF7 1.2	3UF7 1.3	3UF7 1.4
Main circuit						
Current setting $I_{\mathbf{e}}$	Α	0.3 3	2.4 25	10 100	20 200	63 630
Rated insulation voltage <i>U</i> _i	V	690; 3UF7 103				
Rated operational voltage $U_{\rm p}$	V	690	and 5017 10-	+. 1 000 (at poil	ation acgree o,	<u>'</u>
			A 01 IE7 104. (
Rated impulse withstand voltage U _{imp}	kV	6; 3UF7 103 ar	10 3UF/ 1U4: 8	3		
Rated frequency	Hz	50/60				
Type of current		Three-phase c	urrent			
Short-circuit		Additional short	rt-circuit protec	ction is required	d in the main cir	cuit
Accuracy of current measurement (in the range of I x minimum current setting $I_{\rm o}$)	%	±3				
Typical voltage measuring range						
Phase-to-phase voltage/line-to-line voltage (e.g. $U_{L1 L2}$)	V V	110 690 65 400				
Phase voltage (e.g. U _{L1 N})	V	65 400				
Accuracy Voltage measurement	%	+2 (typical)				
(phase voltage $U_{\rm I}$ in the range 230 400 V)	/0	±3 (typical)				
Power factor measurement	%	±5 (typical)				
(in the rated load range power factor = 0.4 0.8)		,,,,				
Apparent power measurement (in the rated load range)	%	±5 (typical)				
Notes on voltage measurement			1 1	/ II		
 In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems 					uring module ca system interfa	
Supply lines for voltage measurement					oltage measur	
cupply into to voltage measurement					ide additional l	
Digital modules						
		01157.0				
уре		3UF7 3				
Control circuits						
Rated insulation voltage <i>U</i> i	V	300 (at pollutio	n degree 3)			
Rated impulse withstand voltage $\emph{U}_{ ext{imp}}$	kV	4				
Relay outputs						
Number		2 monostable of	or bistable rela	y outputs (dep	ending on the v	version)
Specified short-circuit protection for auxiliary contacts						
(relay outputs) - Fuse links		6 A aG operat	ional class: 10) Δ quick-resno	nse (IEC 60947	7-5-1)
- Miniature circuit breakers					, C characterist	
Rated uninterrupted current	Α	6		,, -	,	
• Rated switching capacity		0.1/0.1.1.1.0				
- AC-15 - DC-13		6 A/24 V AC 2 A/24 V DC	6 A/120 V 0.55 A/60		230 V AC 5 A/125 V DC	
						DO
nputs (binary)					nally with 24 Vion, connected	
		potential	O/DO depend	ing on the vers	iori, corinected	to a common
Ground-fault modules						
		0UE7 E				
уре		3UF7 5				
Control circuits						
Connectable 3UL22 summation current transformer	Α	0.3/0.5/1				
vith rated fault currents I_N		No tripping				
$I_{\text{Ground fault}} \le 50 \% I_{\text{N}}$ $I_{\text{Ground fault}} \ge 100 \% I_{\text{N}}$		No tripping Tripping				
Response delay (conversion time)	ms	300 500, add	ditionally dolor	/ahle		
Femperature modules	1119	500 500, au	anionally delay	, abic		
- Inperature modules						
уре		3UF7 7				
Sensor circuit						
ypical sensor circuit						
PT100	mA	1 (typical)				
PT1000/KTY83/KTY84/NTC	mA	0.2 (typical)				
Den-circuit/short-circuit detection						
Sensor type		PT100/PT1000		KTY84	NTC	
- Open circuit - Short-circuit		1	1	1	 /	
- Measuring range	°C	-50 +500	-50 +175	-40 +300	80 160	
Measuring accuracy at 20 °C ambient temperature (T20)	K	<± 2	170	.5 1000	100	
. , ,	%		iation from To)		
Deviation due to ambient temperature (in % of measuring range)		0.05 per K dev	1a(1011 110111 120	,		
Conversion time	ms	500				
Connection type		Two- or three-w	vire connection	1		

- ✓ Detection possible
- -- Detection not possible

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

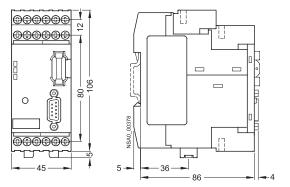
уре		3UF7 1.0	3UF7 1.1	3UF7 1.2	3UF7 1.3	3UF7 1.4
lain circuit		3UF/ 1.0	3UF7 1.1	3UF/ 1.2	3UF/ 1.3	3UF/ 1.4
	A	0.3 3	2.4 25	10 100	20 200	63 630
Current setting I _e	V					
Rated insulation voltage U _i	V		3 and 3UF7 104	: 1 000 (at poi	lution degree 3)	
Rated operational voltage U _e		690				
Rated impulse withstand voltage U _{imp}	kV		and 3UF7 104: 8	<u> </u>		
Rated frequency	Hz	50/60				
ype of current		Three-phase				
Short-circuit			ort-circuit protec	tion is require	d in the main cir	cuit
Accuracy of current measurement (in the range of x minimum current setting $I_{\rm u}$ to 8 x maximum current setting $I_{\rm o}$)	%	±3				
Typical voltage measuring range Phase-to-phase voltage/line-to-line voltage (e.g. $U_{L1 L2}$) Phase voltage (e.g. $U_{L1 N}$)	V V	110 690 65 400				
Accuracy	0/					
Voltage measurement (phase voltage <i>U</i> _I in the range 230 400 V)	%	±3 (typical)				
Power factor measurement	%	±5 (typical)				
(in the rated load range power factor = 0.4 0.8) Apparent power measurement (in the rated load range)	%	±5 (typical)				
Notes on voltage measurement In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems Supply lines for voltage measurement Digital modules		with an upstre In the supply	orks the current, eam decoupling lines from the m oro it may be ned	module on the ain circuit for	e system interfac voltage measure	ce. ement of
		01157.0				
уре		3UF7 3				
Control circuits		000 ()				
lated insulation voltage U _i	V	300 (at polluti	ion degree 3)			
Rated impulse withstand voltage <i>U</i> _{imp} Relay outputs	kV	4				
Number Specified short-circuit protection for auxiliary contacts (relay outputs) - Fuse links - Miniature circuit breakers Rated uninterrupted current Rated switching capacity - AC-15 - DC-13	А	6 A gG opera	e or bistable related ational class; 10 acteristic (IEC 6	A quick-respo 0947-5-1); 6 A	onse (IEC 60947	-5-1)
nputs (binary)			trically isolated, AC/DC dependi			
Ground-fault modules		p crommen				
NDO.		3UF7 5				
ype Control circuits		30173				
Connectable 3UL22 summation current transformer	A	0.3/0.5/1				
vith rated fault currents I _N	^	,,				
$I_{\text{Ground fault}} \leq 50 \% I_{\text{N}}$		No tripping				
IGround fault ≥ 100 % I _N		Tripping	alalitian - U	a la la		
Response delay (conversion time)	ms	300 500, a	dditionally delay	aple		
Temperature modules						
уре		3UF7 7				
Sensor circuit						
ypical sensor circuit PT100 PT1000//TV00//TV04/NTC	mA	1 (typical)				
PT1000/KTY83/KTY84/NTC	mA	0.2 (typical)				
Inon-orrout/chart-airout dataction		PT100/PT100	0 KTY83-110	KTY84 ✓	NTC	
Open-circuit/short-circuit detection Sensor type Open circuit Short-circuit Open circuit	90	1	√	√	✓	
Sensor type - Open circuit - Short-circuit - Measuring range	°C	✓ -50 +500	√ -50 +175	-40 +300	80 160	
Sensor type - Open circuit - Short-circuit - Measuring range Measuring accuracy at 20 °C ambient temperature (T20)	K	✓ -50 +500 <±2	-50 +175	-40 +300		
Sensor type - Open circuit - Short-circuit - Measuring range		✓ -50 +500 <±2		-40 +300		

- ✓ Detection possible
- Detection not possible

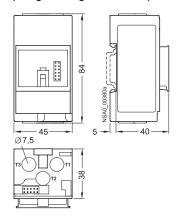
SIMOCODE pro 3UF7 motor management and control devices

Dimensional drawings

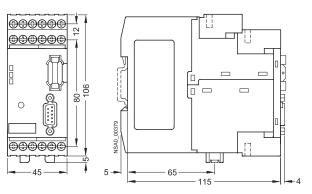
Basic unit 1, SIMOCODE pro C, 3UF7 000



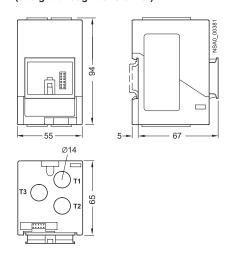
3UF7 100, 3UF7 101 current measuring module (straight-through transformer)



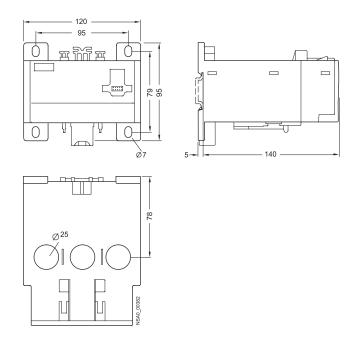
Basic unit 2, SIMOCODE pro V, 3UF7 010



3UF7 102 current measuring module (straight-through transformer)



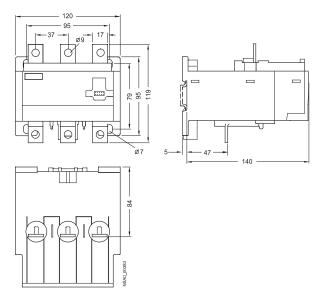
3UF7 103 current measuring module (straight-through transformer)



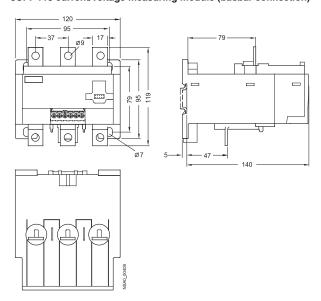
SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

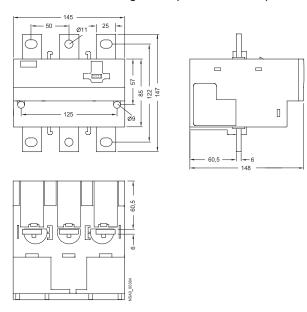
3UF7 103 current measuring module (busbar connection)



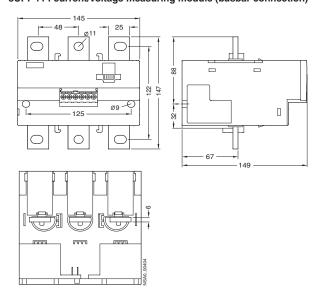
3UF7 113 current/voltage measuring module (busbar connection)



3UF7 104 current measuring module (busbar connection)

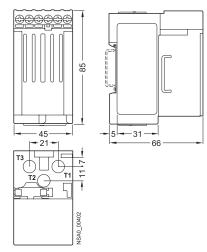


3UF7 114 current/voltage measuring module (busbar connection)

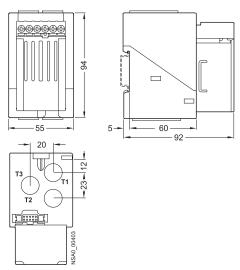


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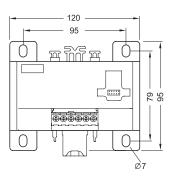
3UF7 110, 3UF7 111 current/voltage measuring module (straight-through transformer)

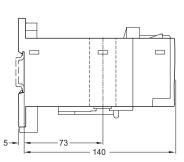


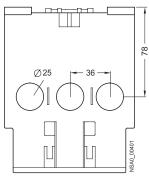
3UF7 112 current/voltage measuring module (straight-through transformer)



3UF7 113 current/voltage measuring module (straight-through transformer)





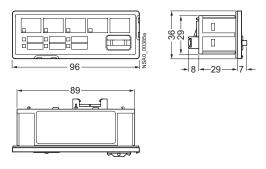


3/81

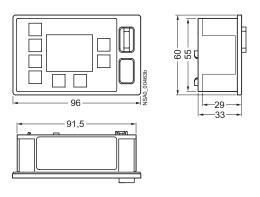
SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 motor management and control devices

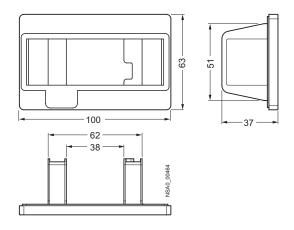
3UF7 200 operator panel



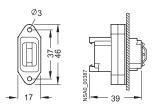
3UF7 210 operator panel with display



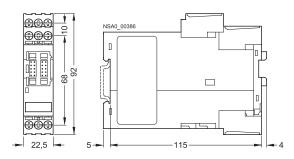
3UF7 922 adapter for operator panel



3UF7 920 door adapter



3UF7 3 digital module 3UF7 4 analog module 3UF7 5 ground-fault module 3UF7 7 temperature module 3UF7 15 decoupling module



Combination Starters & Starters for Group Installation

Contents

Self Protected Motor Starters per UL 508 Type E 3RA6





3RA61 / 3RA62 up to 32 A for mounting rail, surface, comb busbar, infeed system Page

Selection and ordering data

- Direct start, Reversing duty 4/7
- Accessories 4/9-4/13





3RA64 / 3RA65 up to 32 A for mounting rail, surface, comb busbar, infeed system

Selection and ordering data

• Direct start, Reversing duty 4/8

Page

• Accessories 4/9-4/13





3RA68 up to 100 A for 3RA6 direct and reversing starters

Page

Selection and ordering data

- Infeed Components 4/16-4/19
- Accessories 4/20-4/21

Combination starters & starters for group installation 3RA1/3RA2





3RA1/3RA2 up to 100 A for mounting rail and Fast Bus busbar systems Page

Selection and ordering data

Direct start 4/36-4/39Accessories 4/44-4/52

Technical data 4/53-4/58 Installation guidelines 4/59-4/67 Circuit diagrams 4/67 Dimension drawings 4/68-4/71





3RA11/3RA22 up to 100 A for mounting rail and Fast Bus busbar systems Page

Selection and ordering data

Reversing duty
 Accessories
 4/40-4/43
 4/44-4/52

Technical data 4/53-4/58 Installation guidelines 4/59-4/67 Circuit diagrams 4/67 Dimension drawings 4/68-4/71

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

General data

SIRIUS

Overview

3RA6 compact starters and infeed system for 3RA6



3RA62 reversing starter

Integrated functionality

The SIRIUS 3RA6 compact starters are a generation of innovative motor starters with the integrated functionality of a motor starter protector, contactor and solid-state overload relay. In addition, various functions of optional mountable accessories (e. g. auxiliary switches, surge suppressors) come standard with the SIRIUS compact starter.

Application

The SIRIUS compact starters can be used wherever standard induction motors up to 32 A (approx. 20 HP/460 V) are directly started

The compact starters are not suitable for the protection of singlephase AC or DC loads.

The Compact Starter carries IEC, UL, and CSA approvals.

Low equipment variance

Thanks to wide setting ranges for the rated current and wide voltage ranges, the equipment variance is greatly reduced compared to conventional motor starters.

Very high operational reliability

Thanks to the high short-circuit breaking capacity and weld-free capability when the end of service life is reached, the SIRIUS compact starter achieves a very high level of operational reliability that would otherwise have only been possible with considerable additional overhead. This sets it apart from devices with similar functionality.

Safe disconnection

The auxiliary switches of the 3RA6 compact starters are designed as mirror contacts. It is thus possible to use the devices for safe disconnection, e. g. emergency-stops, up to Category 2 (EN 954-1) and together with other redundancy switching devices up to Category 3 or 4.

Communications integration with AS-Interface

To enable communications integration through AS-Interface there is an AS-i add-on module available in several versions which can be mounted on the SIRIUS compact starter in place of its control circuit terminals.

The design of the AS-i add-on module permits a group of up to 62 starters to be connected to the control system using just 4 cables. This reduces wiring work considerably compared to the conventional wiring method.

Communications integration using IO-Link

Up to 4 IO-Link compact starters (reversing and direct-on-line starters) can be connected together and conveniently linked to the IO-Link master through a standardized IO-Link connection. The SIRIUS 4SI solid-state module is used for example as an IO-Link master for connection to the SIMATIC ET 200S distributed I/O system.

The IO-Link connection enables a high density of information to be passed from device to PLC.

For details on the communications integration using IO-Link see Chapter 2 "Industrial Communication" --> "IO-Link".

The diagnostics data of the process collected by the 3RA6 compact starter, e. g. short-circuit, end of service life, limit position etc., are not only indicated on the compact starter itself, but also transmitted to the higher-level control system through IO-Link.

An optional operator panel, which can be installed in the control cabinet door, allows for easy control of the 3RA6 IO-Link compact starter from the control cabinet door.

Permanent wiring / easy replacement

Using the SIRIUS infeed system for 3RA6 (see page 4/16) it is possible to carry out the wiring in advance without a compact starter needing to be connected.

A compact starter can be very easily replaced simply by pulling it out of the infeed system without disconnecting the wiring.

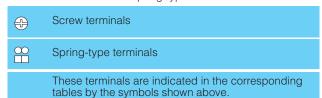
Regardless of whether the infeed system is mounted to a flat surface, or on a DIN rail, there is no need to disconnect any wiring (on account of the removable main and control circuit terminals) in order to replace a compact starter.

Consistent solution from the infeed to the motor starter

The SIRIUS infeed system for 3RA6 (with integrated PE bar) is offered as a user-friendly possibility of supplying up to 100 A to attached starters with a maximum wire cross section of 2/0 AWG while connecting the motor cable directly without additional intermediate terminals.

Screw and spring-type connections

The SIRIUS compact starters and the infeed system for 3RA6 are available with screw and spring-type connections.



System configurator for engineering

A free system configurator is available to further reduce the amount of engineering work for selecting the required compact starters and matching infeed.

Types of infeed for the 3RA6 compact starters

In total, four different infeed possibilities are available:

- Conventional wiring
- Use of three-phase busbars (combination with SIRIUS motor starter protectors and SIRIUS contactors possible)
- 8US Fast Bus busbar adapters
- SIRIUS infeed system for 3RA6 (see page 4/16)



To comply with the clearance and creepage distances demanded according to UL 508 there are the following infeed possibilities:

Type of infeed	Feeder terminal (according to UL 508, type E)	Туре
Conventional wiring	Terminal block for "Self- Protected Combination Motor Controller (Type E)"	3RV29 28-1H
Three-phase busbars	Three-phase infeed terminal for constructing "Type E Starters", UL 508	3RV29 25-5EB
Infeed systems for 3RA6	Infeed on left, 50/70 mm ² , screw terminal with 3 sockets, outgoing terminal with screw/spring-type connections, including PE bar	3RA68 13-8AB (screw terminals), 3RA68 13-8AC (spring-type terminals)

SIRIUS 3RA6 compact starters

The SIRIUS 3RA6 compact starters are universal motor starters according to IEC/EN 60947-6-2. As control and protective switching devices (CPS) they can connect, convey and disconnect the thermal, dynamic and electrical loads from short-circuit currents up to $I_{\rm q}=30~{\rm kA}$, i.e. they are essentially weld-free. They combine the functions of a motor starter protectors, a contactor and a solid-state overload relay in a single enclosure and can be used wherever standard induction motors up to 32 A (up to approx. 20 HP at 480 V AC) are started directly. Available versions are the direct-on-line starters with 45 mm width and the reversing starters with 90 mm width.

The reversing starter version comes with not only an internal electrical interlock but also with a mechanical interlock to prevent simultaneous actuation of both directions of rotation.

3RA6 compact starters are supplied in 5 current setting ranges. The 3RA61 and 3RA62 have 3 control voltage ranges (AC/DC), the 3RA64 and 3RA65 have one control voltage range (DC):

Current setting range	At 460 V AC for induction motors Standard output P	Rated control supply voltage for 3RA61, 3RA62 3RA64, 3RA65 compact starters for IO-Link			
Α	HP	V AC/DC	V DC		
0.1 0.4		24	24		
0.32 1.25	1/2	110 240			
1 4	2				
3 12	7 1/2				
8 32	20				

Note:

The 3RA1 motor starters can be used as motor starters > 32 A up to 100 A.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for motor starters >100 A.

Operating conditions

The SIRIUS 3RA6 compact starters are suitable for use in nearly all climates. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

The SIRIUS compact starters are generally designed to degree of protection IP20. The permissible ambient temperature during operation is -20 to +60 $^{\circ}\text{C}.$

The maximum short-circuit current based on UL testing is 30 kA up to 12 A and 15 kA for the $8 \dots 32$ A versions at 480 V.

Note:

More technical specifications can be found in the system manual at

www.siemens.com/compactstarter

Overload tripping times

The overload tripping time can be set on the device to less than 10 s (CLASS 10) and less than 20 s (CLASS 20 for heavy starting). As the breaker mechanism still remains closed after an overload, resetting is possible by either local manual reset or autoreset after 3 minutes cooling time.

With autoreset there is no need to open the control cabinet.

Diagnostics options

The compact starter provides the following diagnostics options on site:

- With LEDs
 - Connection to the control voltage
- Position of the main contacts
- With mechanical indication
- Tripping due to overload
- Tripping due to short-circuit
- Tripping due to malfunction (end of service life reached because of worn switching contacts or a worn switching mechanism or faults in the control electronics)

These states can also be evaluated in the higher-level control system:

- With conventional wiring using the integrated auxiliary and signaling switches of the compact starter
- With AS-Interface or IO-Link in even greater detail using the respective communication interface

Four complement variants for 3RA6 compact starters

- For standard mounting rail or screw mounting: basic version including 1 pair of main circuit terminals and 1 pair of control circuit terminals
- For standard mounting rail or screw mounting when using the AS-i add-on module: comes without control circuit terminals because the AS-i addon module is attached in lieu of them
- For use with the infeed system for 3RA6: without main circuit terminals because they are supplied with the infeed system and the expansion modules
- For use with the infeed system for 3RA6 and AS-i add-on module:
 - without main or control circuit terminals as they are not needed
- The control circuit terminals are always required by the compact starters for IO-Link; the main circuit terminals depend on the use of the infeed system.

Additional components of the 3RA6

The two control circuit terminals on the 3RA61/3RA62 allow access to signalling contacts for overload (1 CO) and short-circuit / malfunction (1 NO). Furthermore, the 3RA61 has two auxiliary contacts (1 NO + 1 NC) for indicating the position of the main contacts, while the 3RA62 has one auxiliary contact (1 NO) per direction of rotation per main contact.

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4

Overview



Function

Trip units

The SIRIUS 3RA6 compact starters are equipped with the following trip units:

- Inverse-time delayed solid-state overload release
- Instantaneous electronic trip unit (electromagnetic shortcircuit release)

The overload releases can be adjusted in accordance with the load current.

The electronic trip units are permanently set to a value 13 times the maximum rated current of the 4 A, 12 A and 32 A starter and thus enable trouble-free starting of motors.

Trip classes

The trip classes of electronically delayed trip units are based on the tripping time (t_A) at 7.2 times the set current in the cold state (excerpt from IEC 60947-4):

CLASS 10: $4s < t_A < 10 s$

CLASS 20: 6s $< t_A <$ 20 s (for heavy starting)

The compact starter must trip within this time.

Disconnection due to malfunction

The following malfunctions can be detected:

- End of service life
 - Worn switching contacts (for electrical endurance see "Technical data")
 - Worn switching mechanisms (for mechanical endurance see "Technical data")
- · Faults in the control electronics

Short-circuit protection

If a short-circuit occurs, the short-circuit releases of the SIRIUS 3RA6 compact starters isolate the faulty motor starter from the network and thus prevent further damage. The shortcircuit releases are factory-set to 14 times the value of the maximum rated current I_n of the device.

The SIRIUS compact starters have a short-circuit breaking capacity up to 30 kA at a voltage of 480 V AC.

Overload relay function

In the event of an overload, the compact starter switches off without the breaker mechanism being opened.

The overload trip can be signaled to the higher-level control system through an integrated signal switch.

The overload signal can be reset automatically or by means of a manual reset

Control through AS-Interface

For control through AS-Interface, the AS-i add-on module is mounted instead of the two control circuit terminals on the SIRIUS 3RA6 compact starters (direct-on-line starters and reversing starters).

The AS-i auxiliary voltage and the AS-i data line are installed on the AS-i add-on module easily and quickly without tools by means of two plug-in connector blocks with insulation displacement connection.

The AS-i add-on module is equipped with the latest A/B technology and has an addressing socket onboard.

An addressing unit is required and can be ordered for addressing the AS-i add-on module.

Bit assignment (see below) is similar to that for the SIRIUS motor starters, which means that the same programming can be used

DI 0.0 ready
DI 0.1 motor on
DI 0.2 group fault
DI 0.3 group warning

I	DO 0.0 motor on or motor clockwise
	DO 0.1 motor counterclockwise

A 24 V DC PELV power supply unit according to EN 61140 safety class III is required for the auxiliary voltage.

The AS-i data line is supplied with voltage by means of a 30 V DC AS-i power supply unit and is controlled by means of the AS-i master.

The AS-i add-on modules are available in the following five versions:

- AS-i add-on module for compact starters
- AS-i add-on module for compact starters with two local inputs for safe disconnection of the "clockwise rotation" or "counterclockwise rotation" outputs
- AS-i add-on module with two free external inputs
- · AS-i add-on module with two free external outputs
- AS-i add-on module with one free external input and output

The AS-i add-on module can only be used with compact starters with a control voltage of 24 V AC/DC.

Integrated auxiliary switches

The control circuit terminals of the SIRIUS 3RA6 compact starters have the following connections:

- A1/A2 for the control voltage for 3RA61, A1/A2 and B1/B2 for the control voltage for 3RA62
- "Overload" signal switch
- "Fault" signal switch, e. g. "short-circuit"
 Internal auxiliary switch for position of the main contacts (in case of direct-on-line starters: 1 NO + 1 NC with mirror contact to the main contact; in case of reversing starters: 2 NO)



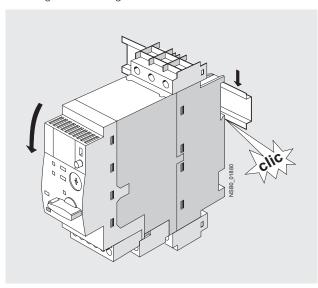
Design

Mounting

The 3RA6 compact starters can be mounted in 4 ways:

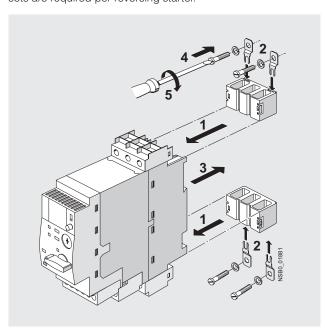
1) By snapping onto a TH 35 standard mounting rail

The SIRIUS compact starters can be snapped onto a standard mounting rail according to EN 60715 with a width of 35 mm.



2) By screw fixing to a flat surface

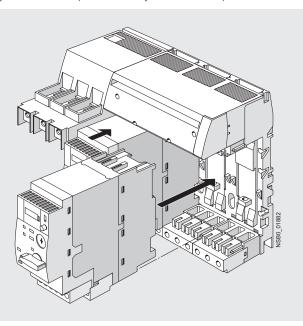
The SIRIUS compact starters are suitable for screw fixing to a flat surface. One set of 3RA69 40-0A adapters for screw connection (including push-in lugs) is required per direct-on-line starter, two sets are required per reversing starter.



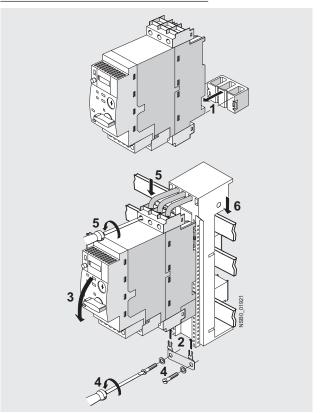
1 ... 5: order of mounting steps

3) By integrating in the infeed system for 3RA6

The SIRIUS compact starters can be assembled with the infeed system for 3RA6 (see "Infeed system for 3RA6").



4) By using the 8US busbar adapter for Fast Bus systems with 60 mm busbar center-to-center clearance



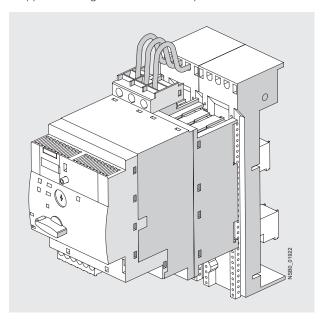
1 ... 6: order of mounting steps

Overview

4a) By using an additional device holder in the case of reversing starters

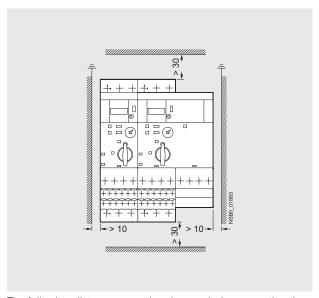
When the 8US busbar adapter is used on Fast Bus systems with 60 mm busbar center-to-center clearance, a device holder is needed in addition for a reversing starter on account of its dou-

The reversing starter is mounted in the same way as the directon-line starter on the busbar adapter. Then the device holder is snapped on alongside the busbar adapter.



Mounting regulations

The module can be installed horizontally or vertically. For the different installations attention must be paid however to limit values for protective separation according to IEC/EN 60947-2 of the compact starters (for details see the "Technical specifications").



The following distances must be observed when mounting the compact starters:

- Lateral clearance to grounded components: 10 mm
- Arcing space at top and bottom: 30 mm



Selection and ordering data





Width 45 mm One set of 3RA69 40-0A adapters is required for screw fixing.





Width 90 mm One set of 3RA69 40-0A adapters is required for screw fixing.

3RA61 20-1CB32	3RA61 20-2EB32	3RA62 50-1CP32	3RA62 50-1CP32

3RA61 20-1CB32	3RA61 20-2EB32	3RA62 50-1CP32	3RA62 50-1CP32
Standard induction motor 4-pole at 400 V AC ¹⁾	Setting range	Order No.	Order No.
· ·	for solid-state overload release		
tandard output P			
	<u></u>		
Р	А		
or use with the infeed	system for 3RA6 and with		
he AS-i add-on module vithout main and control	e or as a replacement device,		
without main and control	0.1 0.4	3RA6 □ 0-0A □30	
1/2	0.32 1.25	3RA6 □ 0-0B □30	_
<u>)</u>	1 4	3RA6 □ 0-0C □30	_
7 1/2	3 12	3RA6 □ 0-0D □30	
20	8 32	3RA6 □ 0-0E □30	
10	0 02	311A0 0-0E 0.30	
		Screw terminals ²⁾	Spring-type terminals
For standard mounting including 1 pair of main c	rail or screw mounting,		
1 pair of control circuit ter			
-	0.1 0.4	3RA6 □ 0-1A □32	3RA6 □0-2A □32
1/2	0.32 1.25	3RA6 □ 0-1B □32	3RA6 □0-2B □32
2	1 4	3RA6 □ 0-1C □32	3RA6 □0-2C □32
7 1/2	3 12	3RA6 □ 0-1D □32	3RA6 □0-2D □32
20	8 32	3RA6□ 0-1E □32	3RA6□0-2E □32
For use in the infeed sy	stem for 3RA6,		
without main circuit termi	nals, with 1 pair of control circuit terminals		
	0.1 0.4	3RA6 □ 0-1A □33	3RA6 □0-2A □33
1/2	0.32 1.25	3RA6 □ 0-1B □33	3RA6 □ 0-2B □33
2	1 4	3RA6 □ 0-1C □33	3RA6 □ 0-2C □33
7 1/2	3 12	3RA6 □ 0-1D □33	3RA6 □0-2D □33
20	8 32	3RA6 □ 0-1E □33	3RA6 □ 0-2E □33
For standard mounting			
when using the AS-i add			
with r-pair of main circuit	terminals, without control circuit terminals	2000001010	
 1/2	0.1 0.4 0.32 1.25	3RA6□0-1A □34	3RA6 □ 0-2A □ 34
)	0.32 1.25 1 4	3RA6□0-1B □34	3RA6 □ 0-2B □ 34
2 7 1/2	1 4 3 12	3RA6 □ 0-1C □34 3RA6 □ 0-1D □34	3RA6 □0-2C □34 3RA6 □0-2D □34
•			
20	8 32	3RA6□0-1E □34	3RA6 □ 0-2E □34
Order No. supplements for	rated control supply voltage		
 Direct-on-line starter 		12	12
Reversing duty starter		25	25
 24 V AC/DC (for combining 	g with AS-I add-on module)	В	В

¹⁾ Selection depends on the motor full load amps. Horse Power ratings provided for reference only.

Siemens Industry, Inc. Industrial Controls Catalog

• 110 ... 240 V AC/DC

 $^{^{\}rm 2)}$ A set of 3RA69 40-0A adapters is required for screw mounting.

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

3RA64, 3RA65 compact starters for IO-Link



Selection and ordering data



3RA64 with 3RA69 11-1A auxilliary switch block

- Direct-on-line starters
- Rated control supply voltage 24 V DC
- •Width 45 mm
- •One set of 3RA69 40-0A adapters is required for screw fixing

Standard induction motor 3-pole at 460 V AC Standard output P	Setting range for solid-state overload release	Screw terminals	Spring-type terminals
HP1)	A	Order No.	Order No.
For standard mounting rail or screen main circuit terminals and 1 pair of			
	0.1 0.4	3RA64 00-1AB42	3RA64 00-2AB42
1/2	0.32 1.25	3RA64 00-1BB42	3RA64 00-2BB42
2	1 4	3RA64 00-1CB42	3RA64 00-2CB42
7 ½	3 12	3RA64 00-1DB42	3RA64 00-2DB42
20	8 32	3RA64 00-1EB42	3RA64 00-2EB42
For use in the infeed system for 3 with 1 pair of control circuit termi	RA6, without main circuit terminals, nals		
_	0.1 0.4	3RA64 00-1AB43	3RA64 00-2AB43
1/2	0.32 1.25	3RA64 00-1BB43	3RA64 00-2BB43
2	1 4	3RA64 00-1CB43	3RA64 00-2CB43
7 ½	3 12	3RA64 00-1DB43	3RA64 00-2DB43
20	8 32	3RA64 00-1EB43	3RA64 00-2EB43



3RA65 with 3RA69 11-1A auxilliary switch block

Reversing starters

- Rated control supply voltage 24 V DC
- •Width 90 mm
- •One set of 3RA69 40-0A adapters is required for screw fixing

	nting rail or screw moutning, including 1 pair of nals and 1 pair of control circuit terminals		
	0.1 0.4	3RA65 00-1AB42	3RA65 00-2AB42
1/2	0.32 1.25	3RA65 00-1BB42	3RA65 00-2BB42
2	1 4	3RA65 00-1CB42	3RA65 00-2CB42
7 ½	3 12	3RA65 00-1DB42	3RA65 00-2DB42
20	8 32	3RA65 00-1EB42	3RA65 00-2EB42
	eed system for 3RA6, without main circuit terminals, trol circuit terminals		
	0.1 0.4	3RA65 00-1AB43	3RA65 00-2AB43
1/2	0.32 1.25	3RA65 00-1BB43	3RA65 00-2BB43
2	1 4	3RA65 00-1CB43	3RA65 00-2CB43
7 ½	3 12	3RA65 00-1DB43	3RA65 00-2DB43
20	8 32	3RA65 00-1EB43	3RA65 00-2EB43

¹⁾ Selection depends on the motor full load amps. Horse power ratings provided for reference only.



Accessories

Overview

Accessories for SIRIUS 3RA6 compact starters

The following accessories are available for the 3RA6 compact starters:

- AS-i add-on module: see AS-Interface Add-On Modules for 3RA6, page 4/14
- External auxiliary switch blocks: Snap-on auxiliary switch as versions 2 NO, 2 NC and 1 NO +1 NC with screw or springtype connections; the contacts of the auxiliary switch block open and close jointly with the main contacts of the compact starter. The NC contacts are designed as mirror contacts.
- Control kit: aid for manually closing the main contacts in order to evaluate the wiring and motor direction under conditions of short-circuit protection
- Adapter for screw mounting the compact starter, including push-in lugs
- Main circuit terminals: Available in screw and spring-type ter-
- Main circuit terminals for mixed connection method: With the main circuit terminal for the mixed connection method it is also possible in the main circuit to change over from the screw connection method on the incoming side to the springtype connection method on the outgoing side.

This enables for example the side-by-side mounting of several compact starters and their cost-effective connection using the three-phase busbars on the infeed side. The motors are then directly connected by the quick and reliably contacting spring-type connection method.

Accessories for UL applications

The terminal block for "Self-Protected Combination Motor Controller", type E is available for complying with the clearance and creepage distances according to UL 508.

Accessories for infeed using three-phase busbar systems

The three-phase busbars can be used as an easy, time-saving and clearly arranged means of feeding SIRIUS 3RA6 compact starters with screw connection. Motor starter protectors size S00 and S0 can also be integrated.

The busbars are suitable for between 2 and 5 devices. However, any kind of extension up to a maximum summation current of 63 A is possible by clamping the terminals of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor circuit protector.

A connecting piece is required for the combination with motor starter protector size S00. S00 and S0 motor starter protectors of the 3RV2 series do not require the additional connecting piece. The motor starter protectors are supplied by appropriate feeder terminals. Special feeder terminals are required for constructing "Type E Starters" according to UL/CSA.

The three-phase busbar systems are finger-safe but empty connection terminals must be fitted with covers. They are designed for any short-circuit stress which can occur at the output side of connected SIRIUS 3RA6 compact starters or motor starter protectors.

8US Fast Bus busbar adapters for 60 mm systems

The compact starters are mounted directly with the aid of busbar adapters on the Fast Bus busbar systems with 60 mm center-tocenter clearance in order to save space and to reduce infeed times and costs. These starters are suitable for copper busbars with a width from 12 to 30 mm. The busbars can be 5 mm or 10 mm thick

The 8US Fast Bus busbar system can be loaded with a maximum summation current of 1400A.

The "reversing starter" version requires a device holder along side the busbar adapter for lateral mounting.

The compact starters are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For more accessories such as incoming and outgoing terminals, flat copper profiles etc., see Section 5 "Fastbus Busbar Systems"

Accessories for operation with closed control cabinet doors

Door-coupling rotary operating mechanisms for standard and emergency-stop applications are available for operating the compact starter with closed control cabinet doors.

Accessories for SIRIUS 3RA6 compact starters in IO-Link version

The following accessories are available specifically for the 3RA64, 3RA65 compact starters:

- The 4SI SIRIUS solid-state module as IO-Link master allows for the simple and economical connection of SIRIUS controls with IO-Link (e.g up to four groups of 4 compact starters) to the multifunctional SIMATIC ET 200S distributed I/O system.
- Additional connection cables for side-by-side mounting of up to 4 compact starters
- Operator panel for local control and diagnostics of up to 4 compact starters coupled to each other

Accessories



Selection and ordering data

Selection and	a oraering	data			
		Version	Order No.	Std. pack qty.	Weight approx.
					kg
Accessories	for 3RA6 c	compact starters			
3RA69 50-0A		Control kits For mechanical actuation of the compact starter	3RA69 50-0A	1 unit	0.004
3HA09 5U-UA		Adapters for screw mounting the	3RA69 40-0A	1 unit	0.152
		compact starter (set including push-in lugs) Direct-on-line starters require 1 set, reversing starters 2 sets.	311A03 40-0A	Turin	0.102
3RA69 40-0A					
311/09 40-0/			Screw terminals	+	
		Auxiliary switch blocks for compact starters			
B. 200717 + 2007		• 2 NO	3RA69 11-1A	1 unit	0.018
6666	7	• 2 NC	3RA69 12-1A	1 unit	0.018
3RA69 11-1A		• 1 NO +1 NC	3RA69 13-1A	1 unit	0.018
erre		Main circuit terminals (line and load side)	3RA69 20-1A	1 unit	0.038
3RA69 20-1A					
4		Control circuit terminals			
		• For 3RA61	3RA69 20-1B	1 unit	0.042
3RA69 20-1B		• For 3RA62	3RA69 20-1C	1 unit	0.042
			Spring-type terminals		
		Auxiliary switch blocks for compact starters			
Days tan		• 2 NO	3RA69 11-2A	1 unit	0.018
00 00 EE EE		• 2 NC • 1 NO +1 NC	3RA69 12-2A 3RA69 13-2A	1 unit 1 unit	0.018 0.018
3RA69 11-2A		• INO +INC	3HA09 13-ZA	i uiii	0.016
Shada 11-2A		Main circuit terminals (line and load side)	3RA69 20-2A	1 unit	0.049
3RA69 20-2A					
5. 1. 155 25 27 (Control circuit terminals			
		• For 3RA61	3RA69 20-2B	1 unit	0.036
3RA69 20-2B		• For 3RA62	3RA69 20-2C	1 unit	0.036



Accessories

0.052



3RA69 20-3A

Version	Order No.	Std. pack qty.	Weight approx.
			kg

Accessories specifically for 3RA64, 3RA65 compact starters with IO-Link



3RA69 31-0A





3RA69 35-0A

Additional connection cables (flat) for side-byside mounting of up to 4 compact starters

• 10-pole			
- 8 mm ¹⁾	3RA69 32-0A	5 units	0.007
- 200 mm ¹⁾	3RA69 33-0B	5 units	0.012
• 14-pole			
- 8 mm ²⁾	3RA69 31-0A	5 units	0.007
- 200 mm	3BA69 33-0C	5 units	0.014

3RA69 35-0A

Operator panels

(incl. enabling block, blanking cover and assembly	/
bracket)	
,	

Enabling block	3RA69 36-0A	1 unit	0.002
Blanking covers	3RA69 36-0B	5 units	0.001
Connection cable (round) for connecting the operator panel 10-pole, 2000 mm	3RA69 33-0A	1 unit	0.114
SIRIUS 4SI solid-state modules IO-Link master for connection of up to 4 SIRIUS controls (max. 16 in groups of 4) with IO- Link (3-wire connection) to SIMATIC ET 200S, width 15 mm, supports firmware update (STEP 7 V5.4 SP5 and higher) Can be used with the following terminal	3RK1 005-0LB00-0AA0	1 unit	0.057



modules:

1 unit

Version	Order No.	Std.	Weight
		pack	approx.
		qty.	
			ka

Terminal blocks and phase barriers for Self-Protected Combination Motor Controllers (Type E)" according to UL 508



UL 508 demands 1-inch clearance and 2-inch creepage distance on the line side for "Combination Motor Controller Type E". The following terminal blocks or phase barriers must be used in 3RV20 motor starter protectors.

The terminal blocks or phase barriers cannot be used in combination with the 3RV19 .5 three-phase busbars.

For construction with three-phase busbars, see "Busbar accessories"

Tamainal blacks tons C	200 200	2DV20 20 411	d . mit	0.005
Terminal blocks type E	S00, S0	3RV29 28-1H	1 unit	0.065
For extended clearance and				
creepage distances				
(1 and 2 inch)				

TMOdules.

• TM-E15S26-A1 (screw terminals)

• TM-E15C26-A1 (spring-type terminals)

• TM-E15N26-A1 (Fast Connect)

^{1) 10-}pole connection cables are required for EMERGENCY-STOP group concepts.

²⁾ Is included in the scope of supply of the SIRIUS 3RA6 compact starter in IO-Link version.

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

Accessories



	Number of compact starters and motor starter protectors that can be connected without lateral acces- sories	Modu- lar spacing	Rated current I_n at 690 V	For motor starter protector	Order No.	Std. pack qty.	Weight approx.
		mm	А	Size			kg
Three-phase busbars for	r infeed with 3RA6						
3RV19 15-1AB 3RV19 15-1BB 3RV19 15-1CB	For feeding several costarter protectors with side by side on standa with touch protection. 2 3 4 5	screw ter	minals, m	ounted	3RV19 15-1AB 3RV19 15-1BB 3RV19 15-1CB 3RV19 15-1DB	1 unit 1 unit 1 unit 1 unit	0.044 0.071 0.099 0.124

Not suitable for 3RV11/3RV21 motor starter protectors for motor protection with overload relay function and for 3RV17/3RV27 and 3RV18/3RV28 motor starter protectors according to UL 489 / CSA C22.2 No.5-02. The joint clamping of motor starter protectors size S00 and size S0 is not possible due to the different modular spacings and the different height of the terminals. The 3RV19 15-5DB connecting piece is available for connecting the compact starters to motor starter protectors size S00.

	Version		Modu spac	ing r	or motor starter protector	Order No.	Std. pack qty.	Weight approx.
			mm		Size			kg
Connecting pieces	for three-p	hase bu	sbars					
3RV19 15-5DB	For connect starters (left starter prototing)	ft) and mo	tor	Ç	S00	3RV19 15-5DB	1 unit	0.042
Covers for connecti	ion termina	als of th	e three-pha	ise busb	ars			
3RV19 15-6AB	Touch prote positions	ection for e	empty	\$	S00, S0	3RV19 15-6AB	10 units	0.003
	\	Finely stranded	tion AWG cables, solid or stranded	Tighten- ing torque	For compact starters and motor starter protectors	Order No.		Weight approx.
	mm² r	mm²	AWG	Nm	Size			kg
Three-phase feeder	terminals							
Bee	Connectio	n from to	р					
000	2.5 16	2.5 16	10 4	3 4	S00, S0	3RV29 25-5AB		0.043
01010	Connectio	n from be	low ¹⁾					
3RV29 25-5AB	2.5 16 2	2.5 16	10 4	Input: 4, Output: 2 2.5	S00, S0	3RV29 15-5B		0.093
3RV29 15-5B								
Three-phase feeder three-phase busbar		for cons	structing "I	ype E Si	tarters" for			
3RV29 25-5EB	2.5 16 2		p 10 4	3 4	S00, S0	3RV29 25-5EB		0.044

¹⁾ This terminal is connected in place of a switch, please take the space requirement into account.

pack

qty.

approx.

kg

Accessories

	_			
	Version	Order No.	Std. pack qty.	Weight approx.
				kg
8US Fast Bus busbar	adapters for 60 mm systems			
8US12 11-1NS10	For flat copper profiles according to DIN 46433 Width: 12 30 mm Thickness: 4 5 mm or 10 mm	8US12 11-1NS10	1 unit	0.337
	and according along side the Foot Bus bushes			
adapter for 60 mm sys	eral mounting along side the Fast Bus busbar stems			
	Required in addition to the busbar adapter for mounting a reversing starter	8US12 50-1AA10	1 unit	0.239
8US12 50-1AA10				
	Version Color of Version of	Order No.	Std.	Weight

extension shaft

handle

Door-coupling rotary operating mechanisms for operating the compact starter with closed control cabinet doors



The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and an extension shaft of 130/330 mm in length (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.

		-			
Door-coupling rotary operating mechanisms	Black	130	3RV29 26-0B	1 unit	0.111
EMERGENCY-STOP door- coupling rotary oper- ating mechanisms	Red/ Yellow	130	3RV29 26-0C	1 unit	0.110

	Version	Order No.	Std. pack qty.	Weight approx.
Tools for opening spring	g-type terminals by hand			
	Screwdrivers for all SIRIUS devices with spring-type terminals	Spring-type terminals		
3RA29 08-1A	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	3RA29 08-1A	1 unit	0.045
Blank labels				
NSBO_O1429b	Unit labeling plates ¹⁾ for SIRIUS devices 20 mm x 7 mm, pastel turquoise	3RT19 00-1SB20	340 units	0.200

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: Murrplastik Systems, Inc. www.murrplastik.com

3RT19 00-1SB20

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

Add-on modules for AS-Interface



Overview

Various AS-i add-on modules are available for communication of the 3RA6 compact starter with the control system using AS-Interface:

- Standard version
- With two local inputs
- With two free external inputs
- With one free external input and one free external output
- With two free external outputs
- For local control

The AS-i add-on modules can be combined only in connection with compact starters with a rated control supply voltage of 24 V AC/DC.

AS-i add-on module for communications controlling

With this new module it is also possible for the connected compact starter to be operated directly using simple switches, i.e. without recourse to AS-i Communication, if required.

"Automatic" mode

NC contacts can be connected to the inputs Y2 and Y4 through the local terminals on the AS-i add-on module. If the "+" connections are connected simultaneously to both local inputs, the AS-i add-on module will be in "Automatic" mode, i.e. it will communicate with the control system through AS-Interface.

Local control

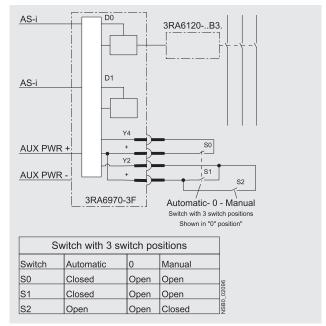
Opening the two inputs Y2 and Y4 will result in the direct disconnection of the compact starter. Operation through AS-i Communication is ended and the compact starter can now be switched on and off directly using NO contacts (one NO contact per direction of rotation on the reversing starter).

"LED AUX Power" must light up green, the 24 V DC supply must be connected and the AS-i control supply voltage must no longer be applied.

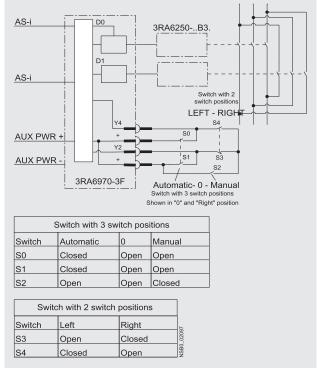
Resetting to "Automatic" mode

Simultaneous application of a "1" signal at the local inputs. The availability bit DI 0 is switched to a "1" signal.

If AS-i Communication is reset, the motor is first switched off and then on again when requested by the control system.



Circuit diagram example for operating a 3RA61 20 direct-on-line starter using an AS-i add-on module for on-site controller



Circuit diagram example for operating a 3RA62 50 reversing starter using an AS-i add-on module for on-site controller

Add-on modules for AS-Interface

2

 $\overline{\Omega}$

4

4/15

Selection and ordering data

	Version	Order No.	Std. pack qty.	Weight approx.
AC i add an madula				kg
AS-i add-on module		00.400.00	4 9	0.045
Proposed A	Standard version	3RA69 70-3A	1 unit	0.045
BANKS STATE	For communication of the compact starter with the control system using AS-Interface			
	With two local inputs	3RA69 70-3B	1 unit	0.045
3RA69 70-3A	For safe disconnection through local safety relays, e.g. cable-operated switches			
	With two free external inputs	3RA69 70-3C	1 unit	0.045
Sitvers	Replaces the digital standard inputs "Motor On" and "Group warning"			
••••	With one free external input and one free external output	3RA69 70-3D	1 unit	0.045
3RA69 70-3B to -3F	Replaces the digital standard input "Group warning"			
	With two free external outputs	3RA69 70-3E	1 unit	0.045
	Only for direct-on-line starters, replaces the digital standard output "Motor left"			
	For local control	3RA69 70-3F	1 unit	0.045
	Control of the compact starter optionally using AS-Interface or local switches			
Accessories for AS-	i add-on modules			
	Addressing units	3RK19 04-2AB01	1 unit	0.540
BH • • •	 For active AS-Interface modules, intelligent sensors and actuators 			
	 According to AS-Interface Version 2.1 			
	 Including expanded addressing mode 			
3RK19 04-2AB01	 Scope of supply 1 addressing unit 1 operating manual (German, English, French, Spanish, Italian) 1 addressing cable (1.5 m, with jack plug) 			

Compact Combination Starters

3RA6 Compact Starters

Infeed systems for 3RA6 up to 100 A



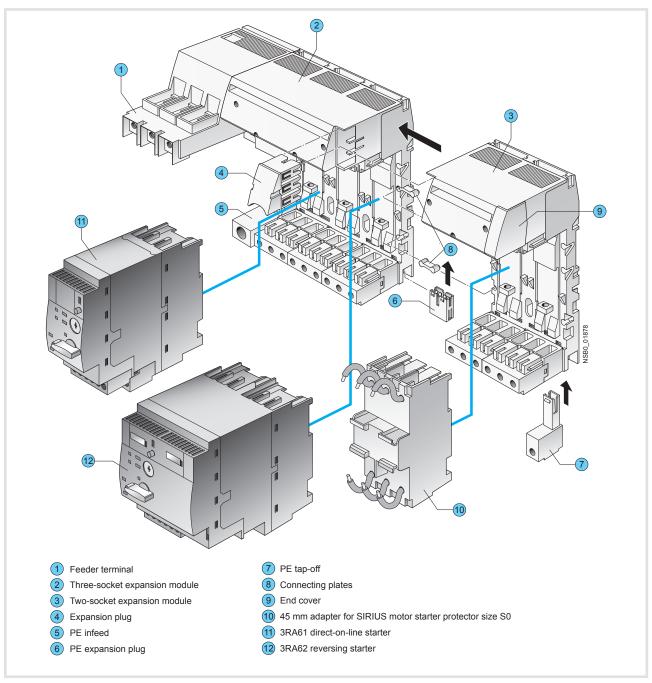
Overview

The infeed system for 3RA6 compact starters enables far less wiring in the main circuit and, thanks to the easy exchangeability of the compact starters, reduces the usual downtimes for maintenance work during the plant's operating phase.

The infeed system provides the possibility of completely prewiring the main circuit without a compact starter needing to be connected at the same time. As the result of the removable terminals in the main circuit, compact starters can be integrated in an infeed system in an easy manner (without the use of tools).

In addition, the integrated PE bar means it is optionally possible to connect the motor cable directly to the infeed system without additional intermediate terminals. The infeed system for 3RA6 compact starters is designed for summation currents up to 100 A with a conductor cross-section of max. 2/0 AWG on the feeder terminal block.

The infeed system can be mounted on a standard mounting rail or flat surfaces.



Infeed system for 3RA6 compact starters



SIRIUS 3RA6 Compact Starters

Infeed systems for 3RA6

up to 100 A

SIRIUS

1) Infeed

The 3-phase infeed is available as an infeed with screw connection (4-2 AWG up to 63 A or 0-2/0 AWG up to 100 A) and a an infeed with spring-type connection (4-2 AWG up to 63 A).

The infeed with spring-type terminal can be attached to the left side, as well as the right side, of an expansion module.

The screw terminal infeeds are permanently fitted to the left side of a 3-socket expansion module.

The infeeds with screw connection enable connection of the main conductors (L1, L2, L3) either from above or from below.

The infeeds with screw connection come packaged with 1 end cover, while the infeed with spring-type connection comes packaged with 2 end covers.

2 Three-socket expansion modules

The expansion module with 3 sockets for compact starters is available with screw connection and with spring-type connection.

Expansion modules enable the infeed system to be expanded and can be connected to each other in any number up to a maximum length of 1.2 meters.

Two expansion modules are held together with the help of 2 connecting plates and 1 expansion plug. These assembly parts are included in the scope of supply of the respective expansion module.

When the infeed system for 3RA6 compact starters is used, the compact starters (plug-in modules) are easily mounted and removed even when live.

Optional possibilities:

- PE connection on motor starter side
- · Outfeed for external auxiliary devices
- Connection to 3RV19 or 3RV29 infeed system
- Integration of SIRIUS 3RV1 motor starter protectors size S0 (using 3RA68 90-0BA adapter)

(3) Two-socket expansion modules

If only 2 instead of 3 additional sockets are required, then the 2-socket expansion module is the right choice. It has the same functionality as the 3-socket expansion module.

(4) Expansion plug

Two expansion modules can be connected together using the expansion plug. Flexible expansion of the infeed system is thus possible.

5 PE infeeds

This module enables a PE cable to be connected.

The PE infeed can be ordered with screw connection and spring-type connection (2 AWG) and can be fitted on the right or left to the expansion block.

6) PE expansion plug

The PE expansion plug is inserted from below and enables two PE bars to be connected.

7 PE tap-off

The PE tap-off is available with screw connection and springtype connection (10-8 AWG). It is snapped into the infeed system from below.

(8) Connecting plates

Two connecting plates are used to hold together 2 adjacent expansion modules.

9 End covers

On the last expansion module of a row, the slot provided for the expansion plug can be covered by inserting the end cover.

10) 45 mm adapters for SIRIUS 3RV1 motor starter protectors

SIRIUS 3RV1 motor starter protectors size S0 with screw connection can be fitted to the adapter, enabling them to be plugged into the infeed system.

Terminal blocks

Using the terminal block, three phase power can be fed out of the infeed system; this means that single-phase, two-phase and three-phase components can also be integrated in the system.

If the end cover is removed, the terminal block can be inserted into an expansion module.

Expansion plug for SIRIUS 3RV19 infeed systems

If the end cover is removed, the expansion plug for the SIRIUS 3RV19 infeed system can be inserted into an expansion module. It connects the infeed system for 3RA6 compact starters with the SIRIUS 3RV19 infeed system.

Maximum rated operational current

The following maximum rated operational currents apply for the components of the infeed system for 3RA6:

Component	Maximum rated operational current
	A
Infeed with screw connection 0-2/0 AWG	100
Infeed with screw connection 4-2 AWG	63
Infeed with spring-type connection 4-2 AWG	63
Expansion plugs	63

When several expansion modules are mounted side by side, the maximum rated operational current from the 2nd expansion module to the end of the row is 63 A.

Proposal for upstream short-circuit protection devices

The following short-circuit data apply for the components of the infeed system for 3RA6 compact starters:

Conductor cross- section	Inscriptions	Proposal for upstream short-circuit protection device
infeed bloc	it protection for k (4-2 AWG) connection	
14-2	$I_{d, \text{max}} = 19 \text{ kA}, I^2 t = 440 \text{ kA}^2 \text{s}$	3RV10 41-4JA10
infeed bloc	it protection for k (0-2/0 AWG) connection	
14-2/0	$I_{d, \text{max}}$ = approx. 22 kA	3RV10 41-4MA10
	it protection for infeed block -type connection	
12	$I_{d, \text{max}} = 9.5 \text{ kA}, I^2 t = 85 \text{ kA}^2 \text{s}$	3RV10 21-4DA10
10	$I_{d, \text{max}} = 12.5 \text{ kA}, I^2 t = 140 \text{ kA}^2 \text{s}$	3RV10 31-4EA10
8	$I_{d, \text{max}} = 15 \text{ kA}, I^2 t = 180 \text{ kA}^2 \text{s}$	3RV10 31-4HA10
6-4	$I_{d, \text{max}} = 19 \text{ kA}, I^2 t = 440 \text{ kA}^2 \text{s}$	3RV10 41-4JA10
Short-circu	it protection for terminal block	
16	$I_{d, \text{max}} = 7.5 \text{ kA}$	5SY
14	$I_{\rm d, max} = 9.5 \rm kA$	1)
12	$I_{\rm d, max} = 9.5 \rm kA$	
10	$I_{\rm d, max} = 12.5 \rm kA$	

¹⁾ To prevent the possibility of short-circuits, the cables on the terminal block must be installed so that they are short-circuit proof according to EN 60439-1 Section 7.5.5.1.2.

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

Infeed systems for 3RA6 up to 100 A



0.957

0.990

Selection and ordering data

Order No. Weight kg

Three-phase infeeds and expansion modules

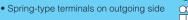


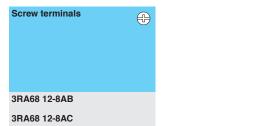
Infeeds with screw connection 4-2 AWG left

Infeed with screw connection with permanently fitted 3-socket expansion module with screw or spring-type terminals on the outgoing side and integrated PE bar

Expansion module with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter

· Screw terminals on outgoing side









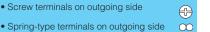
Infeeds with screw connection 0-2/0 AWG left

Infeed with screw connection with permanently fitted 3-socket expansion module with screw or spring-type terminals on the outgoing side and integrated PE bar

Expansion module with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter, suitable for UL duty according to UL 508

• Screw terminals on outgoing side







Screw terminals

1.146

1.179

3RA68 13-8AC



Infeeds with spring-type connection 4-2 AWG left or right

Up to 63 A



0.283

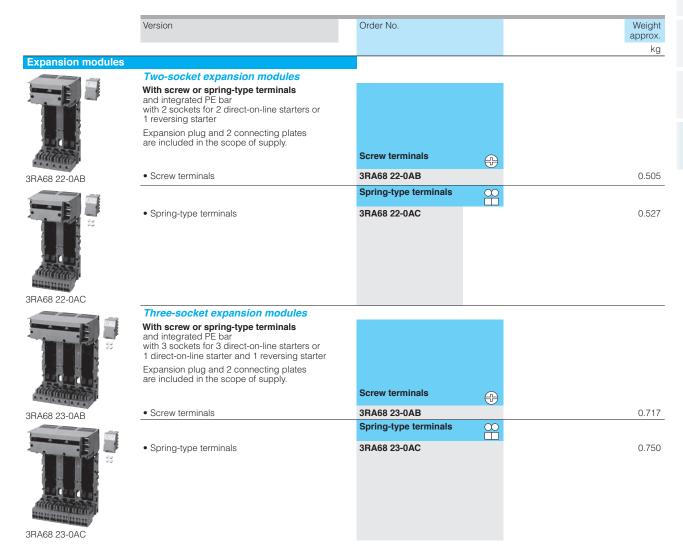


Infeed systems for 3RA6

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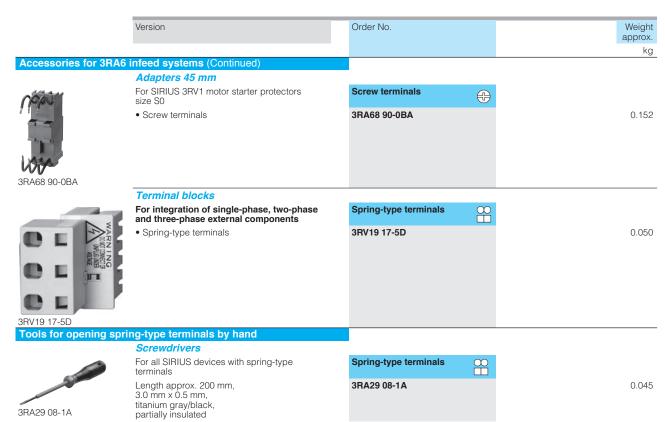
Infeed systems for 3RA6



Accessories			
	Version	Order No.	Weight approx.
Accessories for 3RA6	infeed systems		kg
Accessories for Shace	PE infeeds 4-2 AWG	•	
1. 1		Screw terminals	
3RA68 60-6AB	Screw terminals	3RA68 60-6AB	0.060
3NA00 00-0AB		Spring-type terminals	
	Spring-type terminals	3RA68 60-5AC	0.070
3RA68 60-5AC			
	PE tap-offs 10-8 AWG		
=		Screw terminals	
3RA68 70-4AB	Screw terminals	3RA68 70-4AB	0.019
		Spring-type terminals	
3RA68 70-3AC	Spring-type terminals	3RA68 70-3AC	0.017
	Expansion plugs PE expansion plugs	3RA68 90-0EA	0.008
3RA68 90-0EA	T E expunsion plugs	STAGE SU CLA	0.000
	Expansion plugs between 2 expansion modules	3RA68 90-1AB	0.029
3RA68 90-1AB	Is included in the scope of supply of the expansion modules.		
5.17.00 00 IAD	Expansion plugs for SIRIUS 3RV19/29 infeed	3RA68 90-1AA	0.079
3RA68 90-1AA	system Connects infeed system for 3RA6 to 3RV19 and 3RV29 infeed systems		



Infeed systems for 3RA6



General data



Type Size			3RA61 S0	3RA62	3RA64	3RA65	
Number of poles			3				
General technical specifications							
Device standard			IEC/EN 60947-6-2				
Mounting dimensions (WxHxD)							
 Screw terminals Spring-type terminals 		mm mm			45 x 170 x 165 45 x 191 x 165		
Weight	<u>'</u>	kg	1.4	2.3 -2.4	1.3	2.3	
Permissible mounting positions		9			al or horizontal ir		
Max. rated current $I_{\rm p}$	0.1 0.4 A	Α	0.4	preferably vertic	ar or monzontarii	Stallation	
in the respective setting range	0.32 1.25 A	A	1.25				
	1 4 A	A	4				
	3 12 A 8 32 A	A A	12 32				
Permissible ambient temperature	0 02 / (,,	OL .				
During operation	Acc. to IEC/EN 60721-3-3	°C	-20 +60, with	derating up to +	70		
 For installation in SIRIUS infeed system for 3RA6 		°C	-20 +40				
During storageDuring transport	IEC/EN 60732-3-1 IEC/EN 60721-3-2	°C °C	-55 +80 -55 +80				
Permissible rated current of the compact starter	•		55 TOU				
when several compact starters are mounted side- by-side on a vertical standard mounting rail or in the 3RA6 infeed system	,						
For a control cabinet inside temperature of	+40 °C	%	100				
For a control cabinet inside temperature of	+60 °C	%	80				
			10 90 Up to 2000 above sea level without restriction				
Installation altitude		m	•	ive sea ievei with	out restriction		
Rated frequency		Hz	50/60				
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	690				
Rated impulse withstand voltage <i>U</i> _{imp}		kV	6				
Trip class (CLASS)	Acc. to IEC 60947-4-1, EN 60947-4-1		10/20				
Rated short-circuit current I _q			30 (up to 12 A u 15 (8 32 A ur				
Types of coordination	Acc. to IEC 60947-6-2, EN 60947-6-2		Continuous				
Power loss P _{v max} of all main current paths	0.4 A	mW	10				
Dependent on the rated current I_{e} (upper setting range)	1.25 A 4 A	mW W	100				
(apper setting range)	12 A	W	1.8				
	32 A	W	5.4				
Max. switching frequency	AC-41	1/h	750				
	AC-43 AC-44	1/h 1/h	250 15				
Drive losses	7.0 11	1,11	10				
Active power	At 24 V						
	• 0.1 12 A	W	2.7				
	• 8 32 A At 110 240 V	W	2.95				
	• 0.1 12 A	W	3.4				
	• 8 32 A	W	3.8				
Overload function Ratio of lower to upper current mark			1:4				
Shock resistance (sine-wave pulse)			$a = 60 \text{ m/s}^2 = 6$	g with 10 ms; for	r every 3 shocks	in all axes	
Vibratory load					3 500 Hz; a = 2		
Degree of protection	Acc. to IEC 60947-1		IP20			,	
Touch protection	Acc. to IEC/EN 61140		Finger-safe				
Isolating features of the compact starter	Acc. to IEC/EN 60947-3		Yes				
Main and EMERGENCY-STOP switch	Acc. to IEC/EN 60204		Yes				



General data

Type Size Number of poles			3RA61 3RA62 S0 3	3RA64 3RA65
General technical specifications (contin	nued)			
Protective separation	Acc. to IFC 60947-2			
Control circuit to auxiliary circuit Horizontal standard mounting rail Other mounting position		V V	Up to 400 Up to 250	
Auxiliary circuit to auxiliary circuit Horizontal standard mounting rail Other mounting position		V V	Up to 400 Up to 250	
Main circuit to auxiliary circuit • Any mounting position		V	Up to 400	
EMC interference immunity	Acc. to IEC/EN 60947-1		Corresponds to degree	of severity 3
Conductor-related interference	BURST acc. to IEC/EN 61000-4-4			
In the main circuitIn the auxiliary circuit		kV kV	4 3	4 2
Conductor-related interference	SURGE acc. to IEC/EN 61000-4-5			
 In the main circuit Conductor - Ground Conductor - Conductor In the auxiliary circuit 	123/21101000 10	kV kV	4 2	2
- Conductor - Ground - Conductor - Conductor		kV kV	2	0.5 ¹⁾ 0.5 ¹⁾
Auxiliary switches Integrated Position of the main contacts Overload/short-circuit signal Expandable			1 NO + 1 NC 2 NO 1 CO/1 NO	1 NO + 1 NC 2 NO
- Position of the main contacts			2 NO, 2 NC, 1 NO + 1 NC	
Surge suppressors			Integrated (Varistor)	
Pollution degree			3	
Depth from standard mounting rail		mm	160	
Electromagnetic operating mechanism				
Control voltage		V	24 AC/DC 110 240 AC/DC	24 DC
Frequency	At AC	Hz	50/60 (5 %)	
Primary operating range			0.7 1.25 <i>U</i> _s	0.85 1.2 <i>U</i> _s
No-load switching frequency		1/h	3600	
Make-time		ms	max. 70	Max. 70 + IO-Link communic
Break-time		ms	max. 120	Max. 120 + IO-Link communic

¹⁾ To maintain maximum interference immunity in a harsh electromagnetic environment, additional overvoltage protection should be provided in the control supply current circuit. A suitable choice is for example the Dehn Blitzductor BVT AD 24 V, Art. No. 918 402 or an equivalent protective element. Manufacturer: DEHN+SÖHNE GmbH+Co. KG, Hans-Dehn-Straße. 1, Postfach 1640, D-92306 Neumarkt

General data



Туре		3RA61 20	□B3., 3RA6	2 50□B3.		3RA61 20-	3RA61 20EB3., 3RA62 50EB3.			
	□ = A, B, C or D									
		Rated ope	erational curr	ent 12 A		Rated ope	Rated operational current 32 A			
Rated control supply voltage	٧	24 AC		24 DC	24 DC		24 AC		24 DC	
Inrush peak current	Α	0.59		0.47	0.47			0.47		
Hold current	А	0.13		0.12	0.12			0.14		
Closed	W	2.8		2.9		3.5		3.1		
Operating times, typical On Off	ms ms	<160 <140 <35 <35		<160 <30		<140 <30				
Гуре		3RA61 20	□E3., 3RA6	2 50□E3.		3RA61 20-	EE3., 3RA62	50EE3.		
		□ = A, B, C or D								
		Rated ope	Rated operational current 12 A				Rated operational current 32 A			
Rated control supply voltage	٧	110 AC	240 AC	110 DC	240 DC	110 AC	240 AC	110 DC	240 DC	
Inrush peak current	Α	0.24	0.40	0.17	0.29	0.24	0.40	0.17	0.29	
Hold current	А	0.06	0.08	0.03	0.02	0.06	0.07	0.04	0.03	
Closed	W	3.8	6	3.1	5.1	3.7	5.2	3.4	5.8	
Operating times, typical On Off	ms ms	<160 <50	<140 <80	<150 <50	<140 <70	<160 <40	<140 <60	<150 <40	<140 <60	
Type		3RA64 00	□B4., 3RA6	5 00□B4.		3RA64 00EB4., 3RA65 00EB4.				
•		□ = A, B,	C or D							
		Rated ope	erational curr	ent 12A		Rated ope	erational curr	ent 32 A		
Rated control supply voltage	٧	24 DC				24 DC				
Inrush peak current	Α	0.39				0.53				
Hold current	А	0.13				0.15				
Closed	W	2.9				3.4				
Operating times, typical ¹⁾ • On • Off	ms ms	<140 <35				<140 <30				





General data

Type Size			3RA61 S0	3RA62	3RA64	3RA65
Number of poles			3			
Electromagnetic operating mechan	ism (continued)					
Switching capacity at 480 V		kA	30 (up to 12 A) 15 (8 32 A)			
Switching capacity at 600 V		kA	10 (up to 12 A) 5 (8 32 A)			
Line protection	At 10 kA At 50 kA	AWG AWG	14 12			
Shock resistance Breaker mechanism OFF Breaker mechanism ON		g g	25 15			
Normal switching duty						
Making capacity			12 x I _n			
Breaking capacity			10 × I _n			
Switching capacity dependent on rated current	Up to 12 A Up to 32 A	HP HP	7 1/2 20			
Endurance in operating cycles • Electrical endurance	At $I_{\rm e}$ = 0.9 x $I_{\rm n}$ and 400 V		3 10 000 000) 2 x 3 10 000 00	3 000 000	2 x 1 500 000
Control circuit						
Rated operational voltage • External auxiliary switch block • Internal auxiliary switch • Short-circuit signaling switch • Overload signaling switch		V V V	400/690 400/690 400 400			
Switching capacity • External auxiliary switch block	AC-15 • At $U_e = 230 \text{ V}$ • At $U_e = 400 \text{ V}$ • At $U_e = 400/690 \text{ V}$ • At $U_e = 289/500 \text{ V}$ • At $U_e = 400/690 \text{ V}$ DC-13 • At $U_e = 24 \text{ V}$ • At $U_e = 125 \text{ V}$	A A A A	6 3 2 1 6 0.9 0.55			
Internal auxiliary switchSignaling switch	• At $U_0 = 250 \text{ V}$ AC-15 • At $U_0 = 230 \text{ V}$ • At $U_0 = 400 \text{ V}$ • At $U_0 = 289/500 \text{ V}$ • At $U_0 = 400/690 \text{ V}$ DC-13 • At $U_0 = 24 \text{ V}$ • At $U_0 = 60 \text{ V}$ • At $U_0 = 50 \text{ V}$ • At $U_0 = 60 \text{ V}$ • At $U_0 = 60 \text{ V}$ • At $U_0 = 60 \text{ V}$ • At $U_0 = 250 \text{ V}$ • At $U_0 = 250 \text{ V}$ • At $U_0 = 480 \text{ V}$ AC-15 • At $U_0 = 400 \text{ V}$	A A A A A A A A A	0.27 6 3 2 1 10 2 1 0.27 0.1			
	DC-13 • At $U_{e} = 24 \text{ V}$ • At $U_{e} = 250 \text{ V}$	A A	2 0.11			

1

2

1

General data



Type Size			3RA61 S0	3RA62	3RA64	3RA65
Number of poles	al auviliam auvitab		3			
External auxiliary switch block, intern	ar auxiliary switch					
Endurance in operating cycles • Mechanical endurance			10 000 000		3 000 000	
Electrical endurance	AC-15, 230 V • At 6 A • At 3 A • At 1 A • At 0.3 A		200 000 500 000 2 000 000 10 000 000			
	DC-13, 24 V • At 6 A • At 3 A • At 0.5 A • At 0.2 A DC-13, 110 V • At 1 A • At 0.55 A		300 00 100 000 2 000 000 10 000 000 40 000 100 000			
	• At 0.3 A • At 0.1 A • At 0.04 A DC-13, 220 V • At 0.3 A • At 0.1 A • At 0.05 A • At 0.018 A		300 000 2 000 000 10 000 000 110 000 650 000 2 000 000 10 000 000			
Contact stability	At 17 V and 5 mA	Oper- ating cycles		itching operation	on per 100 000 00	00
Short-circuit protection • Short-circuit current I _K 1.1 kA	Fuse links operational class gG - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	А	10			
• Short-circuit current $I_{\rm K}$ < 400 A	Miniature circuit breaker up to 230 V with C characteristic	Α	10			
Signaling switches						
Endurance in operating cycles Mechanical endurance Electrical endurance AC-15	At 230 V and 3 A		20000 6050			
Contact stability	At 17 V and 5 mA	Oper- ating cycles	1 incorrect sw	itching operation	on per 100 000 00	00
Short-circuit protection • Short-circuit current I _K 1.1 kA	Fuse links operational class gG - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	А	6			
• Short-circuit current I _K < 400 A	Miniature circuit breaker up to 230 V with C characteristic	A	6			
Overload (short-circuit current $I_{\mathrm{K}} = 1.1 \ \mathrm{kA})$	Fuse links operational class gG - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	А	4			



3RA6 up to 32 A

3

4

echnical data									
Connection type		Screw connection	on	Spring-type connection					
Max. rated current I _{max}		12 A	32 A	12 A	32 A				
Conductor cross-sections of main circuit terminals									
Tools	Posidrive size 2		(3.5 x 0.5) mm, 8WA2 803						
Prescribed tightening torque	NM	2 2.5							
Minimum/maximum conductor cross-sections • Solid	mm ² mm ² mm ²	2 x (1.5 2.5) 2 x (2.5 6) Max. 1 x 10	2 x (2.5 6) Max. 1 x 10	2 x (1.5 6) Max. 1 x 10	2 x (2.5 6) Max. 1 x 10				
Finely stranded without ferrule	mm^2			2 x (1.5 6)	2 x (2.5 6)				
Finely stranded with ferrule	mm^2 mm^2	2 x (1.5 2.5) 2 x (2.5 6)	2 x (2.5 6)	2 x (1.5 6)	2 x (2.5 6)				
AWG cables	AWG AWG	2 x (1614) 2 x (1410)	2 x (1410) 1 x 8	2 x (1610) 1 x 8	2 x (1410) 1 x 8				

Connection type		Screw connection	Spring-type connection
Conductor cross-sections of control circuit terminals			
Tools		Posidrive size 2	(3.0 x 0.5) mm, DIN ISO 2380-1A
Prescribed tightening torque	NM	0.8 1.2	
Minimum/maximum conductor cross-sections • Solid	mm² mm²	1 x (0.5 4) 2 x (0.5 2.5)	2 x (0.25 1.5)
• Finely stranded without ferrule	mm²		2 x (0.25 1.5)
• Finely stranded with ferrule	mm² mm²	1 x (0.5 2.5) 2 x (0.5 1.5)	2 x (0.25 1.5)
AWG cables	AWG	2 x (20 14)	2 x (24 16)
Conductor cross-sections of the auxiliary switch for compact starters			
Order No.		3RA69 11A	3RA69 12A
Tools		Posidrive size 2	(2.5 x 0.4) mm, 8WA2 807
Prescribed tightening torque	NM	0.8 1.2	
Conductor cross-sections • Solid	mm² mm² mm²	2 × (0.51.5) 2 × (0.75 2.5) 2 × (1 4)	2 × (0.25 2.5)
• Finely stranded without ferrule	mm²		2 x (0.25 2.5)
• Finely stranded with ferrule	mm² mm²	2 x (0.5 1.5) 2 x (0.75 2.5)	2 x (0.25 1.5)
AWG cables	AWG AWG AWG	2 x (20 16) 2 x (18 14) 1 x 12	2 x (24 14)

3RA6 up to 32A



Technical data

Order No.			3RA6970-3A, 3RA6970-3B, 3RA6970-3C, 3RA6970-3D, 3RA6970-3E
General data of the AS-i add-on mo	odule		
Permissible ambient temperature			
Storage	Acc. to IEC/EN 60721-3-1	°C	-25 +70
Transport	Acc. to IEC/EN 60721-3-2	°C	-25 +70
Degree of protection	Acc. to IEC/EN 60947-1		IP20
EMC interference immunity	Acc. to EN 50295		
Conductor-related interference	BURST acc. to IEC/EN 61000-4-4	kV	1/2
Electrostatic discharge	Acc. to IEC/EN 61000-4-2	kV	6/8
Field-related interference	Acc. to IEC/EN 61000-4-3	V/m	10 (80 MHz 2.7 GHz)
Maximum pick-up current		mA	400
Maximum hold current		mA	200
Power consumption, max.		mA	30
IO code			7
ID code			A
ID2 code			Е

Order No. Connection type		3RA6970-3B, 3RA6970-3C, 3RA6970-3D, 3RA6970-3E Screw connection
,		Screw connection
Conductor cross-sections of the AS-i add-on module		
Tools		Posidrive size 1
Prescribed tightening torque	NM	0.5 0.6
Conductor cross-sections		
• Solid	mm ²	1 x (0.5 2.5)
		2 x (0.5 1.0)
Finely stranded with ferrule	mm²	1 x (0.5 2.5)
		2 x (0.5 1.0)
AWG cables	AWG	1 x (20 12)



Infeed systems for 3RA6 up to 100 A

Technical data

Туре			3RA6.			
General data						
Max. rated operational current Infeed with screw connection 0-2/0 AWG Infeed with screw connection 4-2 AWG Infeed with spring-type connection 10-3 AWG Expansion plug		A A A	100 63 63 63			
Permissible ambient temperature During operation Permissible rated current at control cabinet ins During storage/transport	side temperature: +40 °C +60 °C	°C % % °C	-20 +60 (over +40 current reduction 80 -55 +80	tion is required)		
Relative air humidity		%	10 90			
Installation altitude		m	Up to 2000 above sea level without	t restriction		
Rated operational voltage $U_{\rm e}$		V	690 AC			
Rated frequency		Hz	50/60			
Shock resistance			$a = 60 \text{ m/s}^2 = 6g \text{ with } 10 \text{ ms; for ev}$	ery 3 shocks in all axes		
Vibratory load			f = 1 6 Hz; d = 15 mm 10 cycles f = 150 Hz; a = 2 g			
Degree of protection	Acc. to IEC 60947-1		IP20 (IP 00 terminal compart- ment)			
Touch protection	Acc. to EN 50274		Finger-safe			
Degree of pollution			3			
Short-circuit protection for infeed with screw connection 4-2 AWG and infeed with screw connection 0-2/0 AWG	$I_{ ext{d,max}}$	kA	si 3i < 21	ecommendation for upstream hort-circuit protection device RV1041-4JA10 RV1041-4MA10		
	I ² t	kA ² s		V HRC gL/gG 3NA3, 315 A		
Short-circuit protection for infeed with spring- type connection • Conductor cross-section 12 AWG • Conductor cross-section 10 AWG	I _{d,max} I ² t I _{d,max} I ² t	kA kA²s kA kA²s	< 9.5 3l 85	ecommendation for upstream hort-circuit protection device RV2021-4DA10 RV1031-4EA10		
Conductor cross-section 8 AWG	I _{d,max} I ² t	kA kA ² s	· · · ·	RV1031-4HA10		
Conductor cross-section 6-4 AWG	I _{d,max} I ² t	kA kA²s	< 19 440	RV1041-4JA10		
Short-circuit protection for terminal block				ecommendation for upstream		
Conductor cross-section 16 AWG Conductor cross-section 14 AWG Conductor cross-section 12 AWG Conductor cross-section 10 AWG	$I_{ m d,max}$ $I_{ m d,max}$ $I_{ m d,max}$ $I_{ m d,max}$	kA kA kA kA		SY		

1) To prevent the possibility of short-circuits, the cables on the terminal block must be installed so that they are short-circuit resistant according to EN 60439-1 Section 7.5.5.1.2.

Туре	3RV29.
Connection type	Spring-type connection
Conductor cross-sections of terminal block	
Order No.	3RV29 17-5D
Finely stranded without ferrule	m ² 1.5 6 m ² 1.5 4 m ² 1.5 6 VG 15 10

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

Infeed systems for 3RA6 up to 100 A



Technical data Type 3RA6. Connection type Screw connection Conductor cross-sections of infeed with screw connection 16-2 AWG (L1, L2, L3) $^{1)}$ and PE infeed 2 AWG $^{2)}$ Order No. 3RA68 12-8AB, 3RA68 12-8AC, 3RA68 60-6AB Tools Posidrive size 2 Specified tightening torque NM 4.5 Conductor cross-sections 2.6 ... 16 2.5 ... 35 2.5 ... 25 2.5 ... 25 2.6 ... 16 2.5 ... 35 mm² max. 2 x 16 Solid mm^2 max. 2 x 25 Stranded mm² 2.5 ... 25 2.5 ... 25 Finely stranded with ferrule max. 2 x 16 · Finely stranded without ferrule max. 2 x 16 AWG cables AWG 12 2 12 2 max. 2 x (16 .. Connection type Screw connection **(+)** Conductor cross-sections of infeed with screw connection 10-2/0 AWG (L1, L2, L3) $^{1)}$ Order No. 3RA68 13-8AB, 3RA68 13-8AC Tools SW NM Specified tightening torque 6 ... 8 Conductor cross-sections 2.5 ... 16 Solid mm² 2.5 ... 16 max. 2 x 16 4 ... 70 2.5 ... 35 10 ... 70 max. 2 x 50 Stranded mm² mm² • Finely stranded with ferrule 2.5 ... 50 max. 2 x 35 mm² 10 .. Finely stranded without ferrule 4. . 50 50 max. 2 x 35 10 ... 2/0 max. 2 x (10 AWG cables AWG 10 2/0 Spring-type connection Connection type Conductor cross-sections of infeed with spring-type connection 10-3 AWG (L1, L2, L3)1) and PE infeed 3 AWG 3RA68 30-5AC, 3RA68 60-5AC 8WA2 806 mm 5.5 x 0.8 Conductor cross-sections 4 ... 16 4 ... 35 4 ... 25 Solid mm² Stranded mm² • Finely stranded with ferrule $\,\mathrm{mm}^2$ 25 6 .. mm² · Finely stranded without ferrule AWG cables 10 AWG . 3 Spring-type connection Connection type Screw connection Conductor cross-sections of infeed with screw connection 4-2 AWG (T1, T2, T3)²⁾, 2-socket and 3-socket expansion modules (T1, T2, T3)²⁾ and PE tap-off 10-8 AWG infeed with screw connection 0-2/0 AWG (T1, T2, T3)2) 3RA68 12-8AC, 3RA68 13-8AC, 3RA68 22-0AC, 3RA68 23-0AC, 3RA68 70-3AC 3RA68 12-8AB, 3RA68 13-8AB, Order No. 3RA68 22-0AB, 3RA68 23-0AB, 3RA68 70-4AB Tools Posidrive size 2 (3.5 x 0.5) mm, 8WA2 803 NM 2 ... 2.5 Specified tightening torque Maximum rated current Α 12 12 Conductor cross-sections mm² 2 x (2.5 ... 6) 2 x (1.5 ... 6) 2 x (2.5 ... 6) 2 x (2.5 ... 6) mm² mm² max. 1 x 10 max. 1 x 10 max. 1 x 10 max. 1 x 10 2 x (1.5 ... 6) • Finely stranded with ferrule mm^2 2 x (2.5 ... 6) • Finely stranded without ferrule mm^2 2 x (1 ... 2.5) 2 x (2.5 ... 6) 2 x (1.5 ... 6) 2 x (2.5 ... 6) mm^2 2 x (2.5 ... 6) AWG cables AWG 2 x (16 ... 14) 2 x (14 ... 10) 2 x (16 ... 10) 2 x (14 ... 10) 2 x (14 ... 10) AWG 1 x 8 1 x 8 1 x 8 AWG 1 x 8

¹⁾ L1, L2, L3 main conductors on input side.

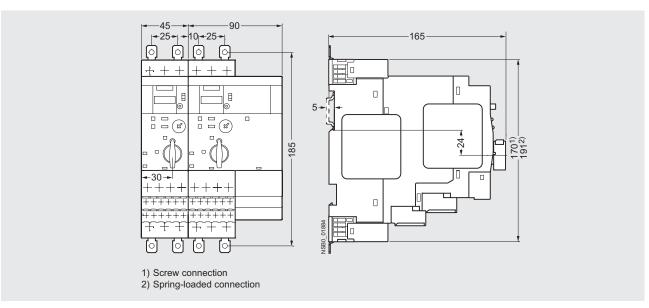
²⁾ T1, T2, T3 main conductors on output side.

3RA6 up to 32 A



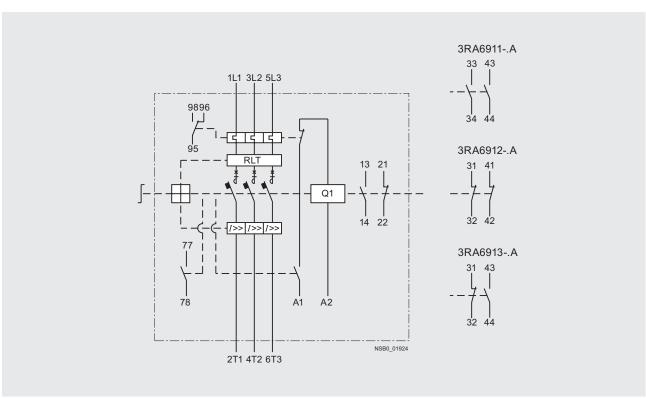
Dimensional drawings

Direct-on-line starters and reversing starters



Schematics

3RA61 direct-on-line starters



Schematic for 3RA61 direct-on-line starters (main circuit)

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3

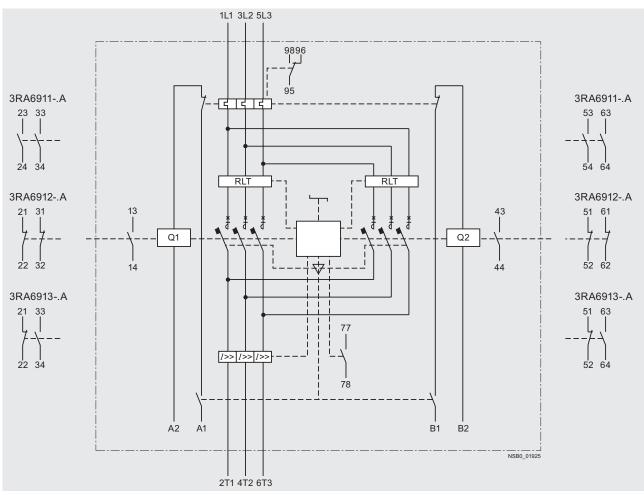
4

up to 32 A



Dimensional drawings

3RA62 reversing starters

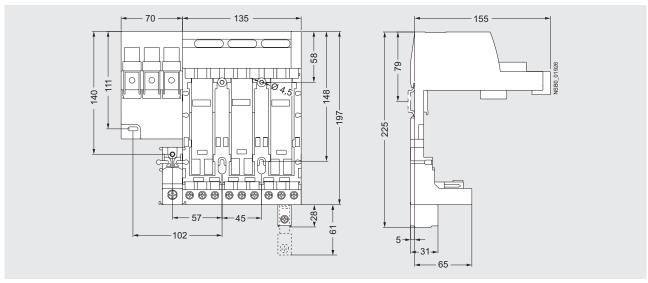


Schematic for 3RA62 reversing starters (main circuit)

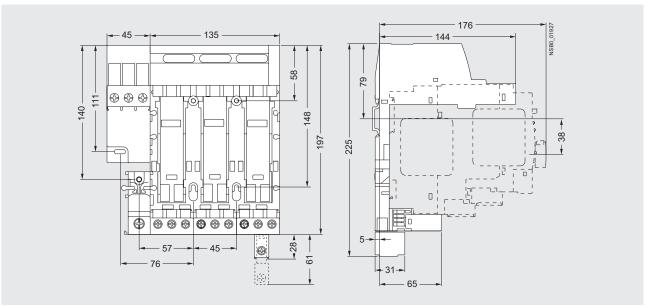


Infeed systems for 3RA6 up to 100 A

Dimensional drawings



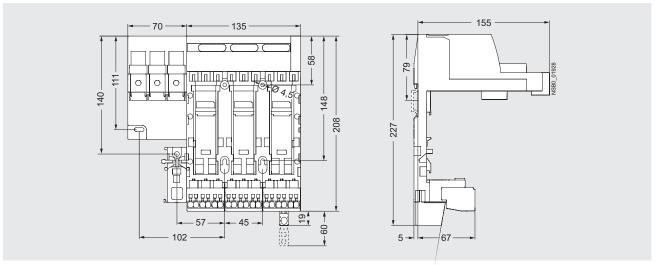
Infeed with screw connection 0-2/0 AWG on left with fixed 3-socket expansion module with outgoing screw terminals



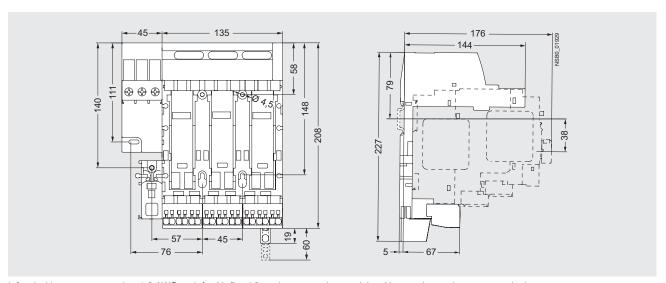
Infeed with screw connection 4-2 AWG on left with fixed 3-socket expansion module with outgoing screw terminals

Compact Combination Starters SIRIUS 3RA6 Compact Starters Infeed systems for 3RA6 up to 100 A

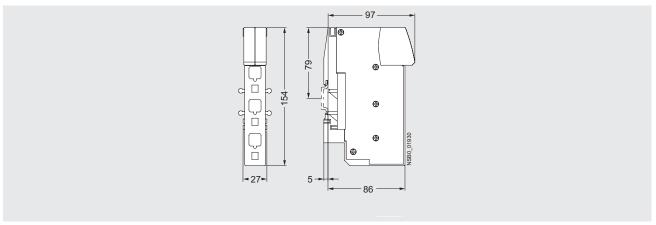




Infeed with screw connection 0-2/0 AWG on left with fixed 3-socket expansion module with outgoing spring-type terminals



Infeed with screw connection 4-2 AWG on left with fixed 3-socket expansion module with outgoing spring-type terminals



Infeed with spring-type terminals

Compact Combination Starters

SIRIUS 3RA6 Compact Starters

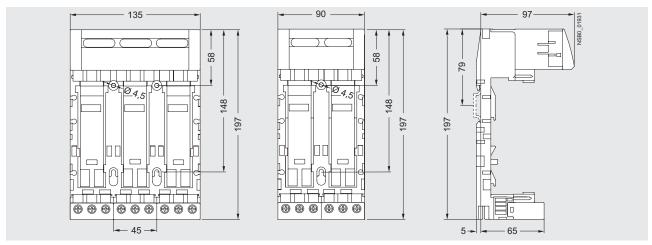
Infeed systems for 3RA6 up to 100 A

1

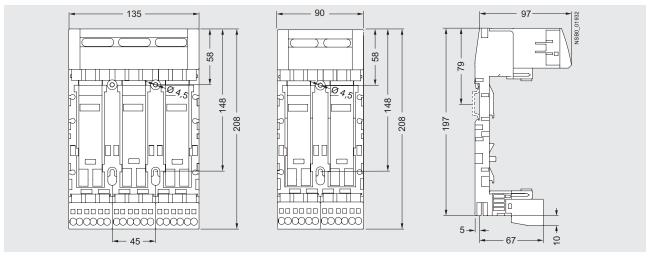
2

3

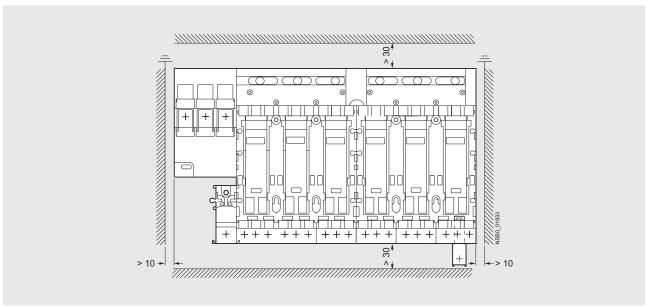
4



3-socket expansion module and 2-socket expansion module with outgoing screw terminals



3-socket expansion module and 2-socket expansion module with outgoing spring-type terminals



Minimum clearances to adjacent components when using infeed system for 3RA6

3RA1 / 3RA2 Starters

Non-Reversing, AC Coil up to 22 A



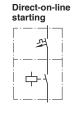
Selection and ordering data











Rated control supply voltage 50/60 Hz 110/120 V AC With screw connections

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
 Auxiliary switches¹⁾ on the motor starter protector and the con-
- Auxiliary switches 'on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
- Contactor size S00: 1 NO;
- Contactor size S0: 1 NO + 1 NC

Combination Starter, UL508 Type F

All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

ze	UL Da	ata						FLA setting range inverse-	Consisting devices	of the follow	ing single	Assem	bled starter		Wei appi
	Single HP rat	-phase ings	Three- HP rat		2)		SCCR at 480 V	time delayed overload release	Motor starter protector	+ Contactor	+ Link module + Busbar	Screw	terminals	+	
	115 V	230 V	200 V	230 V	460 V	575 V	100 ¥	G	protootor		adapter ³⁾	Order N	lo.		
							kA	Α							
elec	ction o	lepend	ls on I	motor	full lo	ad am	ps								
									3RV20	3RT20	3RA				
)							65	0.110.16	11-0BA10	15-1AK61	1921-1DA00	3RA21	10-0A 15-1AK6	,	0
							65	0.140.2	11-0BA10		+ 8US1251-	3RA21	10-0B□15-1AK6	,	0
							65	0.180.25	11-0CA10		5DS10	3RA21	10-0C 15-1AK6	,	C
							65	0.220.32	11-0DA10			3RA21	10-0D 15-1AK6	,	C
							65	0.280.4	11-0EA10			3RA21	10-0E□15-1AK6		C
							65	0.350.5	11-0FA10			3RA21	10-0F□15-1AK6		C
							65	0.450.63	11-0GA10			3RA21	10-0G□15-1AK6	j	(
							65	0.550.8	11-0HA10			3RA21	10-0H□15-1AK6	,	(
						1/2	65	0.7 1	11-0JA10			3RA21	10-0J□15-1AK6		(
					1/2	1/2	65	0.9 1.25	11-0KA10			3RA21	10-0K□15-1AK6	,	(
		1/10			3/4	3/4	65	1.1 1.6	11-1AA10			3RA21	10-1A 15-1AK6	,	(
		1/8			3/4	1	65	1.4 2	11-1BA10			3RA21	10-1B□15-1AK6	j	(
		1/6	1/2	1/2	1	1 1/2	65	1.8 2.5	11-1CA10			3RA21	10-1C□15-1AK6	j	(
	1/10	1/4	1/2	3/4	1 1/2	2	65	2.2 3.2	11-1DA10			3RA21	10-1D□15-1AK6	j	
	1/8	1/3	3/4	3/4	2	3	65	2.8 4	11-1EA10			3RA21	10-1E□15-1AK6		
	1/6	1/2	1	1	3	3	65	3.5 5	11-1FA10				10-1F□15-1AK6		
	1/4	1/2	1	1 1/2	3	5	65	4.5 6.3	11-1GA10				10-1G□15-1AK6		
	1/3	1	2	2	5	5	65	5.5 8	11-1HA10	16-1AK61			10-1H□16-1AK6		
	1/2	1 1/2	2	3	5	7 1/2	65	7 10	11-1JA10	10 17 11 (01			10-1J□16-1AK6		
	1/2	2	3	3	7 1/2	10	65	9 12	11-1KA10	17-1AK61			10-1K□17-1AK6		
	1	2	3	5	10		65	11 16	11-4AA10	18-1AK61			10-4A□18-1AK6		(
	1/6	1/2	1	1	3	3	65	3.5 5	11-1FA10	24-1AK60	2921-1AA00		20-1F□24-0AK6		(
	1/4	1/2	1	1 1/2	3	5	65	4.5 6.3	11-1GA10	24 17(1100	+ 8US1251-		20-1G□24-0AK6		
	1/3	1	2	2	5	5	65	5.5 8	11-1HA10		5NT10		20-1H□24-0AK6		
	1/2	1 1/2	2	3	5	7 1/2	65	7 10	11-1JA10				20-11□24-0AK6		
	1/2	2	3	3	7 1/2	10	65	9 12.5	11-15A10				20-15□24-0AK6		
	1/2	2	3	5	10		65	11 16	21-4AA10	26-1AK60			20-4A \(\sigma 26-0AK6		
	1 1/2	3	5	5	10		65	14 20	21-4AA10 21-4BA10	20- IANOU			20-4B□26-0AK6		
	1 1/2	3	5	7 1/2	15		50	17 22	21-46A10 21-4CA10	27-1AK60			20-46□26-0AK6		
		3	5	7 1/2	15		50	20 25	21-4CA10 21-4DA10	21-1ANOU			20-4C□27-0AK6		
	2	3 5	5 7 1/2		20		50 50	20 25	21-4DA10 21-4EA10				20-4D□27-0AK6		(
		5	/ 1/2	10	20		50	21 32	21-4EA10			SHAZI	20-4ELJ27-UAK0		
														Add	d. w
ew	fixing v	vith 1 p	ush-in I	ug eacl	h per m	otor sta	rter is p	unting rail or so ossible	rew fixing				Α		
e "/	Access	ories fo	r Direct	-Ŏn-Lin	e and F	Reversir	ng Start	ers"). ı m busbar syste	am.		for size S00		1 D		0
	usbar			ouilli	g onk	ว เ นอเม	u3 0011	iiii busbai syste	,,,,		for size S0		2 D		C

1) For auxiliary switches see Accessories page 4/44.

²⁾ Selection depends on the motor full load amps. HP ratings for reference only.

³⁾ Used only for mounting starter on 8US Fast Bus busbar systems.

3RA1 / 3RA2



Non-Reversing, AC Coil up to 100 A

Selection and ordering data

3RA11 30



Direct-on-line starting



For 35 mm standard mounting rail or screw mounting

- All starters are suitable for use in Group Installation applications per NEC 430-53 (c)
- Motor starter protector and contactor are linked electrically and mechanically by means of a link module and adapter plate
- Auxiliary switches ¹) can be added easily to the MSP and the contactor

Combination Starter, UL508 Type F

- Size S2 devices can be applied as Combination Starters
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT1946-4GA07 line side terminal kit
- SCCR: 65kA at 480 V

						FLA setting range	Starter	Size	Consisting of the following individual devices				
						Inverse-time delayed overload release	Order No.		Motor starter + Contactor + protector	Link module +			
Single-Pha Ratings	ase HP	Three- HP rat	-Phase ² ings	2)						Adapter for standard mounting rail ³)			
115V	230V	200V	230V	460V	575V	Α							
110VAC	50Hz	/ 120	VAC 6	60 Hz									
1	3	5	5	10	15	11 16	3RA11 3□-4AB33-□AK6	S2	3RV10 31-4AA10 7				
1 1/2	3	5	7 1/2	15	20	14 20	3RA11 3□-4BB33-□AK6		3RV10 31-4BA10 - 3RT1033-1AK60				
2	5	7 1/2	10	20	25	18 25	3RA11 3□-4DB33-□AK6		3RV10 31-4DA10]	3RA1931-1AA00			
2	5	10	10	25	30	22 32	3RA11 3□-4EB34-□AK6		3RV10 31-4EA10 3RT1034-1AK60 -	+			
3	7 1/2	10	15	30	40	28 40	3RA11 3□-4FB35-□AK6		3RV10 31-4FA10 3RT1035-1AK60	3RA1932-1AA00			
3	7 1/2	15	15	30	40	36 45	3RA11 3□-4GB36-□AK6		3RV10 31-4GA10 3RT1036-1AK60				
3	10	15	15	40	50	40 50	3RA11 3□-4HB36-□AK6		3RV10 31-4HA10 3RT1036-1AK60 ^J				
3	7 1/2	15	15	30	40	28 40	3RA11 4□-4FB44-□AK6	S3	3RV10 41-4FA10 7				
5	10	15	20	40	50	36 50	3RA11 4□-4HB44-□AK6		3RV10 41-4HA10 3RT1044-1AK60	3RA1941-1AA00			
5	15	20	25	50	60	45 63	3RA11 4□-4JB44-□AK6		3RV10 41-4JA10]	+			
7 1/2	15	25	25	60	75	57 75	3RA11 4□-4KB45-□AK6		3RV10 41-4KA10 3RT1045-1AK60				
10	20	30	30	75	-	70 90	3RA11 4□-4LB46-□AK6		3RV10 41-4LA10 3RT1046-1AK60	3RA1942-1AA00			
10	20	30	30	75	_	80100	3RA11 4□-4MB46-□AK6		3RV10 41-4MA10 3RT1046-1AK60]				

24 VDC									
1	3	5	5	10	15	11 16	3RA11 3□-4AB33-□BB4	S2	3RV10 31-4AA10 7
1 1/2	3	5	7 1/2	15	20	14 20	3RA11 3□-4BB33-□BB4		3RV10 31-4BA10 - 3RT1033-1BB40
2	5	7 1/2	10	20	25	18 25	3RA11 3□-4DB33-□BB4		3RV10 31-4DA10]
2	5	10	10	25	30	22 32	3RA11 3□-4EB34-□BB4		3RV10 31-4EA10 3RT1034-1BB40 3RA1931-1BA00
3	7 1/2	10	15	30	40	28 40	3RA11 3□-4FB35-□BB4		3RV10 31-4FA10 3RT1035-1BB40 + 3RA1932-1AA00
3	7 1/2	15	15	30	40	36 45	3RA11 3□-4GB36-□BB4		3RV10 31-4GA10 3RT1036-1BB40 3RT1036-1BB40
3	10	15	15	40	50	40 50	3RA11 3□-4HB36-□BB4		3RV10 31-4HA10 3RT1036-1BB40 ☐
3	7 1/2	15	15	30	40	28 40	3RA11 4□-4FB44-□BB4	S3	3RV10 41-4FA10 7
5	10	15	20	40	50	36 50	3RA11 4□-4HB44-□BB4		3RV10 41-4HA10 - 3RT1044-1BB40
5	15	20	25	50	60	45 63	3RA11 4□-4JB44-□BB4		3RV10 41-4JA10
7 1/2	15	25	25	60	75	57 75	3RA11 4□-4KB45-□B <mark>B4</mark>		3RV10 41-4KA10 3RT1045-1BB40 +
10	20	30	30	75		70 90	3RA11 4□-4LB46-□BB4		3RV10 41-4LA10 3RT1046-1BB40 3RA1942-1AA00
10	20	30	30	75	_	80100	3RA11 4□-4MB46-□B <mark>B4</mark>		3RV10 41-4MA10 3RT1046-1BB40 J

Order No. suffix Standard unit without auxiliary contacts	0	0
1 SPDT NO/NC MSP auxiliary and 1 NO front mount contactor auxiliary	5	1

¹⁾ For auxiliary switches, see accessories page 4/50.

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²⁾ Selection depends on motor full load amps. Horsepower ratings for reference only.

³⁾ Adapters for standard mounting rail are also suitable

3RA1 / 3RA2

Non-Reversing, DC Coil up to 22 A











Direct-on-line starting

Rated control supply voltage 24 V DC With screw connections

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.

 • Auxiliary switches 1 on the motor starter protector and the con-
- tactor can be easily fitted due to the modular system.

 Integrated auxiliary switches:
- - Contactor size S00: 1 NO;
- Contactor size S0: 1 NO + 1 NC

Combination Starter, UL508 Type F

All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

Size	UL D	ata						FLA setting range inverse-	Consisting single dev	of the follow	/ing	Assem	ibled starter		Weight approx.
	Single HP rat		Three- HP rat		2)		SCCR at 480 V	time delayed overload release	Motor starter protector	+ Contactor	+ Link module + Busbar	Screw	terminals	+	
	115 V	230 V	200 V	230 V	460 V	575 V		G	·		adapter3)	Order I	No.		
							kA	А							kg
Sele	ction o	lepend	ds on	motor	full lo	ad am	ps		3RV20	3RT20	3RA				
S00	 	 	 	 	 	 	65 65 65 65 65 65	0.110.16 0.140.2 0.180.25 0.220.32 0.280.4 0.350.5	11-0AA10 11-0BA10 11-0CA10 11-0DA10 11-0EA10 11-0FA10	15-1BB41	1921-1DA00 + 8US1251- 5DS10	3RA21 3RA21 3RA21 3RA21	10-0A□15-1BB4 10-0B□15-1BB4 10-0C□15-1BB4 10-0D□15-1BB4 10-0E□15-1BB4 10-0F□15-1BB4		0.630 0.630 0.630 0.630 0.630 0.630
	 1/10 1/8 1/6	 1/10 1/8 1/6 1/4 1/3 1/2	 1/2 1/2 3/4	 1/2 3/4 3/4	 1/2 3/4 3/4 1 1 1/2 2	 1/2 1/2 3/4 1 1 1/2 2 3	65 65 65 65 65 65 65 65 65	0.450.63 0.550.8 0.7 1 0.9 1.25 1.1 1.6 1.4 2 1.8 2.5 2.2 3.2 2.8 4 3.5 5	11-0GA10 11-0HA10 11-0JA10 11-0KA10 11-1AA10 11-1BA10 11-1CA10 11-1DA10 11-1EA10 11-1FA10			3RA21 3RA21 3RA21 3RA21 3RA21 3RA21 3RA21 3RA21	10-0G□15-1BB4 10-0H□15-1BB4 10-0K□15-1BB4 10-1A□15-1BB4 10-1B□15-1BB4 10-1C□15-1BB4 10-1C□15-1BB4 10-1E□15-1BB4 10-1E□15-1BB4		0.630 0.630 0.630 0.630 0.630 0.630 0.630 0.630 0.630
	1/4 1/3 1/2 1/2 1	1/2 1 1 1/2 2 2	1 2 2 3 3	1 1/2 2 3 3 5	3 5 5 7 1/2 10	5 5 7 1/2 10	65 65 65 65	4.5 6.3 5.5 8 7 10 9 12 1116	11-1GA10 11-1HA10 11-1JA10 11-1KA10 11-4AA10	16-1BB41 17-1BB41 18-1BB41		3RA21 3RA21 3RA21	10-1G□15-1BB4 10-1H□16-1BB4 10-1J□16-1BB4 10-1K□17-1BB4 10-4A□18-1BB4		0.630 0.630 0.630 0.630 0.630
S0	1/6 1/4 1/3 1/2 1/2	1/2 1/2 1 1 1/2 2	1 1 2 2 3	1 1 1/2 2 3 3	3 3 5 5 7 1/2	3 5 5 7 1/2 10	65 65 65 65 65	3.5 5 4.5 6.3 5.5 8 7 10 9 12.5	11-1FA10 11-1GA10 11-1HA10 11-1JA10 11-1KA10	24-1BB40	2921-1BA00 + 8US1251- 5NT10	3RA21 3RA21 3RA21	20-1F□24-0BB4 20-1G□24-0BB4 20-1H□24-0BB4 20-1J□24-0BB4 20-1K□24-0BB4		0.948 0.948 0.948 0.948 0.948
	1 1 1/2 1 1/2 2 2	2 3 3 3 5	3 5 5 5 7 1/2	5 5 7 1/2 7 1/2 10	10 10 15 15 20	 	65 65 50 50 50	11 16 14 20 17 22 20 25 27 32	21-4AA10 21-4BA10 21-4CA10 21-4DA10 21-4EA10	26-1BB40 27-1BB40		3RA21 3RA21 3RA21	20-4A□26-0BB4 20-4B□26-0BB4 20-4C□27-0BB4 20-4D□27-0BB4 20-4E□27-0BB4		0.948 0.948 0.948 0.948 0.948
														Add	d. weight
Screw	fixing \	with 1 p	ush-in l	ug eac	h per m	notor sta	l ard mo arter is p ng Starte		crew fixing				A		
Order		pplem	ent for				0	ım busbar syste	em		for size S00 for size S0		1 D 2 D		0.263 0.301

¹⁾ For auxiliary switches, see Accessories page 4/44.

²⁾ Selection depends on the concrete motor full load amps. HP ratings for reference only.

³⁾ Use only for mounting starter on 8US Fast Bus busbar systems.

3RA1 / 3RA2 Starters

SIRIUS

Non-Reversing Fast Bus® AC Coil

Selection and ordering data

3RA11 30



Direct-on-line starting



For 60mm Fast Bus busbar systems

- All starters are suitable for use in Group Installation applications per NEC 430-53 (c)
- Motor starter protector and contactor are linked electrically by means of a link module and mounted on a Fastbus shoe
- Auxiliary switches ¹) can be added easily to the MSP and the contactor
- Size S3 is kit form only assembly required

Combination Starter, UL508 Type F

- Size S2 devices can be applied as Combination Starters
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT1946-4GA07 line side terminal kit
- SCCR: 65kA at 480V

						FLA setting range	Starter Order No.	Size	Consisting of the fo	ollowing individual d	evices
						Inverse-time delayed overload release	Order No.		Motor starter protector	+ Contactor +	Link module + Adapter shoe for Fastbus
Single- HP Rat		Three-F HP ratio	Phase ²) ngs								i asibus
115V	230V	200V	230V	460V	575V	A					
110V	AC 501	lz / 12	0 VAC	60Hz							
1	3	5	5	10	15	11 16	3RA11 3□-4AD33-□AK6	S2	3RV10 31-4AA10 7		٦
1 1/2	3	5	7 1/2	15	20	14 20	3RA11 3□-4BD33-□AK6		3RV10 31-4BA10 -	3RT1033-1AK60	
2	5	7 1/2	10	20	25	18 25	3RA11 3□-4DD33-□AK6		3RV10 31-4DA10		3RA1931-1AA00
2	5	10	10	25	30	22 32	3RA11 3□-4ED34-□AK6		3RV10 31-4EA10	3RT1034-1AK60	+
3	7 1/2	10	15	30	40	28 40	3RA11 3□-4FD35-□AK6		3RV10 31-4FA10	3RT1035-1AK60	8US1261-5FP08
3	7 1/2	15	15	30	40	36 45	3RA11 3□-4GD36-□AK6		3RV10 31-4GA10	3RT1036-1AK60	
3	10	15	15	40	50	40 50	3RA11 3□-4HD36-□AK6		3RV10 31-4HA10	3RT1036-1AK60	
3	7 1/2	15	15	30	40	28 40	3RA11 4□-4FD44-□AK6	S3	3RV10 41-4FA10		1
5	10	15	20	40	50	36 50	3RA11 4□-4HD44-□AK6		3RV10 41-4HA10 -	3RT1044-1AK60	3RA1941-1AA00
5	15	20	25	50	60	45 63	3RA11 4□-4JD44-□AK6		3RV10 41-4JA10		+
7 1/2	15	25	25	60	75	57 75	3RA11 4□-4KD45-□AK6		3RV10 41-4KA10	3RT1045-1AK60	8US1211-4TR00
10	20	30	30	75	_	70 90	3RA11 4□-4LD46-□AK6		3RV10 41-4LA10	3RT1046-1AK60	
10	20	30	30	75	-	80 100	3RA11 4□-4MD46-□AK6		3RV10 41-4MA10	3RT1046-1AK60	

24VD	С										
1	3	5	5	10	15	11 16	3RA11 3□-4AD33-□BB4	S2	3RV10 31-4AA10 7	٦	
1 1/2	3	5	7 1/2	15	20	14 20	3RA11 3□-4BD33-□BB4		3RV10 31-4BA10 3	BRT1033-1BB40	
2	5	7 1/2	10	20	25	18 25	3RA11 3□-4DD33-□BB4		3RV10 31-4DA10		3RA1931-1BA00
2	5	10	10	25	30	22 32	3RA11 3□-4ED34-□BB4		3RV10 31-4EA10 3	BRT1034-1BB40	+
3	7 1/2	10	15	30	40	28 40	3RA11 3□-4FD35-□BB4		3RV10 31-4FA10 3	BRT1035-1BB40	8US1261-5FP08
3	7 1/2	15	15	30	40	36 45	3RA11 3□-4GD36-□BB4		3RV10 31-4GA10 3	BRT1036-1BB40	
3	10	15	15	40	50	40 50	3RA11 3□-4HD36-□B <mark>B4</mark>		3RV10 31-4HA10 3	BRT1036-1BB40 ^J	
3	7 1/2	15	15	30	40	28 40	3RA11 4□-4FD44-□BB4	S3	3RV10 41-4FA10 7	7	
5	10	15	20	40	50	36 50	3RA11 4□-4HD44-□B <mark>B4</mark>		3RV10 41-4HA10 - 3	BRT1044-1BB40	
5	15	20	25	50	60	45 63	3RA11 4□-4JD44-□B <mark>B4</mark>		3RV10 41-4JA10		_ 3RA1941-1BA00
7 1/2	15	25	25	60	75	57 75	3RA11 4□-4KD45-□BB4		3RV10 41-4KA10 3	BRT1045-1BB40	+
10	20	30	30	75	_	70 90	3RA11 4□-4LD46-□BB4		3RV10 41-4LA10 3	BRT1046-1BB40	8US1211-4TR00
10	20	30	30	75	-	80 100	3RA11 4□-4MD46-□BB4		3RV10 41-4MA10 3	BRT1046-1BB40	
	No. suffi ard unit		auxiliary	contact	S		0 0				
1 SPD front m	T NO/NO	O MSP a	uxiliary auxiliary	and 1 N	0		5 1				

¹⁾ For auxiliary switches, see Accessories page 4/44.

2

3

4

²⁾ Selection depends on motor full load amps. Horsepower ratings for reference only.

3RA1 / 3RA2 Starters

Reversing, AC Coil up to 22 A

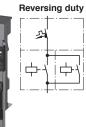


Selection and ordering data









Rated control supply voltage 50/60 Hz 110/120 V AC With screw connections

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches¹⁾ on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is available for free use.

Combination Starter, UL508 Type F

All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

										3RV29	28-1K.			
Size	UL Da	ıta						FLA setting range inverse-		of the following	ng single devices	Assembled starter		Weight approx.
	Single- HP ratio		Three- HP rat		2)		SCCR at 480 V		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH/RS ³⁾	Screw terminals	+	арргож
	115 V	230 V	200 V	230 V	460 V	575 V		5			, -	Order No.		
							kA	Α						kg
Sele	ection	deper	nds or	n moto	r full l	load a	mps							
									3RV20	3RT20	3RA			
S00		 	 	 	 	 	65 65 65 65 65	0.110.16 0.140.2 0.180.25 0.220.32 0.280.4 0.350.5	11-0AA10 11-0BA10 11-0CA10 11-0DA10 11-0EA10 11-0FA10	15-1AK62	1921-1DA00 + 2913-2AA1 ⁴⁾ + 2913-1DB1 (RS)	3RA22 10-0A□15-2 3RA22 10-0B□15-2 3RA22 10-0C□15-2 3RA22 10-0D□15-2 3RA22 10-0E□15-2 3RA22 10-0F□15-2	AK6 AK6 AK6 AK6	0.824 0.824 0.824 0.824 0.824
	 1/10 1/8 1/6	 1/10 1/8 1/6 1/4 1/3 1/2	 1/2 1/2 3/4	 1/2 3/4 3/4 1	 1/2 3/4 3/4 1 1 1/2 2 3	 1/2 1/2 3/4 1 1 1/2 2 3 3	65 65 65 65 65 65 65 65 65	0.450.63 0.550.8 0.71 0.91.25 1.11.6 1.42 1.82.5 2.23.2 2.84 3.55	11-0GA10 11-0HA10 11-0JA10 11-0JA10 11-1AA10 11-1AA10 11-1CA10 11-1DA10 11-1DA10 11-1FA10			3RA22 10-0G□15-2 3RA22 10-0H□15-2 3RA22 10-0J□15-2 3RA22 10-1A□15-2 3RA22 10-1B□15-2 3RA22 10-1D□15-2 3RA22 10-1D□15-2 3RA22 10-1E□15-2 3RA22 10-1F□15-2	AK6 AK6 AK6 AK6 AK6 AK6 AK6	0.824 0.824 0.824 0.824 0.824 0.824 0.824 0.824
	1/3 1/2 1/2	1/2 1 1 1/2 2 2	1 2 2 3 3	1 1/2 2 3 3 5	3 5 5 7 1/2 10	5 5 7 1/2 10	65 65 65 65	4.5 6.3 5.5 8 7 10 9 12 1116	11-1GA10 11-1HA10 11-1JA10 11-1KA10 11-4AA10	16-1AK62 17-1AK62 18-1AK62		3RA22 10-1G□15-2 3RA22 10-1H□16-2 3RA22 10-1J□16-2 3RA22 10-1K□17-2 3RA22 10-4A□18-2	AK6 AK6 AK6	0.824 0.824 0.824 0.824 0.824
S0	1/4 1/3 1/2	1/2 1/2 1 1 1/2 2	1 1 2 2 3	1 1 1/2 2 3 3	3 3 5 5 7 1/2	3 5 5 7 1/2 10	65 65 65 65 65	3.5 5 4.5 6.3 5.5 8 7 10 9 12.5	11-1FA10 11-1GA10 11-1HA10 11-1JA10 11-1KA10	24-1AK60	2921-1AA00 + 2923-1BB1 (RH) + 2923-1DB1 (RS)	3RA22 20-1F□24-0, 3RA22 20-1G□24-0 3RA22 20-1H□24-0 3RA22 20-1J□24-0, 3RA22 20-1K□24-0	AK6 AK6	1.434 1.434 1.434 1.434
	1 1/2 1 1/2 2	2 3 3 3 5	3 5 5 5 7 1/2	5 5 7 1/2 7 1/2 10	10 10 15 15 20	 	65 65 50 50	11 16 14 20 17 22 20 25 27 32	21-4AA10 21-4BA10 21-4CA10 21-4DA10 21-4EA10	26-1AK60 27-1AK60		3RA22 20-4A□26-0 3RA22 20-4B□26-0 3RA22 20-4C□27-0 3RA22 20-4D□27-0 3RA22 20-4E□27-0	AK6 AK6 AK6	1.434 1.434 1.434 1.434 1.434
WitScreen	hout sta h 2 star w fixing	andard ndard n with 2	mounti nountin push-ir	ing rail ig rail a n lugs e	adapte dapters ach pe	r for size for size r motor	e S00 ⁴⁾ e S0 starter	nounting rail o	J			1 A 2 B	Add	d. weigh
	e r No. s i 8US Fa					nto Fas	tbus 60	mm busbar sy	stem		for size S00 for size S0	1 D 2 D		0.486 0.293

¹⁾ For push-in lugs and auxiliary switches, see Accessories on pages 4/44 and 4/52.

²⁾ Selection depends on the motor full load amps. $\ensuremath{\mathsf{HP}}$ ratings for reference only.

³⁾ According to ordering option:

RH = assembly kit for reversing duty with standard rail mounting adapter in size S0.

RS = assembly kit for reversing duty with 8US Fast Bus busbar mounting.

⁴⁾ With standard rail mounting or screw fixing, the 3RA29 13-2AA1 wiring kit is required for size S00.

3RA1 / 3RA2



Reversing, AC Coil up to 100 A

Selection and ordering data

3RA12 20



Reversing duty



For 35 mm standard mounting rail or screw mounting

- All starters are suitable for use in Group Installation applications per NEC 430-53 (c)
- Motor starter protector and contactor are linked electrically and mechanically by means of a link module and adapter plate
- Starter includes both electrical and mechanical interlocks
- Auxiliary switches 1) can be added easily to the MSP and the contactor

Combination Starter, UL508 Type F

- Size S2 devices can be applied as Combination Starters
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT1946-4GA07 line side terminal kit
- SCCR: 65kA at 480V

						FLA set- ting range	Starter	Size	Consisting of the fo	llowing individual dev	rices
						Inverse- time delayed overload	Order No.		Motor starter protector	+ 2 Contactors +	Link module + assembly kit RH ³)
Single-F HP Rati		Three-F HP ratir				G					
115V	230V	200V	230V	460V	575V	A					
110VA	C 50H	z / 120	VAC 6	0Hz							
1	3	5	5	10	15	11 16	3RA12 3□-4AB33-□A <mark>K6</mark>	S2	3RV10 31-4AA10 7	٦	
1 1/2	3	5	7 1/2	15	20	14 20	3RA12 3□-4BB33-□AK6		3RV10 31-4BA10	3RT1033-1AK60	
2	5	7 1/2	10	20	25	18 25	3RA12 3□-4DB33-□AK6		3RV10 31-4DA10		3RA1931-1AA00
2	5	10	10	25	30	22 32	3RA12 3□-4EB34-□AK6		3RV10 31-4EA10	3RT1034-1AK60	+
3	7 1/2	10	15	30	40	28 40	3RA12 3□-4FB35-□AK6		3RV10 31-4FA10	3RT1035-1AK60	3RA1933-1B4)
3	7 1/2	15	15	30	40	36 45	3RA12 3□-4GB36-□AK6		3RV10 31-4GA10	3RT1036-1AK60	
3	10	15	15	40	50	40 50	3RA12 3□-4HB36-□AK6		3RV10 31-4HA10	3RT1036-1AK60 J	
3	7 1/2	15	15	30	40	28 40	3RA12 4□-4FB44-□AK6	S3	3RV10 41-4FA10 7	1	
5	10	15	20	40	50	36 50	3RA12 4□-4HB44-□AK6		3RV10 41-4HA10 -	3RT1044-1AK60	3RA1941-1AA00
5	15	20	25	50	60	45 63	3RA12 4□-4JB44-□AK6		3RV10 41-4JA10		+
7 1/2	15	25	25	60	75	57 75	3RA12 4□-4KB45-□AK6		3RV10 41-4KA10	3RT1045-1AK60	3RA1943-1B4)
10	20	30	30	75	-	70 90	3RA12 4□-4LB46-□AK6		3RV10 41-4LA10	3RT1046-1AK60	
10	20	30	30	75	-	80 100	3RA12 4□-4MB46-□A <mark>K6</mark>		3RV10 41-4MA10	3RT1046-1AK60	

4VDC	;											
1	3	5	5	10	15	11 16	3RA12 3□-4AB33-	-□BB4	S2	3RV10 31-4AA10 7	-	
1 1/2	3	5	7 1/2	15	20	14 20	3RA12 3□-4BB33-	-□BB4		3RV10 31-4BA10 -	3RT1033-1BB40	
2	5	7 1/2	10	20	25	18 25	3RA12 3□-4DB33-	-□BB4		3RV10 31-4DA10		3RA1931-1BA00
2	5	10	10	25	30	22 32	3RA12 3□-4EB34-	-□BB4		3RV10 31-4EA10	3RT1034-1BB40	+
3	7 1/2	10	15	30	40	28 40	3RA12 3□-4FB35-	-□BB4		3RV10 31-4FA10	3RT1035-1BB40	3RA1933-1B4)
3	7 1/2	15	15	30	40	36 45	3RA12 3□-4GB36	-□BB4		3RV10 31-4GA10	3RT1036-1BB40	
3	10	15	15	40	50	40 50	3RA12 3□-4HB36-	-□BB4		3RV10 31-4HA10	3RT1036-1BB40	
3	7 1/2	15	15	30	40	28 40	3RA12 4□-4FB44-	-□BB4	S3	3RV10 41-4FA10 7		
5	10	15	20	40	50	36 50	3RA12 4□-4HB44-	-□BB4		3RV10 41-4HA10	3RT1044-1BB40	3RA1941-1BA00
5	15	20	25	50	60	45 63	3RA12 4□-4JB44-	-□BB4		3RV10 41-4JA10		+
7 1/2	15	25	25	60	75	57 75	3RA12 4□-4KB45-	-□BB4		3RV10 41-4KA10	3RT1045-1BB40	3RA1943-1B4)
10	20	30	30	75	_	70 90	3RA12 4□-4LB46-	-□BB4		3RV10 41-4LA10	3RT1046-1BB40	
10	20	30	30	75	_	80 100	3RA12 4□-4MB46	-□BB4		3RV10 41-4MA10	3RT1046-1BB40	
0.40.1	No. suffix											
			uxiliary co	ontacts.			0	0				
1 SPDT	NO/NC	MSP au	xiliary an	d 1 NO								
front mo	ount con	tactor a	uxiliary				5	1				

RH = Reversing duty for rail mounting.

- 1) For auxiliary switches, see Accessories page 4/44.
- 2) Selection depends on motor full load amps. Horse power ratings for reference only.
- 3) Adapters for standard mounting rail are also suitable for screw mounting.
- 4) Mechanical interlock must be ordered separately; see Accessories page 4/50

2

J

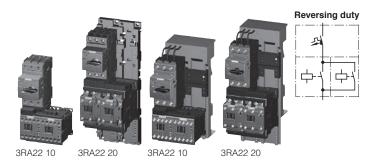
1

Siemens Industry, Inc. Industrial Controls Catalog

3RA1 / 3RA2

Reversing, DC Coil up to 22 A





Rated control supply voltage 24 V DC With screw connections

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module.
- Auxiliary switches¹⁾ on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is available for free use.

Combination Starter, UL508 Type F

All size S00 and S0 devices can be applied as Combination Starters with the addition of either of these line side connectors: 3RV29 28-1H, 3RV29 25-5EB or 3RV29 28-1K.

										3HV29	20 111.		
Size	UL Da	ata						FLA setting range inverse-		f the followin	g single devices	Assembled starter	Weight approx.
	Single- HP rati		Three- HP rat		2)		SCCR at 480 V	time delayed overload release	Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH/RS ³⁾	Screw terminals	
	115 V	230 V	200 V	230 V	460 V	575 V		4				Order No.	
							kA	Α					kg
Sele	ection	deper	nds or	moto	r full l	oad a	mps						
									3RV20	3RT20	3RA		
S00	 1/10 1/8	 1/10 1/8 1/6 1/4 1/3	 1/2 1/2 3/4	 1/2 3/4 3/4	 1/2 3/4 3/4 1 1 1/2 2	 1/2 1/2 3/4 1 1 1/2 2	65 65 65 65 65 65 65 65 65 65 65 65 65 6	0.110.16 0.140.2 0.180.25 0.220.32 0.280.4 0.350.5 0.450.63 0.550.8 0.71 0.91.25 1.11.6 1.42 1.82.5 2.23.2 2.84	11-0AA10 11-0BA10 11-0CA10 11-0EA10 11-0FA10 11-0FA10 11-0GA10 11-0HA10 11-0KA10 11-1AA10 11-1BA10 11-1CA10 11-1DA10 11-1DA10	15-1BB42	1921-1DA00 '+ 2913-2AA1 ⁴) '+ 2913-1DB1 (RS)	3RA22 10-0A□15-2BB4 3RA22 10-0C□15-2BB4 3RA22 10-0C□15-1BB4 3RA22 10-0C□15-1BB4 3RA22 10-0F□15-1BB4 3RA22 10-0G□15-2BB4 3RA22 10-0H□15-2BB4 3RA22 10-0H□15-2BB4 3RA22 10-0H□15-2BB4 3RA22 10-1C□15-2BB4 3RA22 10-1C□15-2BB4 3RA22 10-1C□15-2BB4 3RA22 10-1C□15-2BB4 3RA22 10-1C□15-2BB4	0.934 0.934 0.934 0.934 0.934 0.934 0.934 0.934 0.934 0.934
	1/6 1/4 1/3 1/2 1/2	1/2 1/2 1 1 1/2 2 2	1 1 2 2 3 3 3	1 1/2 2 3 3 5	3 3 5 5 7 1/2 10	3 5 5 7 1/2 10	65 65 65 65 65 65	3.5 5 4.5 6.3 5.5 8 7 10 9 12 1116	11-1FA10 11-1GA10 11-1HA10 11-1JA10 11-1KA10 11-4AA10	16-1BB42 17-1BB42 18-1BB42		3RA22 10-1F□15-2BB4 3RA22 10-1G□15-2BB4 3RA22 10-1H□16-2BB4 3RA22 10-1J□16-2BB4 3RA22 10-1K□17-2BB4 3RA22 10-4A□18-2BB4	0.934 0.934 0.934 0.934 0.934
S0	1/6 1/4 1/3 1/2 1/2	1/2 1/2 1 1 1 1/2 2	1 1 2 2 3	1 1 1/2 2 3 3	3 3 5 5 7 1/2	3 5 5 7 1/2 10	65 65 65 65 65	3.5 5 4.5 6.3 5.5 8 7 10 9 12.5	11-1FA10 11-1GA10 11-1HA10 11-1JA10 11-1KA10	24-1BB40	2921-1BA00 '+ 2923-1BB1 (RH) '+ 2923-1DB1 (RS)	3RA22 20-1F□24-0BB4 3RA22 20-1G□24-0BB4 3RA22 20-1H□24-0BB4 3RA22 20-1J□24-0BB4 3RA22 20-1K□24-0BB4	1.811 1.811
	1 1 1/2 1 1/2 2 2	2 3 3 5	3 5 5 5 7 1/2	5 5 7 1/2 7 1/2 10	10 10 15 15 20	 	65 65 50 50 50	11 16 14 20 17 22 20 25 27 32	21-4AA10 21-4BA10 21-4CA10 21-4DA10 21-4EA10	26-1BB40 27-1BB40		3RA22 20-4A□26-0BB4 3RA22 20-4B□26-0BB4 3RA22 20-4C□27-0BB4 3RA22 20-4D□27-0BB4 3RA22 20-4E□27-0BB4	1.811
WitWit	hout stath	andard ndard r	mounti nountin	ng rail a	adapte: dapters	for size	e S00 ⁴⁾ e S0	nounting rail or	r screw fixing			1 A 2 B	d. weight
Orde	_	upplen	nent fo	r moun	iting or			mm busbar sy	stem		for size S00 for size S0	1 D 2 D	0.486 0.306

- 1) For push-in lugs and auxiliary switches, see Accessories on pages 4/44 and 4/52.
- 2) Selection depends on the motor full load amps. $\ensuremath{\mathsf{HP}}$ ratings for reference only.
- 3) Code for abbreviations:

RH = assembly kit for reversing duty with standard rail mounting adapter in size S0.

- RS = assembly kit for reversing duty with 8US Fast Bus busbar mounting.
- 4) With standard rail mounting or screw fixing, the 3RA29 13-2AA1 wiring kit and link module are required for size S00.

3RA1 / 3RA2



Reversing Fast Bus®, AC Coil up to 100 A

Selection and ordering data



Reversing duty



For 60 mm Fast Bus busbar systems

- All starters are suitable for use in Group Installation applications per NEC 430-53 (c)
- Motor starter protector and contactor are linked electrically and mechanically by means of a link module and mounted on a Fastbus Shoe
- Starter includes both electrical and mechanical interlocks
- Auxiliary switches 1) can be added easily to the MSP and the contactor
- Size S3 is kit form only assembly required

Combination Starter, UL508 Type F

- Size S2 devices can be applied as Combination Starters
- Size S3 devices can be applied as Combination Starters with the addition of a 3RT1946-4GA07 line side terminal kit
- SCCR: 65kA at 480V

						FLA setting	Starter	Size	Consisting of the fo	llowing individual de	evices
						range Inverse-time delayed overload release	Order No.		Motor starter protector	+ Contactor +	Link module + Adapter shoe for Fastbus
Single-F HP Rati		Three-F HP ratir									
115V	230V	200V	230V	460V	575V	А					
110V	AC 50H	z / 120	VAC 6	0Hz							
1	3	5	5	10	15	11 16	3RA12 3□-4AD33-□AK6	S2	3RV10 31-4AA10 ¬	7	
1 1/2	3	5	7 1/2	15	20	14 20	3RA12 3□-4BD33-□AK6		3RV10 31-4BA10 -	3RT1033-1AK60	
2	5	7 1/2	10	20	25	18 25	3RA12 3□-4DD33-□AK6		3RV10 31-4DA10		3RA1931-1AA00
2	5	10	10	25	30	22 32	3RA12 3□-4ED34-□AK6		3RV10 31-4EA10	3RT1034-1AK60	+
3	7 1/2	10	15	30	40	28 40	3RA12 3□-4FD35-□AK6		3RV10 31-4FA10	3RT1035-1AK60	3RA1933-1D ³⁾
3	7 1/2	15	15	30	40	36 45	3RA12 3□-4GD36-□AK6		3RV10 31-4GA10	3RT1036-1AK60	
3	10	15	15	40	50	40 50	3RA12 3□-4HD36-□AK6		3RV10 31-4HA10	3RT1036-1AK60 -	
3	7 1/2	15	15	30	40	28 40	3RA12 4□-4FD44-□AK6	S3	3RV10 41-4FA10 ¬	7	
5	10	15	20	40	50	36 50	3RA12 4□-4HD44-□AK6		3RV10 41-4HA10 -	3RT1044-1AK60	
5	15	20	25	50	60	45 63	3RA12 4□-4JD44-□A <mark>K6</mark>		3RV10 41-4JA10		3RA1941-1AA00
7 1/2	15	25	25	60	75	57 75	3RA12 4□-4KD45-□A <mark>K6</mark>		3RV10 41-4KA10	3RT1045-1AK60	+
10	20	30	30	75	-	70 90	3RA12 4□-4LD46-□AK6		3RV10 41-4LA10	3RT1046-1AK60	3RA1943-2A ³⁾
10	20	30	30	75	-	80 100	3RA12 4□-4MD46-□AK6		3RV10 41-4MA10	3RT1046-1AK60 J	

1	3	5	5	10	15	11 16	3RA12 3□-4AD33-□BB4	S2	3RV10 31-4AA10 ¬	٦	
1 1/2	3	5	7 1/2	15	20	14 20	3RA12 3□-4BD33-□B <mark>B4</mark>		3RV10 31-4BA10	3RT1033-1BB40	
2	5	7 1/2	10	20	25	18 25	3RA12 3□-4DD33-□B <mark>B4</mark>		3RV10 31-4DA10		3RA1931-1BA00
2	5	10	10	25	30	22 32	3RA12 3□-4ED34-□B <mark>B4</mark>		3RV10 31-4EA10	3RT1034-1BB40	+
3	7 1/2	10	15	30	40	28 40	3RA12 3□-4FD35-□B <mark>B4</mark>		3RV10 31-4FA10	3RT1035-1BB40	3RA1933-1D ³⁾
3	7 1/2	15	15	30	40	36 45	3RA12 3□-4GD36-□B <mark>B4</mark>		3RV10 31-4GA10	3RT1036-1BB40	
3	10	15	15	40	50	40 50	3RA12 3□-4HD36-□B <mark>B4</mark>		3RV10 31-4HA10	3RT1036-1BB40 []]	
3	7 1/2	15	15	30	40	28 40	3RA12 4□-4FD44-□B <mark>B4</mark>	S3	3RV10 41-4FA10 7	1	
5	10	15	20	40	50	36 50	3RA12 4□-4HD44-□B <mark>B4</mark>		3RV10 41-4HA10	3RT1044-1BB40	
5	15	20	25	50	60	45 63	3RA12 4□-4JD44-□B <mark>B4</mark>		3RV10 41-4JA10	-	3RA1941-1BA00
7 1/2	15	25	25	60	75	57 75	3RA12 4□-4KD45-□B <mark>B4</mark>		3RV10 41-4KA10	3RT1045-1BB40	+
10	20	30	30	75	_	70 90	3RA12 4□-4LD46-□B <mark>B4</mark>		3RV10 41-4LA10	3RT1046-1BB40 J	3RA 1943-2A ³⁾
10	20	30	30	75	_	80 100	3RA12 4□-4MD46-□B <mark>B4</mark>		3RV10 41-4MA10	3RT1046-1BB40	

1 SPDT NO/NC MSP auxiliary and 1 NO front mount contactor auxiliary.....

RH = Reversing duty for rail mounting.

- 1) For auxiliary switches, see Accessories page 4/44.
- 2) Selection depends on motor full load amps. Horsepower ratings for reference only.
- 3) Mechanical interlock must be ordered separately; see Accessories page 4/50.

3RA1 / 3RA2 Accessories

Auxiliary switches



Overview

The accessories listed here are parts and add-ons for the 3RA1/3RA2 direct-on-line and reversing starters as well as components for the customer assembly of motor starters

Selection and ordering data













3RV29 01-1E

3RV29 01-2E

3RV29 01-1A

3RV29 01-2A

3RV29 02-1A

3RV29 02-2D

For MSPs	Screw Terminals	Weight approx.		Weight approx.
Size	Order No.	kg	Order No.	kg

Auxillary switches for motor starter protectors ¹

Transverse auxillary switches

For front mounting

1 00	S00, S0	3RV29 01-1D	0.014		
	S2,S3	3RV19 01-1D	0.020		
1 NO + 1 NC	S00, S0	3RV29 01-1E	0.016	3RV29 01-2E	0.016
	S2,S3	3RV19 01-1E	0.020		

Lateral auxillary switches

Mountable on the left

O + 1 NC	S00, S0	3RV29 01-1A	0.036	3RV29 01-2A	0.035
	S2, S3	3RV19 01-1A	0.030		

¹ One transverse auxilary switch and one lateral auxilary switch can be attached per motor starter protector. The lateral auxilary switch with 2 NO + 2 NC is used without a transverse auxillary switch.

AC 50 Hz	AC 60 Hz	ge Us AC 50/60 Hz 100% ON period ¹	AC/DC 50/60 Hz, DC 5s ON period ²	For MSPs	Screw Terminals	Weight approx.		Weight approx.
V	V	V	V	Size	Order No.	kg	Order No.	kg

Auxillary releases for motor starter protectors ³

Undervoltage releases

415	480	_	_	S00, S0	3RV29 02-1AV1	0.117	_	
415	480	_	_	S2, S3	3RV19 02-1AV1	0.129	_	

Shunt releases

_	_	2024	2070	S00, S0	3RV29 02-1DB0	0.119	3RV29 02-2DB0	0.115
_	_	90110	70190		3RV29 02-1DF0	0.119	3RV29 02-2DF0	0.115
_	_	24	_	S2, S3	3RV19 02-1DB0	0.113	_	
_	_	120	_		3RV19 02-1DF0	0.135	_	

¹ The voltage range is valid for 100% (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

² The voltage range is valid for 5s ON period at AC 50 Hz/60 Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

³ One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV21 motor starter protectors with overload relay function).

Auxiliary switches, terminals

Veight pprox.	Spring-type Terminals	Weight approx.
g	Order No.	kg
0.020	_	

Selection and ordering data



3RH29 11-1MA20

Auxillary switch blocks for snap							
Cable entry from below	S00, S0	1-pole	1 NC	3RH29 11-1BA10	0.020	_	
	S00, S0	1-pole	1 NO	3RH29 11-1BA01	0.020	_	
• •	S00, S0	2-pole	1 NO + 1 NC	3RH29 11-1MA11	0.050	_	
051100 11 15110	S00, S0	2-pole	2 NO	3RH29 11-1MA20	0.050	_	
3RH29 11-1BA10	S2, S3	2-pole	1 NO + 1 NC	3RH19 11-1MA11	0.075	_	
2222	S2, S3	2-pole	2 NO	3RH19 11-1MA20	0.075	_	
466	S2, S3	2-pole	2 NC	3RH19 11-1MA02	0.075	_	

Screw

Terminals

Order No.

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Cable entry from two sides



3RH29 11-1FA22

S00, S0	4-pole	2 NO + 2 NC	3RH29 11-1FA22	0.060	3RH29 11-2FA22	0.049
S2, S3	4-pole	2 NO + 2 NC	3RH19 21-1FA22	0.075	_	
S2, S3	1-pole	1 NO	3RH19 21-1CA10	0.020	_	
S2, S3	1-pole	1 NC	3RH19 21-1CA01	0.020	_	
S00	2-pole	1 NO + 1 NC	3RH29 11-1DA11	0.039	3RH29 11-2DA11	0.050
S00	2-pole	2 NC	3RH29 11-1DA02	0.039	3RH29 11-2DA02	0.050
S0	2-pole	1 NO + 1 NC	3RH29 21-1DA11	0.039	3RH29 21-2DA11	0.050
S0	2-pole	2 NC	3RH29 21-1DA02	0.041	3RH29 21-2DA02	0.050
S0	2-pole	2 NO	3RH29 21-1DA20	0.041	3RH29 21-2DA20	0.050

Laterally mountable auxiliary switch blocks for contactors

For

Size

Conductors

Version



3RH29 11-1DA11

S00	2 NC	3RH29 11-1DA02	0.020	3RH29 11-2DA02	0.050
S00	1 NO + 1 NC	3RH29 11-1DA11	0.040	3RH29 11-2DA11	0.050
S00	1 NO	3RH29 11-1DA20	0.040	3RH29 11-2DA20	0.050
S0	2 NC	3RH29 21-1DA02	0.050	3RH29 21-2DA02	0.050
S0	1 NO + 1 NC	3RH29 21-1DA11	0.050	3RH29 21-2DA11	0.050
S0	1 NO	3RH29 21-1DA20	0.050	3RH29 21-2DA20	0.050

Connection modules for contactors with screw terminals

Adaptors for contactors



3RT19 26-4RD01

Ambient te	Ambient temperature Tu max = 60 °C						
S00	Rated operational current I _e at AC-3/400 V: 20A	3RT19 16-4RD01	0.020	_			
S0	Rated operational current I _e at AC-3/400 V: 25A	3RT19 26-4RD01	0.020	_			

S00. S0 3RT19 00-4RE01 0.025 Plugs for contactors



3RT19 00-4RE01

3RA1 / 3RA2 Accessories



Terminals

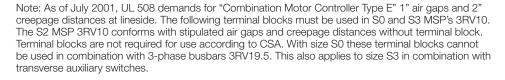
Selection and ordering data

For Conductors	Version	Screw Terminals	Weight approx.
Size		Order No.	kg

Auxillary switch blocks for snapping on the front for contactors



3RV29 28-1H





Terminal block type E	
for extended air/creepage distance (1" and 2"	')

S00, S0	3RV29 28-1H	0.120
S00, S0	3RV29 28-1K	0.120
S2, S3	3RT19 46-4GA07	0.120



3RT19 46-4GA07

Combination Starters & Starters for Group Installation 3RA1 / 3RA2 Accessories

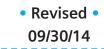
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Surge suppressors

Selection and ordering da	nta				
	For Conductors	Version	Rated control supply voltage U _S ¹	Surge Suppressors	Weight approx.
	Size		V	Order No.	kg
Auxillary switch blocks for	r snapping on the	front for contactors			
Size S00 — For plugging on	to the front side of	the contactors with and without auxiliar	y switch blocks		
4	3RT2.	Varistors	24 48 AC	3RT29 16-1BB00	0.010
(2005)			24 70 DC		
			48 127 AC	3RT29 16-1BC00	0.010
1			70 150 DC		
3RT29 16-1EH00	3RT2.	RC elements	24 48 AC	3RT29 16-1CB00	0.010
			24 70 DC		
			48 127 AC	3RT29 16-1CC00	0.010
			70 150 DC		
	3RT2.	Noise suppression	12 250 DC	3RT29 16-1DG00	0.010
	3RT2.	Diode assemblies	12 250 DC	3RT29 16-1EH00	0.010
		(diode and Zener diode) for DC operation and short break times	1		
Size S0 — For plugging onto	the front side of t	the contacctors (prior to mounting of the	auxiliary switch blo	ock)	
400	3RT20.2	Varistors	24 48 AC	3RT29 26-1BB00	0.010
			24 70 DC		
			48 127 AC	3RT29 26-1BC00	0.010
			70 150 DC		
3RT29 26-1BB00	3RT20.2	RC elements	24 48 AC	3RT29 26-1CB00	0.010
			24 70 DC		
			48 127 AC	3RT29 26-1CC00	0.010
			70 150 DC		
	3RT20.2	Diode assemblies	24 DC	3RT29 26-1ER00	0.010
		for DC operation and short break times	30 250 DC	3RT29 26-1ES00	0.010
Sizes S2 and S3					
THE SECOND SECON	3RT10 3.	Varistors	24 48 AC	3RT19 36-1BB00	0.025
	3RT10 4.		24 70 DC		
			48 127 AC	3RT19 36-1BC00	0.025
3RT19 36-1CC00			70 150 DC		
	3RT10 3.	RC elements	24 48 AC	3RT19 36-1CB00	0.040
	3RT10 4.		24 70 DC		
			48 127 AC	3RT19 36-1CC00	0.040
			70 150 DC		
	3RT10 3.	Diode assemblies	24 DC	3RT19 36-1TR00	0.025
	3RT10 4.	for DC operation and short break times, can be plugged in at bottom	30 250 DC	3RT19 36-1TS00	0.025

3RA1 / 3RA2 Accessories

Surge suppressors, link modules



Spring-type

Spring-type

2

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Selection and ordering data

For MSP	For contactors	Actuating voltage of contactor	Screw Terminals	(1)	Pack Qty.	Weight approx.
Size			Order No.			kg

Auxillary switch blocks for snapping on the front for contactors

Electrical and mechanical link between motor starter protector and contactor



Single-unit	S00, S0	S00	AC and DC	3RA19 21-1DA00		
packaging	S00, S0	S0	AC	3RA29 21-1AA00	1 unit	0.028
	S00, S0	S0	DC	3RA29 21-1BA00	1 unit	0.001
	S2	S2	AC	3RA19 31-1AA00	1 unit	0.001
	S3	S3	AC	3RA19 41-1AA00	1 unit	0.05
	S2	S2	DC	3RA19 31-1BA00	1 unit	0.08
	S3	S3	DC	3RA19 41-1BA00	1 unit	0.05
Multi-unit	S00, S0	S00	AC and DC	3RA19 21-1D	10 unit	0.021
packaging	S00, S0	S0	AC	3RA29 21-1A	10 unit	0.001
	S00, S0	S0	DC	3RA29 21-1B	10 unit	0.001



3RA29 11-2AA00

				Ierminals		
Electrical and mechanical link between motor starter protector and contactor				Order No.		
Single-unit	S00	S00	AC and DC	3RA29 11-2A	A00	
packaging	S0	S0	AC ¹⁾ and DC	3RA29 21-2A	A00 1 unit	0.040
Multi-unit	S00	S00	AC and DC	3RA29 11-2A	10 unit	0.400
packaging	S0	S0	AC1) and DC	3RA29 21-2A	10 unit	0.770

Hybrid link modules from motor starter protector to contactor



For mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals

	Single-unit	S00	S00	AC and DC	3RA29 11-2FA00	1 unit	0.029
00	packaging	S0	S0	AC ¹⁾ and DC	3RA29 21-2FA00	1 unit	0.056
)()	Multi-unit	S00	S00	AC and DC	3RA29 11-2F	10 unit	0.290
	packaging	S0	S0	AC ¹⁾ and DC	3RA29 21-2F	10 unit	0.560

For MSPs	For soft starters	Screw Terminals	Pack Qty.	Weight approx.
Size	Size	Order No.		kg

Link modules from motor starter protector to soft starters

Electrical and mechanical link between motor starter protector and soft starter

Single-unit packaging	S00/S0	S00/S0	3RA29 21-1BA00	1 unit	0.001
Multi-unit packaging	S00/S0	S00/S0	3RA29 21-1B	10 unit	0.001



3RA29 11-2GA00

			iciiiiidis .			
Electrical	and mechanical link between i	motor starter protector and soft starter	Order No.			
Single-ur		S00	3RA29 11-2GA0	0 1	unit	0.038
packaging	g S0	S0	3RA29 21-2GA0	0 1	unit	0.072
Multi-uni		S00	3RA29 11-2G	10) unit	0.380
packagir	g S0	S0	3RA29 21-2G	10	0 unit	0.720

A spacer for height compensation on AC contactors with spring-type terminals, size S0 is optionally available, see page 4/52.

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• Revised • 09/30/14

3RA1 / 3RA2 Accessories

Mounting kits for Fast Bus

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	For	Version	Screw (1)	Pack	Weight
	Conductors		Terminals	Qty.	approx
	Size		Order No.		kg
Wiring kits for contactors					
	Reversing				
	S00	Electrical and mechanical connection for reversing contactors, optionally with integrated electrical	3RA29 13-2AA1	1 unit	0.001
ULUU	S0	and mechanical interlock	3RA29 23-2AA1	1 unit	0.001
0D100 00 0111	S2	Mechanically locking device must be ordered	3RA19 33-2A	1 unit	0.120
3RA29 23-2AA1	S3	seperately	3RA19 43-2A	1 unit	0.300
	Wye-delta s	starting			
11111	S00	Electrical and mechanical link for three contactors	3RA29 13-2BB1	1 unit	0.001
IIIII	S0	of same size	3RA29 23-2BB1	1 unit	0.001
3RA29 23-2BB1	S2	Electrical and mechanical link for three contactors	3RA19 33-2B	1 unit	0.070
3HAZ9 Z3-ZBB1	S3	of same size	3RA19 43-2B	1 unit	0.160
			Spring-type Terminals		
	Reversing				
199966	S00	Electrical and mechanical connection for reversing	3RA29 13-2AA2	1 unit	0.001
Geret Ceret	S0	contactors, optionally with integrated electrical and mechanical interlock	3RA29 23-2AA2	1 unit	0.001
litica					
3RA29 23-2AA2	Wye-delta s	starting			
	S00	Electrical and mechanical link for three contactors	3RA29 13-2BB2	1 unit	0.001
	SO	of same size	3RA29 23-2BB2	1 unit	0.001
			Screw Terminals		
Wiring kits for contactors					
To be	Reversing				
1 1777	S00	Switches 2 contactors in series	3RA29 16-1A	1 unit	0.001
	S0		3RA29 26-1A	1 unit	0.001

3RA29 16-1A					

3RA1 / 3RA2 Accessories



Mounting kits for Fast Bus

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Accesso	כסווי

	For Conductors	For MSPs	Version	Screw Terminals	Pack Qty.	Weight approx.
Manhania	Size	Size		Order No.		kg
Mechanical interl	S2, S3		For reversing contactors, laterally fittable with 1 auxiliary contact (1 NC) each per contactor.	3RA19 24-2B		0.040
3RA19 24-2B						
Terminals for con	tactor coil					-
3RA19 23-3B	S2, S3		For A1 and A2 of reversing contactors (includes 2 x A1 and 1 x A2)	3RA19 23-3B		0.020
	va roil adapto	ve.		•		
Standard mounting	For mechani	ical fixing of	motor start protector and contactor; for snapping rail or for screw fixing.			
	S00, S0	S00, S0	Single-unit packaging	3RA29 22-1AA00	1 unit	0.001
	S2	S2		3RA19 31-1AA00	1 unit	0.020
- I manual	S3	S3		3RA19 41-1AA00	1 unit	0.250
3RA29 22-1AA00	S00, S0	S00, S0	Multi-unit packaging	3RA29 22-1A	5 units	0.001
Side modules for	standard mou	untin rail ac	laptors			
3RA19 02-1B	S00S3	S00S3	For standard mountin rail adaptors 10 mm wide, 96 mm long, for widening standard mounting rail adaptors when using lateral auxiliary switches, For size S00 to S2: 2 units required. For size S3: 3 units required	3RA19 02-1B	10 units	0.009
RH assembly kits	for reversing	duty and s	tandard rail mounting			
المالية المالية			rew terminals		:	0.5-:
933	S0	S0	Comprising: • Wiring kits - 2 standard mounting rail adaptors	3RA29 23-1BB1	1 unit	0.001
	S2	S2	2 connecting wedges	3RA19 33-1B	1 unit	0.560
	S3 RH assemble	S3	Link modules may be ordered seperately. ring-type terminals	3RA19 43-1B Spring-type Terminals	1 unit	0.810
	S0	S0	Comprising: • Wiring kits • 2 standard mounting rail adaptors • 2 connecting wedges • Spacers	3RA29 23-1BB2	1 unit	0.001

Spacers

Link modules may be ordered seperately.

3RA29 23-1BB1



Busbar adapters

approx.	
kg	

		For motor starter pro- tector	For contactors	Version	Order No.	Std. pack qty.	Weight approx.
		Size	Size				kg
Busbar ac	dapters for 6	0 mm syste	ems				
41	ar	Width: 12 n Thickness:	nm and 30 n 5 mm and 1				
		For motor screw term		ectors and contactors with	Screw terminals	+	
		S00	S00	Rated current 16 A, 45 mm wide, 200 mm long	8US12 51-5DS10	1 unit	0.183
011010.51	011040.54	S0	S0	Rated current 32 A, 45 mm wide, 260 mm long	8US12 51-5NT10	1 unit	0.183
8US12 51- 5DS10	8US12 51- 5DT11		starter prot e terminals	ectors and contactors with	Spring-type terminals		
		S00	S00	Rated current 16 A, 45 mm wide, 260 mm long	8US12 51-5DT11	1 unit	0.183
		S0	S0	Rated current 32 A, 45 mm wide, 260 mm long	8US12 51-5NT11	1 unit	0.183
Device ho for 60 mm		eral mounti	ng onto b	usbar adapters			
		S00, S0	S00, S0	Up to 25 A, 45 mm wide, 200 mm long	8US12 50-5AS10	1 unit	0.183
		SO	S0	Up to 40 A, 45 mm wide, 260 mm long	8US12 50-5AT10	1 unit	0.183
8US12 50- 5AS10	8US12 50- 5AT10						
Side mod	ules for wide	ning busba	ar adapter	s			
				Including connecting wedges, for widening busbar adapters or device holders, 9 mm wide, 200 mm long	8US19 98-2BJ10	1 unit	0.023
Spacers for	or fixing the n	notor starte	r onto the	busbar adapter			
			S00, S0	(1 pack = 100 units)	8US19 98-1BA10	1 pack	0.183
Vibration	and shock k	its for high	vibration	and shock loads			
			S00, S0		8US19 98-1CA10	1 unit	0.183
RS assem	bly kits for r	eversing d	uty for 60	mm busbar systems			

Vibration and
RS assembly
3RA29 23-1DB1

	-	
S00, S0 S0 S00	\$00 \$0 \$0	Comprising: • Wiring kits • Busbar adapters • Device holders • 2 connecting wedges • Side modules

RS assembly kits for screw terminals

Screw terminals 3RA29 13-1DB1 3RA29 23-1DB1 3RA29 23-1EB1 Link modules must be ordered

Spring-type terminals

3RA29 13-1DB2

3RA29 23-1DB2

1 unit 0.001 1 unit 0.001 0.001 1 unit

1

 $\underset{\square}{\otimes}$

1 unit

1 unit

3RA29 23-1DB2 only Busbar adapter pictured

only Busbar adapter pictured

RS asser	mbly kits fo	or spring-type terminals
S00	S00	Comprising:

SO

Comprising: S00 Wiring kits Busbar adapters

separately.

Device holders2 connecting wedges Spacers

 Side modules Link modules must be ordered separately.

0.001

0.001

3RA1 / 3RA2 Accessories



Connecting wedges, spaces, and tools

	For motor starter protector	For contactors	Version	Order No.		Std. pack qty.	Weight approx.
	Size	Size					kg
Connecting wedges							
8US19 98-1AA00	holders or o	nical linking of standard i ation require	of busbar adapters and device mounting rail adapters (2 units ed)	8US19 98-1AA00		100 units	0.100
Spacers							
		compensation type termination	on on AC contactors size S0	Spring-type terminals	$\stackrel{\infty}{\square}$		
	S0	S0	Single-unit packaging	3RA29 11-1CA00		1 unit	0.001
6 6	S0	S0	Multi-unit packaging	3RA29 11-1C		5 units	0.001
3RA29 11-1CA00							
	Version			Order No.		Std. pack qty.	Weight approx.
							kg
Tools for opening spr	ing-type ter	minals by	hand				
	Screwdrive for all SIRIU	e rs JS devices v	vith spring-type terminals	Spring-type terminals	\bigotimes		
- The state of the	Length app 3.0 mm x 0	rox. 200 mn .5 mm.	٦,	3RA29 08-1A		1 unit	0.045
	titanium gra						
3RA29 08-1A	partially ins	uiated					
Blank labels							
3RT19 00-1SB20	Unit labelii for SIRIUS (20 mm x 7) pastel turqu	devices mm,		3RT19 00-1SB20		340 units	0.200
1) PC labeling system for in	ndividual inscr	iption of					

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systems, Inc. www.murrplastik.com.

Selection and ordering data

	For MSPs	For Conductors	Version		Std. Pack	Weight approx.
	Size	Size		Order No.	Qty.	kg
Push-in lugs for s	screw fixing					
3RV29 28-0B	S00		For screwing the motor starter protector onto mounting plates; for each motor starter protector, 2 units are required.	3RV29 28-0B	10 units	0.100



Components for IEC types of coordination 1 and 2 at AC 500 V

2

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Three-phase standar 1-pole at AC 500 V	,	Setting range Inverse-time delayed overload release	Motor starter protector	Contactor ²)	Size
Standard output	Motor current (guide value)	0.000000	Туре	Туре	
P '	I			,	
kW	Α	A			
EC Type of coor	dination 1 at I_a = 50 kA/AC 40				
Normal starting (Class 10				
1.5	3.6	3.5 5	3RV20 11-1FA10	3RT20 15-1AP00	S00
2.2	4.9	4.5 6.3	3RV20 11-1GA10		
3	6.5	5.5 8	3RV20 11-1HA10		
4	8.5	7 10	3RV20 11-1JA10	3RT20 16-1AP01	
5.5	11.5	9 12.5	3RV20 11-1KA10	3RT20 17-1AP01	
7.5	15.5	11 16	3RV20 11-4AA10	3RT20 18-1AP01	
EC Type of coor	dination 2 at $I_{\rm q}$ = 50 kA/AC 40	00 V			
Normal starting (Class 10	70 ¥			
0.06	0.2	0.14 0.2	3RV20 11-0BA10	3RT20 15-1AP01	S00
0.06	0.2	0.18 0.25	3RV20 11-0CA10		
0.09	0.3	0.22 0.32	3RV20 11-0DA10		
0.09	0.3	0.28 0.4	3RV20 11-0EA10		
0.12	0.4	0.35 0.5	3RV20 11-0FA10		
0.18	0.6	0.45 0.63	3RV20 11-0GA10		
0.18	0.6	0.55 0.8	3RV20 11-0HA10		
0.25	0.85	0.7 1	3RV20 11-0JA10		
0.37	1.1	0.9 1.25	3RV20 11-0KA10		
0.55 0.75	1.5 1.9	1.1 1.6 1.4 2	3RV20 11-0AA10 3RV20 11-1BA10		
0.75	1.9	1.8 2.5	3RV20 11-16A10		
1.1	2.7	2.2 3.2	3RV20 11-1DA10		
1.5	3.6	2.8 4	3RV20 11-1EA10		
1.5	3.6	3.5 5	3RV20 11-1FA10	3RT20 24-1AP01	S0
2.2	4.9	4.5 6.3	3RV20 11-1GA10		
3	6.5	5.5 8	3RV20 11-1HA10		
4	8.5	7 10	3RV20 11-1JA10		
5.5	11.5	9 12.5	3RV20 11-1KA10		
7.5	15.5	11 16	3RV20 21-4AA10	3RT20 26-1AP01	
7.5	15.5	14 20	3RV20 21-4BA10		
11	22	17 22	3RV20 21-4CA10	3RT20 27-1AP01	
11	22	20 35	3RV20 21-4DA10		
15	29	27 32	3RV20 21-4EA10		

Selection depends on the actual startup and rated data of the protected motor.

²⁾ Rated control supply voltage 120 V AC. Other voltages are possible.

Components for IEC types of coordination 1 and 2 at AC 500 V



	Tecl	hni	cal	data
_	100		Jui	uutu

Three-phase standard 4-pole at AC 500 V	I motor ¹)	Setting range Inverse-time delayed	Motor starter protector	Contactor ²)	Size
Standard output	Motor current (guide value)	overload release	Туре	Туре	
P	I	5			
kW	A	А			
EC Type of coord Normal starting C	lination 1 at I_q = 50 kA/AC 50 lass 10	00 V			
15	23	18 25	3RV1031-4DA10	3RT10 34-1AK60	S2
18.5 22	28 33	22 32 28 40	3RV1031-4EA10 3RV1031-4FA10	3RT10 34-1AK60 3RT10 35-1AK60	
30	44	36 45	3RV1031-4GA10	3RT10 36-1AK60	
30	44	40 50	3RV1031-4HA10	3RT10 36-1AK60	
37	53	45 63	3RV1041-4JA10	3RT10 44-1AK60	S 3
45	64	57 75	3RV1041-4KA10	3RT10 44-1AK60	
55	78	70 90	3RV10414LA10	3RT10 45-1AK60	
EC Type of coord	dination 2 at I_q = 50 kA/AC 50 class 10	00 V			
7.5	12.4	11 16	3RV10 31-4AA10	3RT10 34-1AK60	S2
11 15	17.6 23	14 20 18 25	3RV10 31-4BA10 3RV10 31-4DA10	3RT10 34-1AK60 3RT10 34-1AK60	
18.5	23	22 32	3RV10 31-4EA10	3RT10 34-1AK60 3RT10 34-1AK60	
22	33	28 40	3RV10 31-4FA10	3RT10 35-1AK60	
30	44	36 45	3RV10 31-4GA10	3RT10 36-1AK60	
30	44	40 50	3RV10 31-4HA10	3RT10 36-1AK60	
37 45	53 64	45 63	3RV10 31-4JA10	3RT10 44-1AK60	S3
		57 75	3RV10 31-4KA10	3RT10 44-1AK60	

¹⁾ Selection depends on the actual startup and rated data of the protected motor.

²⁾ Rated control supply voltage 120 V AC. Other voltages are possible.



Components for IEC types of coordination 1 and 2 at AC 690 V

Technical data

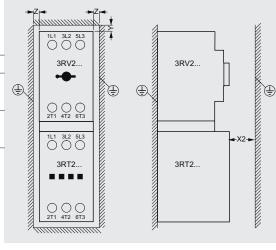
Three-phase standard motor 4-pole at AC 690 V ³)		Setting range MSP			Subsequent Contactor¹) MSP		Short-circuit switching capacity $I_{\rm q}$ at 690 V
Standard output	Motor current (guide value)		Туре	Туре	Туре		
P	I						
kW	Α	A					kA
IEC Types		on 1 and 2 at AC	690 V				kA

11 15 18.5 22	12.8 17 21 24	11 16 14 20 18 25 22 32	3RV13 31-4HC10 Size S2 I _n = 50 A	3RV10 31-4AA10 3RV10 31-4BA10 3RV10 31-4DA10 3RV10 31-4EA10	3RT10 34-1AK60 3RT10 34-1AK60 3RT10 35-1AK60 3RT10 35-1AK60	S2	50
30 37 45	32 39 47	28 40 36 45 40 50		3RV10 31-4FA10 3RV10 31-4GA10 3RV10 31-4HA10	3RT10 44-1AK60 ²) 3RT10 44-1AK60 ²) 3RT10 45-1AK60 ²)	S2/S3	50

Installation guidelines for AC 400/500 V

The following distances from earthed components must be observed when installing combinations:

Motor starter protectors in combination with contactors				Distances from earthed or live parts			
MSP	Contactor	Rated operational voltage	Y mm	X2 ⁴) mm	Z mm		
3RV2. 1 with	3RT20 1	400/500 V	20	10	9		
3RV2. 2 with	3RT20 1 3RT2 . 2 3RT1 . 3	400/500 V 400/500 V 400/500 V	30 30 30	10 10 10	9 9 9		
3RV1. 3 with	3RT20 2 3RT1 . 3 3RT10 4	400/500 V 400/500 V 400/500 V	50 50 50	10 10 10	10 10 10		
3RV1. 4 with	3RT10 4 3RT10 4	400 V 500 V	90 220	10 10	12 20		



- No upstream circuit-breaker required; short-circuit proof up to 100 kA.
- 1) Rated control supply voltage 120 V AC. Other voltages are possible.
- 2) With these combinations, the distance between 4) Minimum distance to contactor at front. the subsequent MSP and the contactor must be at
- 3) Selection depends on the specific startup and rated data of the protected motor. For the MSP, no minimum distance

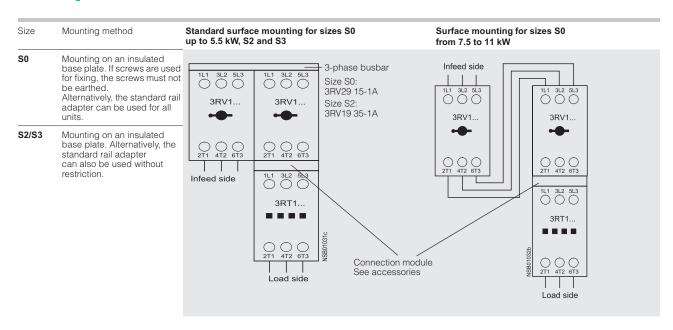
at the front must be maintained.

3RA1 / 3RA2 up to 100 A



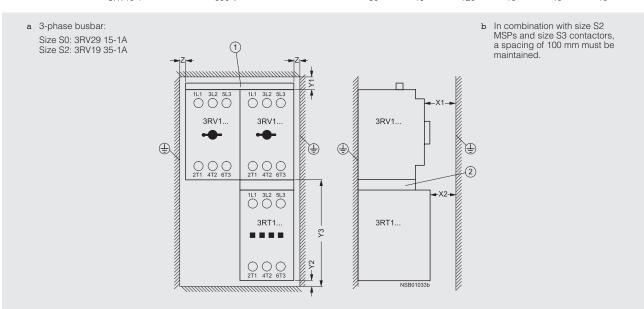
Technical data

Installation guidelines for AC 690 V



The following distances from earthed components must be observed when installing combinations:

Two MSPs in combination with contactors			Distanc	Distances from earthed or live components				
MSP	Contactor	Rated operational voltage	Y1 mm	Y2 mm	Y3 mm	X1 mm	X2 mm	Z mm
3RV2. 2 with	3RT20 2	690 V	80	10	95	20	14	20
3RV1. 3 with	3RT10 3 3RT10 4	690 V 690 V	50 50	10 10	120 120	10 10	32 40	10 10





3RA1 / 3RA2 up to 100 A

Technical data

General data						
Specifications			IEC 60 947-2, EN	I 60 947-1 (VDE 0 I 60 947-2 (VDE 0 EN 60 947-4-1 (VE		
Type Size Number of poles			3RA2. 1 S00 3	3RA2. 2 S0 3	3RA1. 3 S2 3	3RA11 4 S3 3
Max. rated current I nmax (= max. rated operational current	А	16	40	50	100	
Permissible ambient temperatur	е	°C °C	-55 +80 for sto -20 +70 for op		ns apply at more t	han +60 °C)
Rated operational voltage <i>U</i> e Rated frequency Rated insulation voltage <i>U</i> i Rated impulse withstand voltage	e <i>U_{imp}</i>	V Hz V kV	690 50/60 690 6			
Release class (CLASS)	acc. to IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102)		10			
Rated fused short-circuit curren acc. to IEC 60 947-4-1, DIN EN 6 Types of coordination to IEC 60 (VDE 0660 Part 102)	0 947-4-1 (VDE 0660 Part 102)	kA	153		50	
Power losses $P_{v max}$ of all main c depending on the rated current I_n (upper current setting range)	• Up to 1.25 A • 1.6 - 6.3 A • 8 - 12 A • 16A • 5- 6.3 A • 8 - 12 A • 16 - 32 A • 16 - 32 A • 25 - 32 A • 40 A • 45 - 50 A • 63 A • 75 - 90 A • 100 A	W W W W W W W W W W W W W W W W W W W	2 2.3 3.5 4.3	2.3 3.5 4.3	19 28 35	29 45 60
Power consumption of solenoid with cold coil and U_s , 50 Hz) AC operation DC operation	coils closing p.f. closed p.f. closing = closed	VA VA W	27 0.8 4.2 0.25 4	65 0.82 8.5 0.25 5.9	127 0.82 13.5 0.34 11.50	270 0.68 22 0.27 15
Coil voltage tolerance for contact		• • • • • • • • • • • • • • • • • • • •	0.8 - 1.1 x U _s	5.9	11.50	10
oon voitage tolerance for contact	low limit at 55 °C at 60 °C		0.8 x U _s 0.85 x U _s	_ _		
Endurance of MSP Mechanical endurance Electrical endurance Max. switching frequency per ho	operating operating our (motor starts)		100 000 50 000 100 000 50 000 15 15			
Endurance of contactor Mechanical endurance Electrical endurance	operating operating		30 million See endurance o	10 million curves of contacto	rs in Part 3.	
Shock resistance (sine-wave pulse)	acc. to IEC 60 068 Part 2-27	g	up to 6	up to 6	up to 8	up to 6
Degree of protection	acc. to IEC 60 947-1		IP 20 IP 00 terminal chamber			
Shock-hazard protection	acc. to DIN VDE 0106 Part 100		Finger-safe			
Phase failure sensitivity of MSP acc. to IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102)			yes			
Isolating characteristics of MSP Main and EMERGENCY-STOP switch characteristics of MSP and accessories acc. to IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101) acc. to IEC 60 204-1, EN 60 204-1 (VDE 0113 Part 1)			yes, with undervoltage release up to category 1 in proper use.			
Safe isolation between main and auxiliary circuits			up to 400 V			
Positively driven operation at co	ontactors		yes	yes, from main o	contact to auxiliary	/ NC contact

¹⁾ See selection and ordering data on pages 4/36 to 4/43.

3RA1 / 3RA2 up to 100 A



Technical data

Conductor cross-sections of main circuit						
Specifications	IEC 60 947-1, EN 60 947-1 (VDE 0660 Part 100) IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101) IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102)					
Type Size Number of poles		3RA2. 1 S00 3	3RA2. 2 S0 3	3RA1. 3 S2 3	3RA11 4 S3 3	
Connection type Terminal screw		Screw terminal M3 Posidrive size 2	Screw terminal M3 Posidrive size 2	Box terminals Posidrive size 2	Box terminals Allen screw	
Conductor cross-sections (min/max) 1 or 2 conductors can be connected • solid and stranded	mm² mm² mm²	2 x (0.5 1.5) ²⁾ or 2 x (0.75 2.5) ²⁾ max. 2 x 4	nly for contactors			
• Finely stranded without end sleeve	mm²	-				
• Finely stranded with end sleeves (DIN 46 228 T1)	mm ²	2 x (0.5 1.5) ²⁾ 2 x (0.75 2.5) ²⁾				
AWG cables, solid or stranded	AWG AWG AWG	2 x (20 16) ²⁾ 2 x (18 14) 2 x 12				
Minimum/maximum conductor cross-sections • flexible with ferrule - 1 conductor - 2 conductors • solid or stranded - 1 conductor - 2 conductors Ribbon cable Bus connection • solid or stranded • stranded	mm² mm² mm² mm² AWG AWG			0.75/25 0.75/16 0.75/35 0.75/25 yes - 2 x (30 2)	2.5/50¹) 2.5/35¹) 2.5/70¹) 2.5/50¹) yes yes - 2 x (10 1/0)	
Connection type		Spring Loaded con	nection			
	mm² AWG	2 x (0.5 2.5) 2 x (20 12)	-			
Permissible mounting position		Attention: acc. to DIN 43 602 Start command "I" right-hand or above				

¹⁾ Cable-lug and busbar connection possible after removing the box terminals.

If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.



Overview

The 3RA combination starters consist of the 3RV MSP and the 3RT contactor. MSP and contactor are prewired and mechanically connected with preassembled kits (link modules, connection assembly kits and mounting rail or busbar adapters).

As the 3RA combination starters are constructed from 3RV MSPs and 3RT contactors, the same accessories can be used for the combination starter as for these MSPs and contactors.

Pre-assembled link modules are available as accessories for the power spectrum up to 75 HP. The desired combination starter can thus be assembled quickly and economically by the customer. A time saving is also achieved with the link modules as – unlike with conventional wiring systems – there is no need to rectify possible wiring errors.

As a combination starter rated for tap conductor protection for group installation the 3RV MSP is responsible for overload and short-circuit protection in the motor circuit. Back-up protective devices, such as fuses or SIEMENS Sentron circuit breakers are required as per NEC 430-53 guidelines for group installations for multiple motor applications

The 3RT contactor is ideal for extremely complex switching tasks requiring durable components

The permissible ambient temperature is 60 °C with butt-mounting and without derating (70 °C possible subject to certain restrictions).

3RA combination starters are available for motors up to 75 Hp at 460 V AC and setting ranges from 0.14 A to 100 A.

3RA combination starters are supplied in four different sizes:

Size	Overall width mm	Max. rated current $I_{\text{n max}}$	For three- phase motors up to HP
\$00	45	8	5
\$0	45	22	15
\$2	55	50	40
\$3	70	100	75

Operating conditions

3RA combination starters are climate-proof. They are intended for use in enclosed rooms in which no severe conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable enclosures must be provided for installation in dusty and damp locations.

Accessories

The accessories for the special equipment, such as auxiliary contacts and undervoltage trips, can also be used for the 3RA combination starters.

In addition, certain accessories have been optimized for the combination starters. They include the top-connected, transverse auxiliary contact on the MSP with one changeover contact or one NO contact + one NC contact. Special auxiliary contact blocks that can be snapped on from below are available for the contactor. These two accessories enable the combination starters to be wired easily without having to route cables via the equipment.

The special accessories for 3RA combination starters take the form of link modules for 3RV MSPs and 3RT contactors.

Technical data

For technical data, see pages 4/56-4/58. Additional details are contained in the respective tables for the 3RV MSPs and 3RT contactors.

Configuration

Overload tripping times

All the 3RA combination starters described here are designed for normal starting, in other words for overload tripping times of less than 10 s (CLASS 10). At rated-load operating temperature the tripping times are shorter, depending on the particular equipment and the setting range. The exact values can be derived from the tripping characteristics of the MSPs.

Classification types

DIN VDE 0660 Part 102 and IEC 60 947-4-1 make a distinction between two different types of coordination (types 1 and 2). Any short-circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the equipment by a short-circuit.

IEC Type of coordination 1

The combination starter may be non-operational after a short-circuit has been cleared. Damage to the contactor or to the overload relay is permissible. In 3RA load feeders, the MSP itself always achieves type of coordination 2.

IEC Type of coordination 2

There must be no damage to the overload trip or to any other components after a short-circuit has been cleared. The 3RA combination starter can resume operation without needing to be be renewed. At most, it is permissible to weld the contactor contacts if they can be disconnected easily without any significant deformation.

Mounting

Complete equipment

The 3RA combination starters can be ordered as complete equipment for direct starting or for reversing mode. Control supply voltages of 50 Hz AC 230 V or DC 24 V and assembly on a 35 mm standard mounting rail or in a 40 or 60 mm busbar system are possible.

Special equipment for customer assembly can be ordered if other rated control supply voltages are required. The link modules simplify customer assembly of the load feeders.

3RA1 / 3RA2 up to 100 A

The corresponding distances from earthed or live parts, as detailed in the technical data, must be observed.

Customer assembly

The standard devices can be combined optimally in terms of both technical data and dimensions, thanks to the modular system of the SIRIUS series.

The combination starters can thus be assembled easily by the customer. It is simply necessary to assemble the standard 3RV MSP and 3RT contactor and the appropriate link module together.

For the order numbers for special equipment and link modules, see the selection and ordering data.

For the link modules for direct starting or reversing mode and assembly on a standard mounting rail or busbar, see accessories

If a MSP with a rotary operating mechanism is required for the lower setting ranges up to 12 A, the S0 MSP can also be assembled with an S00 contactor. A special connecting module is available for this purpose.

For the installation of feeders, it is imperative to use standard rail adapters, as from size S2 for direct starting and as from size S0 for reversing, to ensure the necessary mechanical strength. A standard rail adapter is not necessary if a busbar adapter is used.

Assembly

3RA combination starters are available for assembly on standard mounting rails in accordance with EN 50 022-35 x 15 or on busbar adapters with a busbar centre-line spacing of 40 or 60 mm and a busbar thickness of 5 or 10 mm.

The combination starters are also suitable for screw fixing.

Size S00 and S0 can be screwed on with the aid of plugin clips (see accessories on page 4/47).

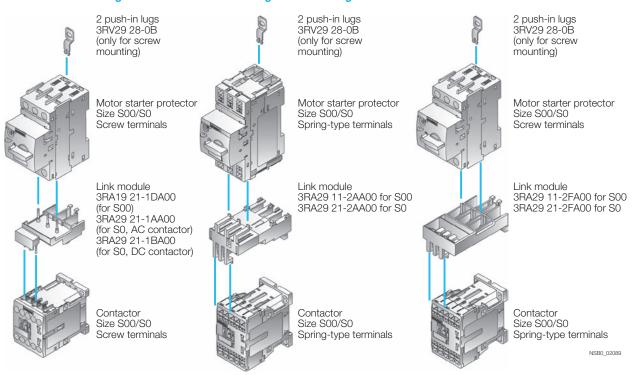
4/59

3RA1 / 3RA2 up to 100 A



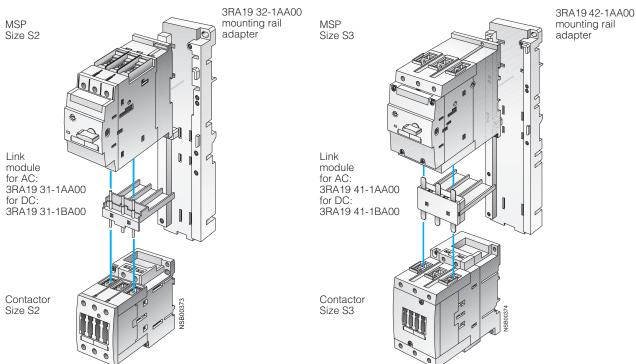
Mounting

Direct-on-line starting · For standard rail mounting or screw fixing · Sizes S00 and S0



Left: 3RA21 motor starter with screw connection
Center: 3RA21 motor starter with spring-type connection
Right: Motor starter protector combination with screw connection, with contactor with spring-type connection

DOL starting · for standard rail mounting · size S2 and S3



These graphical overviews are shown without small mounting hardware (screws etc.).

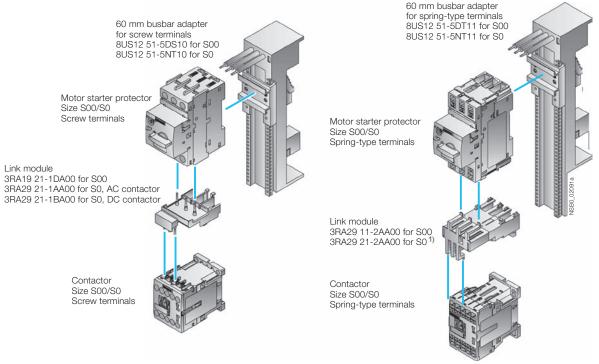


3RA1 / 3RA2 up to 100 A

/

Mounting

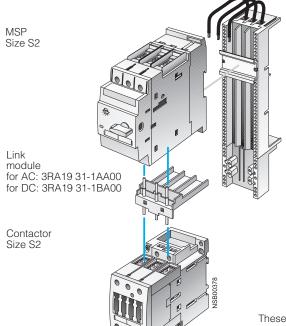
DOL starting \cdot for 60 mm busbar systems \cdot size S00 and S0



1) Additional 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

DOL starting \cdot for 40 mm and 60 mm busbar systems \cdot size S2

Busbar adapter 60 mm: 8US12 61-5FP08



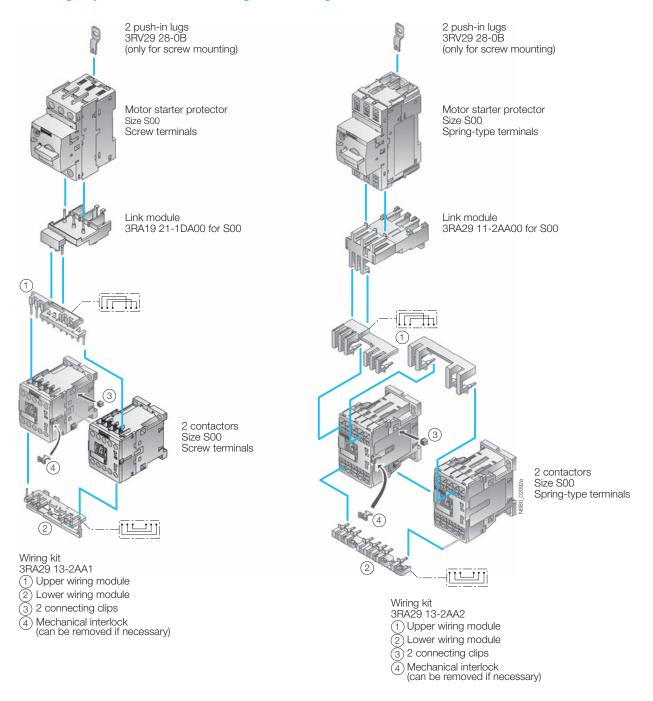
These graphical overviews are shown without small mounting hardware (screws etc.).

3RA1 / 3RA2 up to 100 A



Mounting

Reversing duty • For standard rail mounting or screw fixing • Size S00



Left: 3RA22 motor starter with screw connection, push-in lugs, 2 contactors for reversing duty and 3RA29 13-2AA1 wiring kit for connecting the contactors (incl. mechanical interlocking and connecting clips)

Right: 3RA22 motor starter with spring-type connection, push-in lugs, 2 contactors for reversing duty and 3RA29 13-2AA2 wiring kit (incl. mechanical interlocking and connecting clips)



3RA1 / 3RA2 up to 100 A

2

4

Mounting

Reversing duty • For standard rail mounting • Size S0

RH assembly kit for reversing duty and standard rail mounting in size S0

For screw terminals: 3RA29 23-1BB1

For spring-type terminals: 3RA29 23-1BB2¹⁾

Comprising:

1 wiring kit

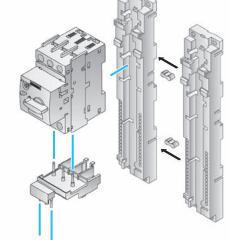
2 standard mounting rail adapters

2 connecting wedges

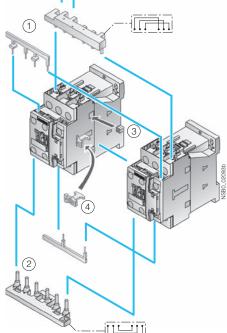
1) Also includes 3RA29 11-1CA00 spacer for height compensation on AC contactors size SO with spring-type terminals.

> Motor starter protector Size S0 Screw terminals/ spring-type terminals

Link module For screw terminals: 3RA29 21-1AA00 (AC) 3RA29 21-1BA00 (DC) For spring-type terminals: 3RA29 21-2AA00 ²⁾



2 standard mounting rail adapters 3RA29 22-1AA00 with 2 connecting wedges 8US19 98-1AA00



2 contactors Size S0 Screw terminals/ spring-type terminals

Wiring kit For screw terminals: 3RA29 23-2AA1 For spring-type terminals: 3RA29 23-2AA2

- 1 Upper wiring module
- (2) Lower wiring module
- (3) 2 connecting clips
- (a) Mechanical interlock (can be removed if necessary)

²⁾Additional 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals

3RA22 motor starter for reversing duty and standard rail mounting in size S0 (the version with screw connection is shown in the picture)

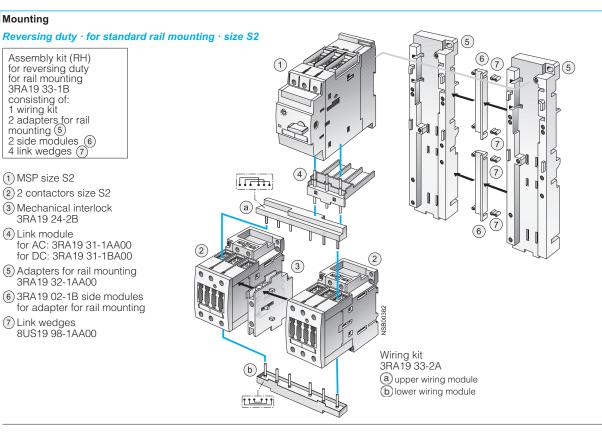
3RA1 / 3RA2 up to 100 A



Mounting

Assembly kit (RH) for reversing duty for rail mounting 3RA19 33-1B consisting of: 1 wiring kit 2 adapters for rail mounting 5 2 side modules 6 4 link wedges (7)

- 1) MSP size S2
- 2 2 contactors size S2
- (3) Mechanical interlock 3RA19 24-2B
- (4) Link module for AC: 3RA19 31-1AA00 for DC: 3RA19 31-1BA00
- (5) Adapters for rail mounting 3RA 19 32-1AA00
- (6) 3RA19 02-1B side modules for adapter for rail mounting
- 7 Link wedges 8US19 98-1AA00

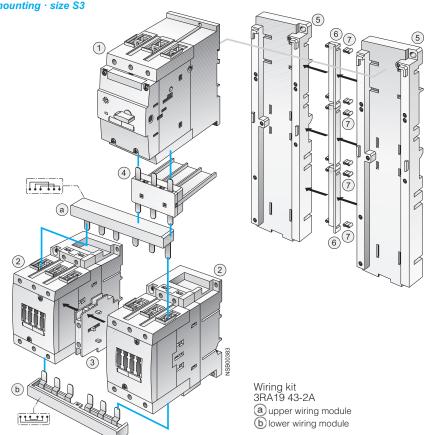


Reversing duty · for standard rail mounting · size S3

Assembly kit (RH) for reversing duty for rail mounting 3RA19 43-1B consisting of: 1 wiring kit 2 adapters for rail mounting (S) mounting (5)
3 side modules (6)
6 link wedges (7)

- 1) MSP size S3
- (2) 2 contactors size S3
- (3) Mechanical interlock 3RA19 24-2B
- (4) Link module for AC: 3RA19 41-1AA00 for DC: 3RA19 41-1BA00
- (5) Adapters for rail mounting 3RA19 42-1AA00
- 6 3RA19 02-1B side modules for adapter for rail mounting
- 7 Link wedges 8US19 98-1AA00

These graphical overviews are shown without small mounting hardware (screws etc.).

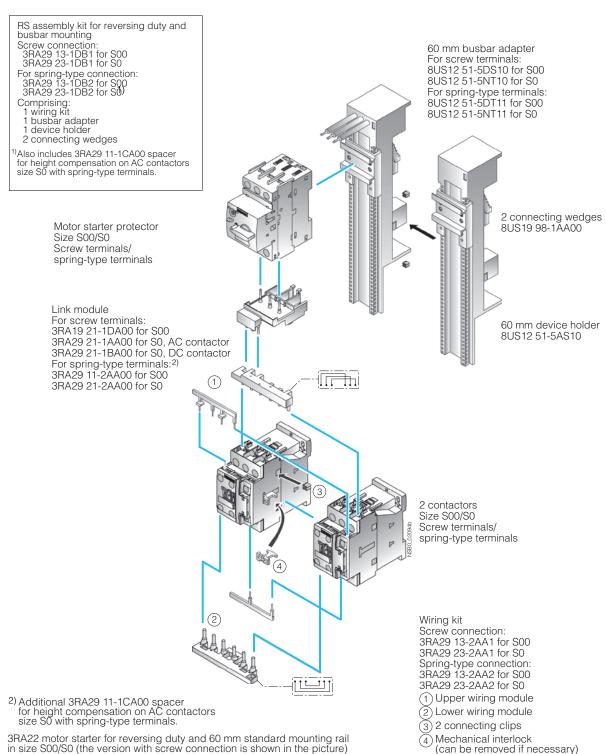




3RA1 / 3RA2 up to 100 A

Mounting

Reversing duty • For 60 mm busbar systems • Sizes S00 and S0



2

3

1

3RA1 / 3RA2 up to 100 A



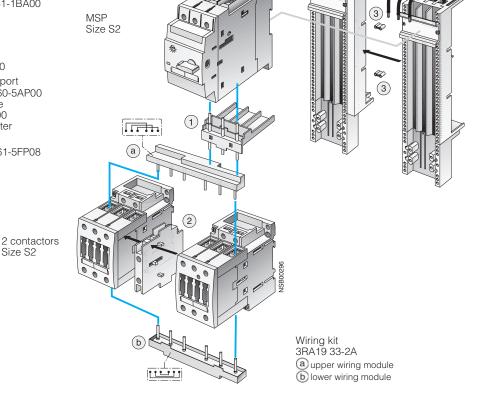
Mounting

Reversing duty · for 60 mm busbar systems · size S2

Assembly kit (RS) for reversing duty for busbar mounting 40 mm: 3RA19 33-1C 60 mm: 3RA19 33-1D consisting of: 1 wiring kit 1 busbar adapter 1 controlgear support 1 side module 2 link wedges (3)

- 1) Link module for AC: 3RA19 31-1AA00 for DC: 3RA19 31-1BA00
- (2) Mechanical interlock 3RA19 24-2B
- ③ Link wedges 8US19 98-1AA00
- 4 Controlgear support 60 mm: 8US12 60-5AP00 with side module 8US19 98-2BM00 for busbar adapter
- (5) Busbar adapter 60 mm: 8US12 61-5FP08

Size S2



These graphical overviews are shown without small mounting hardware (screws etc.).



3RA1 / 3RA2 up to 100 A

A

Components for Fast Bus mounting

1 Link module for AC: 3RA19 41-1A for DC: 3RA19 41-1B

2 Mechanical interlock 3RA19 24-2B Adapter shoe 8US1211-4TR00

MSP 3RV104

2 Brackets FBS0070B

3RA1943-2A Wiring kit

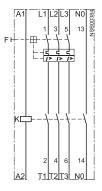
- a Upper wiring module
- b Lower wiring module

2 Contactors 3RT104

Circuit diagrams

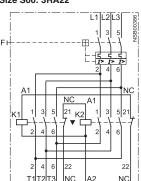
Direct-on-line starting

Size S00: 3RA21.1

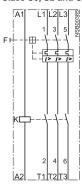


Reversing duty

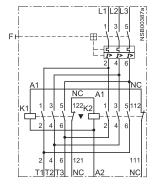
Size S00: 3RA22



Sizes S0, S2 and S3: 3RA11/21 2, 3RA11/21 3



Size S0: 3RA22



2

U

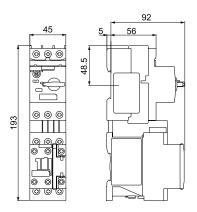
4

3RA1 / 3RA2 up to 100 A

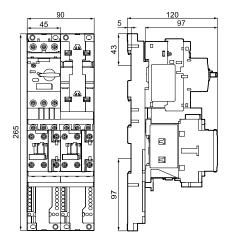


Dimension drawings

Size S00 · for standard rail mounting

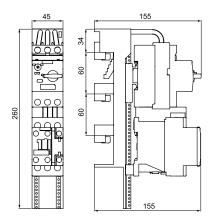


S0 direct-on-line starter, AC, screw-type connection system 3RA2120-..A

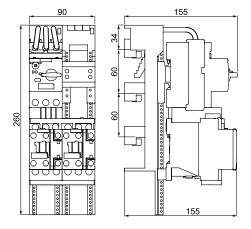


S0/S0 and S00/S0 reversing starters, AC, screw-type connection system 3RA2220-..B..-0AP0

Size S00 · for 40 mm and 60 mm busbar systems



S0/S0 and S00/S0 direct-on-line starters, AC, screw-type connection system 3RA2120-..D..-0AP0



S0/S0 and S00/S0 reversing starters, AC, screw-type connection system 3RA2220-..D..-0AP0

When mounting the combinations, observe the installation guidelines (page 4/60-4/61).



3RA1 / 3RA2 up to 50 A

2

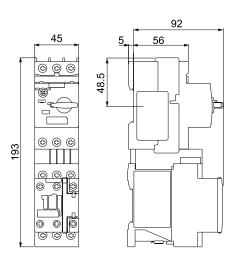
4

3

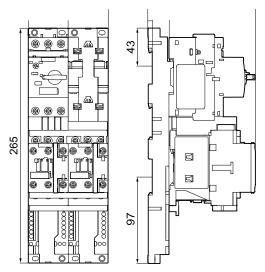
4

Dimension drawings

Size S0 · for standard rail mounting

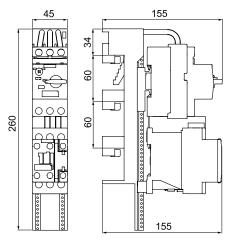


S0 direct-on-line starter, AC, screw-type connection system 3RA2120-..A

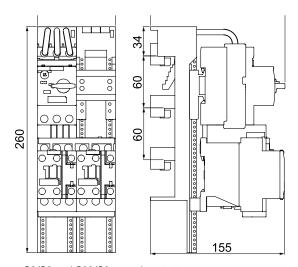


S0/S0 and S00/S0 reversing starters, AC, screw-type connection system 3RA2220-..B..-0AP0

Size S0 · for 40 mm and 60 mm busbar systems



S0/S0 and S00/S0 direct-on-line starters, AC, screw-type connection system 3RA2120-..D..-0AP0



S0/S0 and S00/S0 reversing starters, AC, screw-type connection system 3RA2220-..D..-0AP0

When mounting the combinations, observe the installation guidelines (page 4/60-4/61).

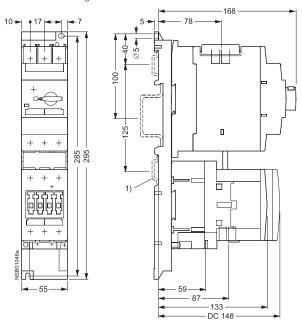
3RA1 / 3RA2 up to 50 A

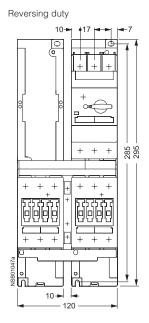


Dimension drawings

Size S2 · for standard rail mounting

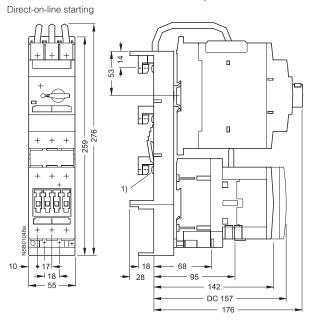
Direct-on-line starting



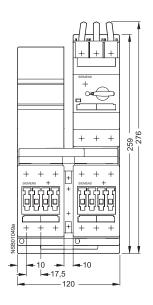


- Alternative fixing methods
 a) 2 35 mm mounting rails
 acc. to DIN EN 50022
 Spacing: 125 mm
 Depth: 7.5 or 15 mm.
 - b) 1 75 mm mounting rail acc. to DIN EN 50 023.

Size S2 · for 40 mm and 60 mm busbar systems



Reversing duty



 Busbar adapter suitable for rail thicknesses of 5 and 10 mm with chamfered edges.

When mounting the combinations, observe the installation guidelines (page 4/60-4/61).

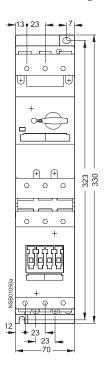


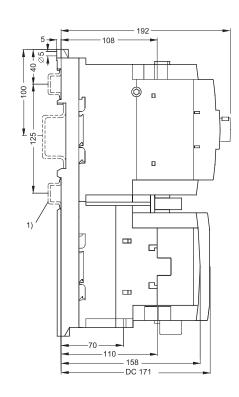
3RA1 / 3RA2 up to 100 A

Dimension drawings

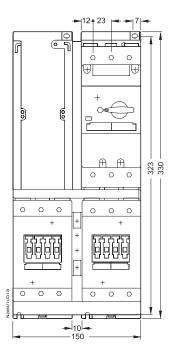
Size \$3 · for standard rail mounting

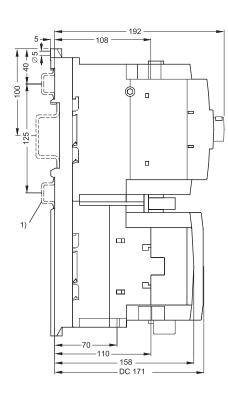
Direct-on-line starting





Reversing duty





- Alternative fixing methods
 a) 2 35 mm mounting rails
 acc. to DIN EN 50 022 Spacing: 125 mm
 Depth: 7.5 or 15 mm.
 - b) 1 75 mm mounting rail acc. to DIN EN 50 023.

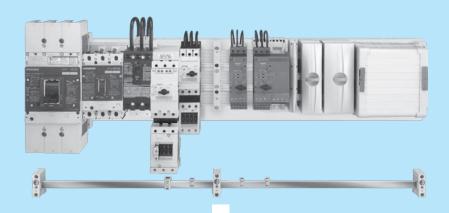
When mounting the combinations, observe the installation guidelines (page guidelines 4/60-4/64).

Notes



Contents

Fast Bus busbar adapter system



60 mm system

Page

Selection and ordering data

3/9
3/11
5/6
5/6
5/6
5/6

 Overview
 5/2

 Introduction
 5/3

 Technical Data
 5/3

 Dimension drawings
 5/10-15

FBCB Fast Bus circuit breakers

Fast Bus combination starters





FBCB Fast Bus main and feeder circuit breakers

Page



Selection and ordering data

Fast Bus circuit breakers assemblies and kits Fast Bus adapter shoes for VL breakers 5/8

Selection and ordering data

• See Section 4

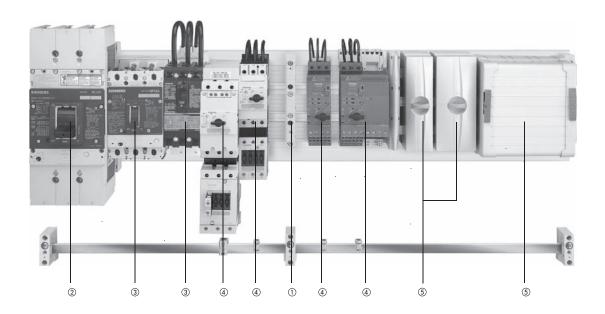
Fast Bus

Fast Bus Busbar Adapter System

Overview

Busbar adapter systems

Busbar adapter systems with busbar centerline spacing of 60 mm



Page

60 mm busbar system

for sharp-edged copper busbars to DIN 46 433, width 20 mm to 30 mm, thickness 5 mm and 10 mm

① **Busbar holder**End and intermediate holders for flat copper profiles 5/6

② Fast Bus main circuit breakers 5/7 from 50 to 500A

Fast Bus circuit breakers from 15 to 600A

④ 3RA1 Combination Starters

Page

(5) Incoming supply terminals

Page

Fast Bus Busbar Adapter System

Introduction

General

The Fast Bus Multi-Motor Control system is a 3-phase insulated busbar system and is ideal for space saving in panel designs. The system saves considerable line side wiring and space for multi-motor panels. It is also ideal for panels where several feeder breakers are used and will save significant wiring space and wiring labor. The system is also ideal for future expansion planning. when building control panels. SIRIUS 3RV/3RT starter combinations and Siemens circuit breakers are all adaptable to Fast Bus for convenient mounting and faster replacement times.

Fast Bus is ideal for industrial applications where system availability is important.

How to Select Fast Bus

- 1) Determine the required load.
- 2) Select method to power Fastbus.
- -Main lug up to 800A
- -Circuit breakers, 15A to 500A
- If load exceeds 500A, the CB must be separately panel mounted and fed to a main lug infeed module.
- 3) Select 3RV MSP & 3RT contactor components and appropriate adapter shoe or select preassembled 3RA starters. See section 4.
- Select appropriate length busbar, busbar holders, insulation covers and any other required components.

Features

- Simple economical installation
- · Compact design
- Requires fewer mounting holes
- Domestic and International approvals
- Touch safe
- Modular design
- Provision for system expansion
- Clip-on shoes provide mechanical and electrical connections to panel mounted busbars
- Main and Feeder breakers mount to busbars

Benefits

- Saves installation time
- Reduces space requirements
- Minimizes layout time
- Allows flexibility for domestic and export business
- Protection for maintenance personnel
- Improves equipment mounting density
- Reduces time and costs associated with system expansion
- Reduces mounting and wiring time and provides trouble free connections
- · Allows for quick retrofitting of breakers





General Ratings of Fastbus System								
	IEC	Domestic						
Rated operating voltage	690V	600V						
Rated insulation voltage, IEC VDE	AC 1000V	N/A						
Temperature stability	Up to 105 degrees C	N/A						
Busbar support and adapter shoe material	Glass-reinforced polyamide	Same						
Color	RAL 7035, light gray	Same						

Ampacity									
Busbar thickness and width									
5 x 20 mm	3/16" x 3/4"	362A							
5 x 25 mm	3/16" x 1"	432A							
5 x 30 mm	3/16" x 1 1/8"	500A							
10 x 20 mm	3/8" × 3/4"	564A							
10 x 25 mm	3/8" x 1"	660A							
10 x 30 mm	3/8" x 1 1/8"	756A							
720mm ²		1400A							

For technical information on E and F frame circuit breakers used as main and feeder breakers, see section 17

Thermal busbar currents, E-Cu, bare, at 35 $^{\circ}$ C ambient temperature in accordance with DIN 43 6711

Busbar dimensions	System	Thermal c	85 °C	105 °C	
mm	mm	Busbar te A	mperature A	А	
20 x 5 25 x 5 30 x 5	60 60 60	274 327 379	362 432 500	430 513 595	
20 x 10 30 x 10	60 60	427 573	564 756	670 900	

2

Fast Bus

Fast Bus Busbar Adapter System

Introduction



Fast Bus set-up

The Fast Bus system is designed to be easy to use and to save set up time.

8US Busbar holders

The 8US busbar holders are designed to accommodate ampacities up to 1400A. In some cases, the busbar holder will accept busbars in either 5mm or 10mm widths. Refer to page 5/6 for selection details.

High quality material

Busbar supports and fuse bases are manufactured from glassfiber reinforced, thermoplastic polyester with the color RAL 7035, light gray. The material ensures excellent mechanical, chemical and electrical properties. Furthermore, the material has an extremely low flammability and meets the requirements of UL 94 VO.

8WC Busbar and busbar systems

The most common size busbar for applications in the US is the 8WC5053 (20 mm x 5 mm), however there are other styles available depending on your appli-

Busbar systems with 60 mm busbar center-to-center clearance have now become firmly established in the US market.

The permissible busbar temperature is a decisive factor when dimensioning the busbars. The busbar temperature is dependent on the current, the current distribution, the busbar crosssection, the busbar surface, the position of the busbar, the convection and the ambient temperature. The values stated in the table on page 5/3 can only be considered as reference values because the conditions vary with each location. The values are based on constant current over the whole busbar length.

The trend toward busbars proves most advantageous when the incoming supply is centrally located and the load is distributed symmetrically on both sides.

For the assemblies of a busbar system in the feeder circuit the UL directives specify components with large clearance in air and creepage distances (see the table below). Components of the 8US1 busbar system which meet this requirement can be found in this chapter.

The design of an 8US1 busbar system for use in the feeder circuit always presumes the use of the UL base plate (8US19 22-2UA01) so that the clearance in air and creepage distance requirements are met.

Feeder/branch circuit accord- Short-circuit strength ing to UL 508A

The feeder circuit is that part of a circuit which comes in front of the last short circuit protection device (SCPD). The branch circuit is that part of the circuit which follows after the last short circuit protection device. When the 8US1 busbar system is used in a switchgear which must comply with UL directives, it is important to establish whether it is to be used in the feeder circuit or the branch circuit. Components used in the feeder circuit require larger clearance in air and creepage distances than in the branch circuit.

Simple Fast Bus system

The two illustrations above show the very basic items needed when setting up a Fastbus sys-

- ① 8US1 Busbar holder (5/6)
- 2) 8US1 Ground busbar support (shown attached however can be mounted separately 5/6)
- 3 Ground busbar available in 5 x 20 mm to 10 x 30 mm
- 4 8WC Busbar (8WC5053 shown) FBB36 Busbar (5/6)

The short-circuit strength of the busbar system is dependent on the spacing of the busbar holders and on the busbar cross-

The short-circuit strength of the whole system is dependent on the short-circuit strength of the busbar system and the components that are mounted to the system.

Applications

The 8US Fast Bus distribution system is ideal for control panel builders with multiple motor applications. These applications are most common in the material handling, automotive, food processing, pharmaceutical and paper processing indus-

	Clearance in air	Creepage distance
Between live parts	25.4 mm (1 inch)	50.8 mm (2 inch)
Between live parts and grounded, non-insulated metal parts	25.4 mm (1 inch)	25.4 mm (1 inch)

2

3

4

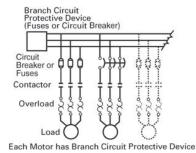
5

Fast Bus combination starters and group installation assemblies

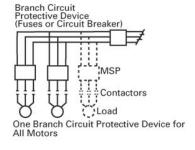
Ratings for Group Installations per NEC 430-53

Group Installation is an approach to building multiple motor control systems in accordance with Section 430-53 of the National Electrical Code. In Group installation, multiple motor starters can be grouped under one short circuit protective device. The 3RV MSP's have been UL listed for use in Group Installations both with and without 3RT contactors when mounted on the Fast Bus system. A 3RT contactor is added when remote operation of the motor is required.

Standard Installation, NEC 430-52



Group Installation, NEC 430-53



FLA FLA		Maximum rating of Group Brace Circuit Protective Device	Maximum rating of Group Branch				
MSP Type	Amp Range	Amp Range	Fuse	Circuit Breaker	Curr 240V	ent Rati 480V	ings ^{1) 2)} 600V
3RV201 3RV201 3RV202 3RV202 3RV202 3RV202 3RV103 3RV104	\$00 \$00 \$0 \$0 \$0 \$0 \$0 \$2 \$3	0.11-12.5 0.11-16 3.5-12.5 3.5-25 28-32 36-40 11-50 28-100	The main fuse should be selected based on the FUSE selection procedure listed below.	The main CB should be selected based on the CIRCUIT BREAKER selection procedure listed below.	65kA 65kA 65kA 65kA 65kA 65kA 65kA	65kA 65kA 50kA 12kA 65kA 65kA	30kA — 30kA — — — 25kA 30kA

The selection of components for Group Installation is a simple process of the following three steps:

- Selection of the Branch Circuit Protective Device, fuse or circuit breaker.
- 2. Selection of the 3RA Motor Starter based on the motor Full Load Amps.

Circuit Breaker Selection

Select a circuit breaker (CB) between: Minimum CB size (per NEC430-110): Sum of all motor FLC (per NEC table 430-150) x115%.

Maximum CB size (per NEC430-53c): 250% x FLC of the largest motor + FLC of all other motors.

Fuse Selection

Calculate the maximum fuse size per NEC430-53c.

Max Fuse Size =175% x FLC of largest motor + FLC of all other motors (FLC's from NEC table 430-150).

Assembled Starter Type	Starter Frame Size	FLA Amp Range	240V	Short Circuit Current Ratings (Type E 480Y/277V	5) ¹⁾ 600Y/347V
3RA201 3RA201 3RA202 3RA202 3RA202 3RA103 3RA104 3RA104	\$00 \$00 \$0 \$0 \$0 \$0 \$2 \$3 \$3	0.11-12.5 0.11-16 0.45-12.5 0.45-25 28-32 11-50 28-75 28-100			30kA





¹⁾ Branch Circuit Protective Device for 480V-Ratings: The appropriate BCPD need to be determined in accordance with the National Electrical Code, Article 430-53 and the application. The following devices are permitted:

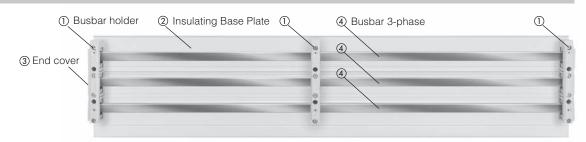
Fuses: Classes RK1, RK5, J, G, T, CC or Circuit breakers: Listed Siemens type, with a marked short-circuit rating equal or larger than the available short-circuit current rating. These devices were tested for group installation use at the above levels without any upstream branch circuit device.

^{2) 3}RA2 used as Manual Motor Controller; Branch Circuit Protective Device for 600V-Ratings: Max. Class J 50A

³⁾ Starter sizes S00,S0 and S3 require additional type E line side terminal adaptors on the MSP for type F applications. See section 1 accessories

60 mm system

Selection and ordering data



- Busbar holder
- 2 Insulating Base Plate

- (a) End cover (b) Busbar 3-phase (c) Busbar Neuteral or PE (c) Ground busbar holder (c) Terminals for Round Conductors



	Description		UL Current rating	UL508A Compliance ¹)	Order No.	Pack Units
	Base plate ②					
8US1922-2UA01	3-pole system flat	230 mm x 1100 mm	_	required	8US19 22-2UA01	
	Copper Busbar with tin plating					
8WC5	20 mm x 5 mm x 914 mm (36")	for 60 mm systems	362A	yes	FBB36	3 pcs
	20 mm x 5 mm x 1524 mm (60")	for 60 mm systems	362A	yes	FBB60	3 pcs
	20 mm x 5 mm x 2000 mm (78.74")	for 60 mm systems	362A	yes	8WC5053	
8US1948-2AA00	25 mm x 5 mm x 2000 mm (78.74")	for 60 mm systems 4)	432A	yes	8WC5054	
0001040 27 (700	30 mm x 5 mm x 2000 mm (78.74")	for 60 mm systems	500A	yes	8WC5055	
6	20 mm x 10 mm x 2000 mm (78.74")	for 60 mm systems	564A	yes	8WC5063	
	30 mm x 10 mm x 2000 mm (78.74")	for 60 mm systems	756A	yes	8WC5065	
2	720 mm ² x 2400 mm (94.49")	Twin T (TT) Busbar	1400A	yes	8US19 48-2AA00	
	Busbar holder (end and intermediat	e) ①				
8US1922-1AC00	3-pole with inside mounting	for 20 mm and 30 mm x 5 mm or 10 mm	_	yes	8US19 23-3UA01	
4	3-pole with inside mounting	for 25mm x 5mm or x 10mm	_	_	8US19 23-3AA00	
8US1923-3UA01	-	for Twin T (TT) w/ end cover		yes	8US19 43-3AA01	
The second	Busbar holder end cover ③					
14 .	3-pole end cover	fits 8US19 23-3UA01 and 8US1923-3A	A01	required	8US19 22-1AC00	
4	Ground Busbar holder 6					
	1-pole with inside mounting	for 20 mm - 30 mm x 5 mm or 10 mm ²⁾		n/a	8US19 23-1AA01	
8US1923-1AA01	Cover profiles for Busbars					
	for 5 mm busbars up to 30 mm wide	1000 mm length	_	required	8US19 22-2AA00	
	for 10 mm busbas up to 30 mm	1000 mm length	_	required	8US19 22-2BA00	
8US1922-2AA00	for Twin T (TT) busbar	1000 mm length	_	required	8US19 22-2DA00	
0031922-2AA00	Reserve Space Cover (for coverin	g round terminals placed on 3-phase	busbar)			
	Holder for reserve space cover	32mm height	_	required	8US1922-2EA00	4 pcs
	Holder for reserve space cover	107 mm length	_	required	8US1922-2EA01	8 pcs
y	Reserve space cover	195mm height / 700mm length	_	required	8US1922-2EB00	
8US1922-2EB00	Feeder Lugs (mounts to all busbar s	sizes on this page)				
	3-pole terminal plate with cover	20 mm x 200 mm 16-4 AWG	80A	yes	5SH3538	
	3-pole terminal plate with cover	54 mm x 200 mm 10-2/0 AWG	300A	yes	8US19 21-1BA00	
	3-pole terminal plate with cover	81 mm x 200 mm 2 AWG-250 MCM	440A	yes	8US19 21-1AA00	
	3-pole terminal plate with cover	180 mm x 200 mm 250-600 MCM	560A	yes	FBT600F	
5SH3538	3-pole terminal plate	154 mm x 184 mm 300-600 MCM	560A	yes	8US19 41-2AA03	
8US1921-1BA00	3-pole terminal plate	160 mm x 184 mm for flat bars up to 32 mm x 20 mm	800A	yes	8US19 41-2AA04	
	Cover for 8US19 41-2AA03 and 04	180 mm x 200 mm x 90 mm	_	yes	8US19 22-1GC00	

¹⁾ UL 508A labeled panels require the use of components that meet the creepage and air distances of 1" air clearance and 2" creepage distance. N/A = not applicable for given item. FBT600F w/cover

²⁾ Current rating dependent on size of busbar used. Refer to busbar selection data

Selection and ordering data

Description

FBCB Fast Bus circuit breakers

Offer a full range of feeder circuit breakers from 15A to 250A. All kits 125A and under are pre-assembled on 60 mm Fast Bus adaptor shoes and ready to place on the busbar. Circuit breakers

150A and higher are pre-packaged kits for fast user assembly and must be torqued down to the busbar prior to assembly. For VL breakers, adaptors are available for up to 500A breakers

(both main and feeder orientation). See page 5/8.

						Available in 2014	ļ 2)
Design	UL Current Rating		Bre	aker Frame (SC	CR Rating 1)		
Feeders Circuit Breakers		ED (25kA)	HHED (65kA)	FXD (65kA)	NGG (25kA)	HGG (35kA)	LGG (65kA)
3 pole/600V fully assembled breakers and adaptors that quickly snap onto the Busbar.	15A 20A 25A 30A 35A 40A 45A 50A 60A 70A 80A 90A 100A 110A 125A	FBCB015 FBCB020 FBCB025 FBCB035 FBCB035 FBCB040 FBCB045 FBCB050 FBCB060 FBCB070 FBCB080 FBCB090 FBCB110 FBCB110 FBCB125	FBCB020H FBCB025H FBCB030H FBCB035H FBCB040H FBCB045H FBCB050H — — — — — — — — — — —		FBCB015NGG FBCB020NGG FBCB025NGG FBCB035NGG FBCB035NGG FBCB045NGG FBCB050NGG FBCB110NGG FBCB110NGG FBCB115NGG	FBCB015HGG FBCB020HGG FBCB025HGG FBCB035HGG FBCB035HGG FBCB045HGG FBCB050HGG FBCB050HGG FBCB060HGG FBCB090HGG FBCB090HGG FBCB090HGG FBCB110HGG FBCB110HGG FBCB115HGG	FBCB015LGG FBCB020LGG FBCB020LGG FBCB030LGG FBCB035LGG FBCB040LGG FBCB050LGG FBCB050LGG FBCB050LGG FBCB090LGG FBCB090LGG FBCB100LGG FBCB110LGG FBCB110LGG
3 pole/600V kitted components for customer assembly that require the adaptor to be torque down to the Busbars prior to assembly.	150A d 175A 200A 225A 250A	_ _ _ _	= = =	FBCB150 FBCB175 FBCB200 FBCB225 FBCB250	_ _ _ _	= = =	= = =

Design	UL Current Rating	Breaker Frame (SCCR Rating)						
Main Circuit Breakers		FXD (65kA)	HFXD (65kA)					
3 pole/600V kitted components for customer	100A	FBCB100M	FBCB100M-HB	_	_	_	_	
assembly that require the adaptor to be torque		FBCB125M	FBCB125M-HB	_	_	_	_	
down to the Busbars prior to assembly.	150A	FBCB150M	FBCB150M-HB	_	_	_	_	
· ·	175A	FBCB175M	FBCB175M-HB	_	_	_	_	
44	200A	FBCB200M	FBCB200M-HB	_	_	_	_	
	225A	FBCB225M	FBCB225M-HB	_	_	_	_	
ololo	250A	FBCB250M	FBCB250M-HB	_	_	_	_	

FBCB250M

- 1) UL Short Circuit Current ratings are based on 480V. Contact Siemens for 600 V ratings.
- 2) Check Industry Mall for availability.

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60 mm system Busbar adapters and device holders

Selection and ordering data

	Busbar device adapters	Number of mount- ing rails (35 mm)	Rated current	Con- necting cables		Adapter width		UL508A ¹⁾ compliance	Order No.	Pack units	Weight per PU approx
			Α	AWG	mm	mm	V				kg
\mathcal{M}	For SIRIUS										
E COLUMN TO THE	Size S00/S0										
	MSP's	1	25	12	182	45	600	yes	8US12 51-5DM07		0.183
 81180	Contactors + Overload relays	1	25	12	182	45	600	yes	8US12 51-5DM07		0.183
	Direct start load feeders	1	25	12	182	45	600	yes	8US12 51-5DM07		0.183
	Reversing feeder	'S									
MI	Busbar adapters	1	25	12	182	45	600	yes	8US12 51-5DM07		0.183
8US21 51-5DM07	+ Device holders	1			182	45	600	yes	8US12 50-5AM00		0.158
	+ Connecting plates							yes	8US19 98-1AA00	100 units	0.100
	Size S00/S0 Cage Clamp										
	Direct start load feeders	1	12	14	182	45	600	yes	8US12 51-5CM47		0.190
	Size S2										
	MSP's	1	50	8	182	55	600	yes	8US12 61-5FM08		0.263
Щ	Contactors + Overload relays	1	50	8	182	55	600	yes	8US12 61-5FM08		0.263
SUS21 60-5AM00	Direct start load feeders	1	50	8	245	55	600	yes	8US12 61-5FP08		0.292
<i>((((((((((</i>	Reversing feeder	'S									
/ A))	Busbar adapters	1	50	8	242	55	600	yes	8US12 61-5FP08		0.292
	Busbar adapters	1			242	55	600	yes	8US12 60-5AM00		0.202
1.1	+ Device holders				242	55	600	yes	8US12 60-5AP00		0.243
	+ Connecting plates							yes	8US19 98-1AA00	100 units	0.100
: :	Size S3		80	4	215	72	600	yes	8US12 11-4TR00		0.659
		1	100		200	72	600	yes	FBS100723R		0.590
			100		200	72	600	yes	FBS100722		0.610
US12 11-4TR00											
	For VL UL circui	it breakers	s ²⁾								
	VL150 UL, DG frame		150	Tubular con- tacts	190	105	600	yes	8US12 13-4AQ03		1.020
	VL250 UL, FG frame		250	Tubular con- tacts	190	105	600	yes	8US12 13-4AQ03		1.020
BUS12 13-4AQ03	VL400 UL, JG frame		400	Tubular con- tacts	296	140	600	yes	8US12 13-4AH00		1.900
	VL400X UL, LG frame		540 ³⁾	con-	296	140	600	yes	8US12 13-4AH00		1.900
		Tubul	ar	tacts							

8US12 13-4AH00

¹⁾ UL 508A labeled panels require the use of components that meet the creepage and air distances of 1" air clearance and 2" creepage distance. N/A = not applicable for given item.

²⁾ For use with 10mm x 30mm and twin T (TT) busbars only. Adaptors can be configured for main or feeder breakers applications.

³⁾ For use with maximum 500A circuit breaker. Circuit breakers greater than 500A must be panel mounted off the busbar system and fed to the busbars via an infeed module. See page 5/6.

Fast BusFast Bus Busbar Adapter System

8US1998-2BM00

8US1998-2BJ10

60 mm system Terminals and accessories

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Selection and ordering data

Selection and	ordering data						
	Description	Max Amps	Width	UL508A Compliance ¹)	Order No.	List Price \$	Pack Units
	Terminals for round conductors						
699	5 mm busbar thickness 3)			_			
2 2 3	12 mm x 5 mm	180		16 - 6 AWG	8US19 21-2AA00		100
學者為門	15 mm x 5 mm	270		12 - 2 AWG	8US19 21-2AB00		50
	20 mm x 5 mm 25 mm x 5 mm	400 440		6 - 2/0 AWG 6 - 250 MCM	8US19 21-2AD00 8US19 21-2AC00		50 50
Terminals	30 mm x 5 mm	180		16 - 6 AWG	8US19 21-2AC00		15
	00 111111 X 3 111111	270		12 - 2 AWG	8US19 21-2AB01		15
		400		6 - 2/0 AWG	8US19 21-2AD01		15
		440		6 - 250 MCM	8US19 21-2AC01		15
	20 mm x 5 mm, 25 mm x 5 mm	500		3/0 - 350 MCM	8US19 41-2AA01		6
	30 mm x 5 mm	600		300 - 600 MCM	8US19 41-2AA02		3
72	10 mm bar thickness						
50	12 mm x 10 mm ³⁾	180		16 - 6 AWG	8US19 21-2BA00		100
	15 mm x 10 mm ³⁾ , 20 mm x 10 mm	270		12 - 2 AWG	8US19 21-2BB00		50
	25 mm x 10 mm, 30 mm x 10 mm	400		6 - 2/0 AWG	8US19 21-2BD00		50 50
Terminals		440 180		6 - 250 MCM 16 - 6 AWG	8US19 21-2BC00 8US19 21-2BA01		15
		270		12 - 2 AWG	8US19 21-2BB01		15
		400		6 - 2/0 AWG	8US19 21-2BD01		15
		440		6 - 250 MCM	8US19 21-2BC01		15
	20 mm x 10 mm, 25 mm x 10 mm	500		3/0 - 600 MCM	8US19 41-2AA01		6
	30 mm x 10 mm	600		300 - 600 MCM	8US19 41-2AA02		3
	Terminal covers for circular conductors (mounts to busbars) For terminals up to 250 MCM				8US19 22-1GA00		10
	200 mm long, 84 mm wide For terminals up to 600 MiCM				8US19 22-1GA02		1
8US19 22-1GA00	200 mm long, 270 mm wide For terminals up to 600 MCM 200 mm long, 135 mm wide				FBC135		
C 2070700	Accessories for busbar adapters and device holders						
13030	Mounting rail (35 mm) - plastic	45 mm		n/a	8US1998-7CA15		10
	complete with mounting screws	55 mm		n/a	8US1998-7CA16		10
Total Control		70 mm		n/a	8US1998-4AA00		10
. B. B. B. C.		90 mm		n/a	8US1998-7CA08		10
Manustina Dail		110 mm		n/a	8US1998-7CA10		10
Mounting Rail	Connection holder			n/a	8US1998-1DA00		20
	(for vertical bubar assembly)	-		Π/α	0031330-1DA00		20
M.	fixes the MSP to the mounting rail ³⁾ (for SIRIUS sizes S00/S0)						
DJ ž	Screw holder	-		n/a	8US1998-1CA00		20
	for supplementary screw fixing of the feeder						
8US1998-1BA00	(for SIRIUS sizes S00/S0)						
	Chance			n/o	8US1998-1BA00		100
A A A	Spacer	-		n/a n/a	8US1998-1BA00		100
س س ب	fixes the busbar adapter to the device holder (for SIRIUS sizes S00/S0)	-		Пуа	0031990-IBA01		'
FBC20	Connection wedges			2/2	EDC00		00
400	Connection wedges	-		n/a	FBC20		20
1 3	for mechanical linking of adapters and switching device holders						
Trees.	(2 units required per combination)						
WILLIAM .							
errer &	Outgoing terminal rail for busbar adapters						
Help	Plug-type terminal						
Land Cit	(complete with supporting element for attaching to busbar adapter						
Load Side Terminal	and switching device holder. Spring loaded terminals.)						
reminal	3 x 14 AWG (400 V) and 4 x 16AWG (250 V)	91 mm	45 mm	n/a	8US1998-8AM07		
er.	7 x 14 AWG (400 V)	91 mm	54 mm	n/a	8US1998-8AA10		



8US1998-2BM00

182 mm 10 mm n/a

Accessories for busbar adapters and device holders

Side module for busbar adapter expansion For adapters w/182 mm

Side module for busbar adapter expansion $\,$ For adapters w/200 mm $\,$ 200 mm $\,$ 9 mm $\,$

¹⁾ UL508A labeled panels require the use of components that meet the creepage and air distances of 1" air clearance and 2" creepage distance. N/A = not applicable for given item.

²⁾ Terminals must be manually spaced on the busbar to comply with UL508A distances of 1" air clearance and 2" creepage distance.

³⁾ Cannot be used on Twin T (TT) profile up to 1400 A.

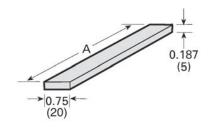
Fast Bus

Fast Bus Busbar Adapter System

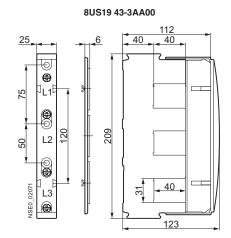
60 mm system

Dimension drawings

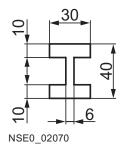
FBB36/FBB60 Copper Busbar



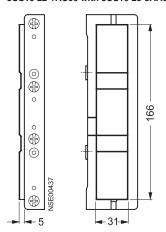
Dimension	A
FBB36	36 (914)
FBB60	60 (1524)



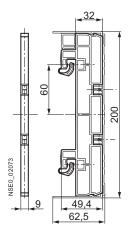
Copper Busbar/TT profile, 8US19 48-2AA00



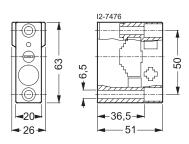
8US19 22-1AC00 with 8US19 23-3UA01 8US19 22-1AC00 with 8US19 23-3AA01



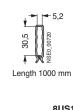
Support for blanking covers, 8US1922-2EA00



8US19 23-1AA01

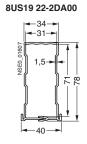


8US19 22-2AA00

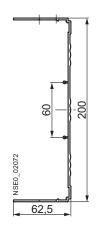


8US19 22-2BA00



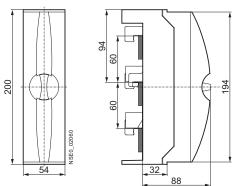


Blanking cover, 8US1922-2EB00

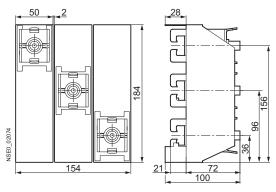


Dimension drawings

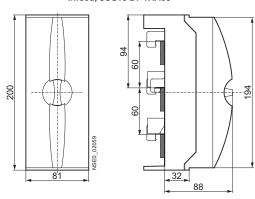
Infeed, 8US19 21-1BA00



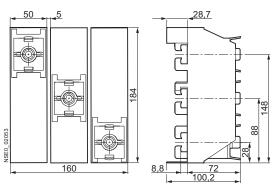
Infeed, 8US19 41-2AA03



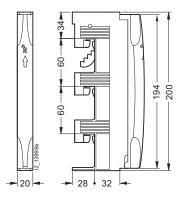
Infeed, 8US19 21-1AA00



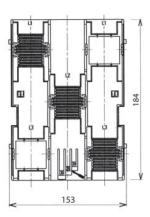
Infeed, 8US19 41-2AA04



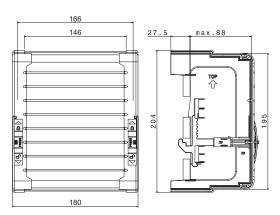
Infeed 5SH3538



FBT600F (supplied with cover)



FBT600F Cover



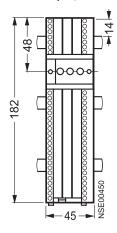
Fast Bus

Fast Bus Busbar Adapter System

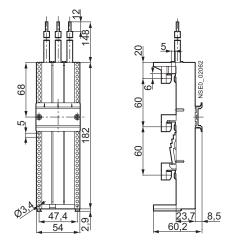
60 mm system

Dimension drawings

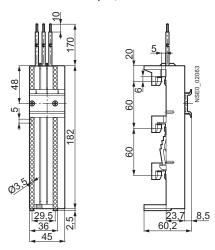
Busbar device adapter, 8US12 50-5AM00



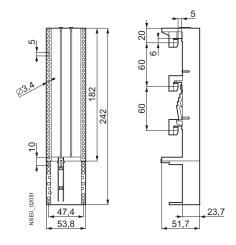
Busbar device adapter, 8US12 61-5FM08



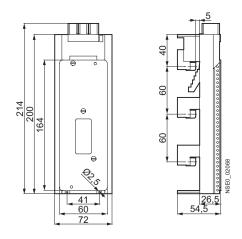
Busbar device adapter, 8US12 51-5DM07



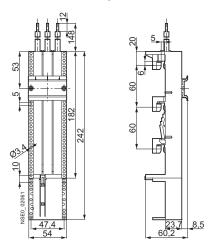
Busbar device adapter, 8US12 60-5AP00



Busbar device adapter, 8US12 11-4TR00



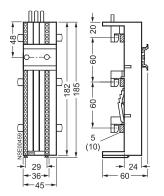
Busbar device adapter, 8US12 61-5FP08



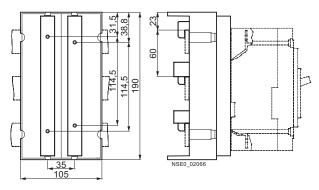
60 mm system

Dimension drawings

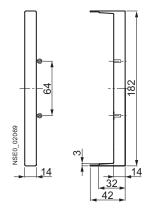
Busbar device adapter, 8US12 51-5CM47



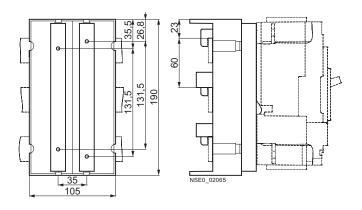
Busbar device adapter, 8US12 13-4AQ01



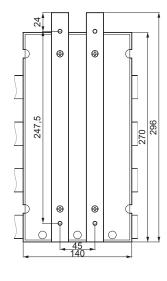
8US19 98-2BM00

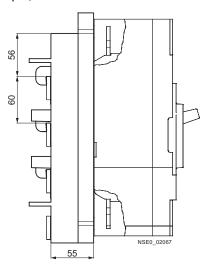


Busbar device adapter, 8US12 13-4AQ03



Busbar device adapter, 8US12 13-4AH00





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Fast Bus

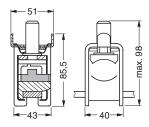
Fast Bus Busbar Adapter System

60 mm system

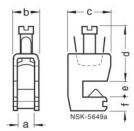
Dimension drawings

	Туре	а	b	С	d	е	f	Max tighening torque
5mm	8US1921-2AA0. 8US1921-2AB0. 8US1921-2AC0. 8US1921-2AD0.	7.5 10.5 17 14.5		36	25 35 55 42	5 5 5 5	10 10 12 12	4 Nm 6 Nm 15 Nm 10 Nm
10mm	8US1921-2BA0. 8US1921-2BB0. 8US1921-2BC0. 8US1921-2BD0.	7.5 10.5 17 14.5	15.5 23.5	36	25 35 55 42	10 10 10 10	10 10 12 12	4 Nm 6 Nm 15 Nm 10 Nm

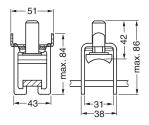
8US1941-2AA01



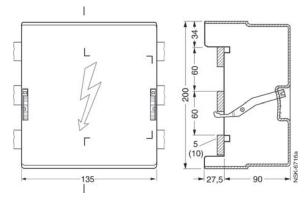
8US1921-2A / -2B



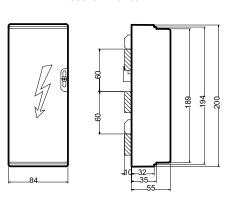
8US1941-2AA02



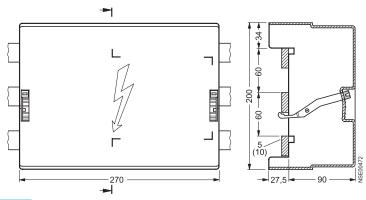
FBC135



8US1922-1GA00



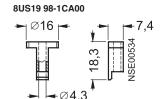
8US19 22-1GA02

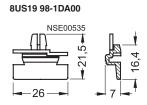


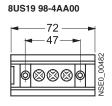
Fast Bus Busbar Adapter System

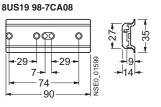
60 mm system

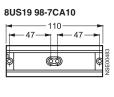
Dimension drawings

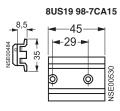




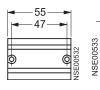






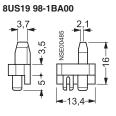




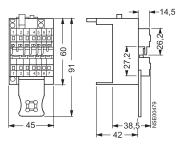


8US19 98-7CA16

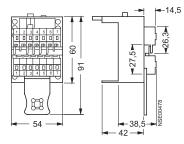




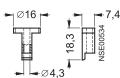
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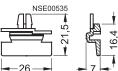




8US19 98-1CA00







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5

SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

General data

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th	
	310																
					0	-						-					
SIRIUS starters	3 R A																
SIRIUS 2nd generation		2															
Type of starter (direct-on-line starter = 1, reversing starter = 2)																	
Size (S00 = 1, S0 = 2)																	
Setting range for overload release																	
Design type and connection method																	
Rated power at 460 V AC																	
Integrated auxiliary switches of the contactor																	
Operating range / solenoid coil circuit (contactor)																	
Rated control supply voltage (contactor)																	
Example	3 R A	2	1	1	0	_	0	В	Α	1	5	_	1	Α	K	6	

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

Technical specifications

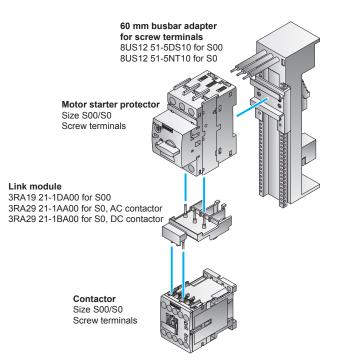
Direct-on-line starters/ reversing starters	Size	Connection methods	Mounting	Control voltage	Width W	Height H	Depth D
					mm	mm	mm
Mounting dimensions							
Direct-on-line starters	S00	Screw terminals	Standard mounting rails	AC/DC	45	167	97
3RA21.	3RA21 1.		Busbar adapters	AC/DC	45	200	155
		Spring-type terminals	Standard mounting rails	AC/DC	45	198	97
			Busbar adapters	AC/DC	45	260	155
	S0	Screw terminals	Standard mounting rails	AC	45	193	97
	3RA21 2.			DC	45	193	107
₩. V			Busbar adapters	AC	45	260	155
< ∨∨ 				DC	45	260	165
		Spring-type terminals	Standard mounting rails	AC/DC	45	243	107
			Busbar adapters	AC/DC	45	260	165
Reversing starters	S00	Screw terminals	Standard mounting rails	AC/DC	90	170	97
3RA22.	3RA22 1.		Busbar adapters	AC/DC	90	200	155
		Spring-type terminals	Standard mounting rails	AC/DC	90	204	97
			Busbar adapters	AC/DC	90	260	155
	S0	Screw terminals	Standard mounting rail	AC	90	265	120.3
	3RA22 2.		adapters	DC	90	265	130
			Busbar adapters	AC	90	260	155
				DC	90	260	165
		Spring-type terminals	Standard mounting rail adapters	AC/DC	90	270	131
			Busbar adapters	AC/DC	90	260	165

Type Size Number of poles		3RA2. 1 \$00 3	3RA2. 2 S0 3
Mechanics and environment			
Permissible ambient temperature • During operation • Storage and transport	°C °C	-20 +60 -55 +80	
Weight	kg	0.6 1.5	0.8 2.3
Permissible mounting positions		9 9 22 22 22 122 122 122 122 122 122 122	tart command "I" at the right or ton

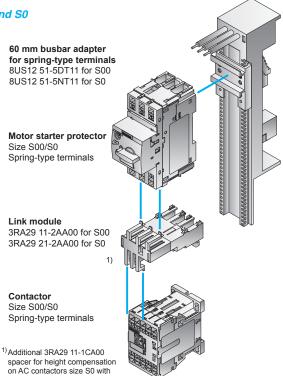
SIRIUS 3RA Motor Starters

General data

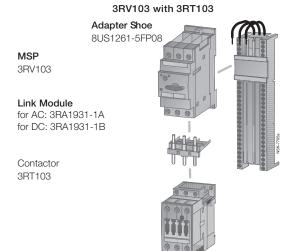
Direct-on-line starting \cdot For 60 mm busbar systems \cdot Sizes S00 and S0



Left: 3RA21 motor starter for direct-on-line starting with busbar adapters with screw connection



Right: 3RA21 motor starter for direct-on-line starting with busbar adapters with spring-type connection



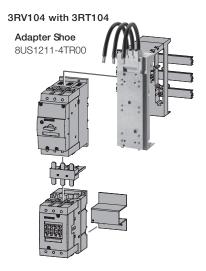
MSP 3RV104 Link Module

spring-type terminals.

for AC: 3RA1941-1A for DC: 3RA1941-1B

Contactor 3RT104

Bracket FBS0070B



2

3

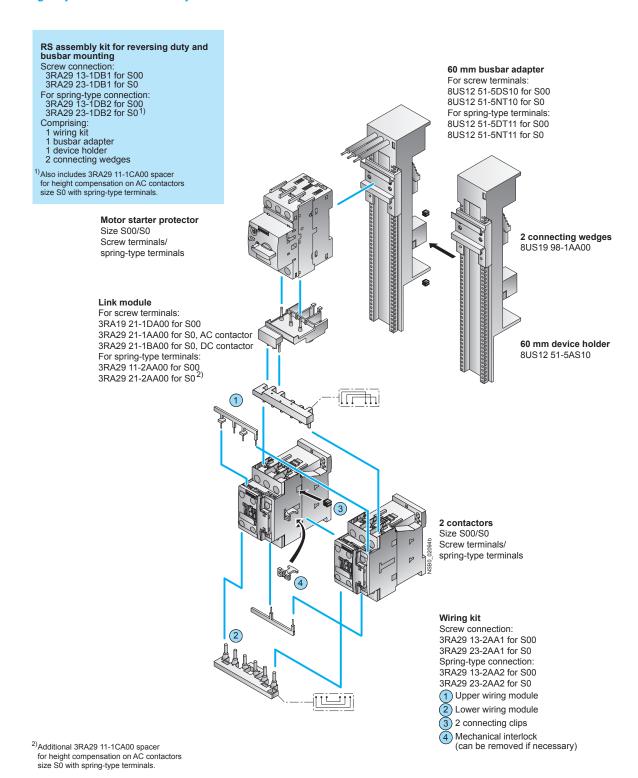
4

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SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

Selection

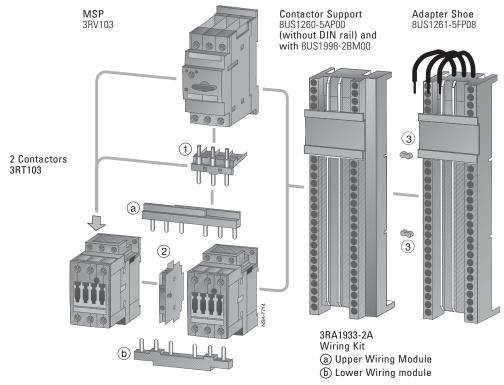
Reversing duty · For 60 mm busbar systems · Sizes S00 and S0



3RA22 motor starter for reversing duty and 60 mm standard mounting rail in size S00/S0 (the version with screw connection is shown in the picture)

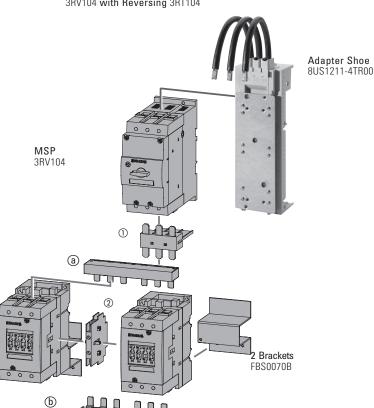
3RV103 with Reversing 3RT103

- ① Link Module for AC: 3RA1931-1A for DC: 3RA1931-1B
- 2 Mechanical Interlock 3RA1924-2B
- 3 Fast Clips FBC20



3RV104 with Reversing 3RT104

- ① Link Module for AC: 3RA1941-1A for DC: 3RA1941-1B
- ② Mechanical Interlock 3RA1924-2B



3RA1943-2A Wiring Kit

- (a) Upper Wiring Module
- **(b)** Lower Wiring Module

2 Contactors 3RT104

Siemens Industry, Inc. Industrial Controls Catalog

Fast Bus

SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

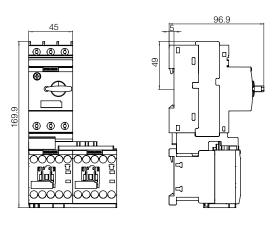
Dimensions

Dimensions, 3RV101 with 3RT101

3RA2110 Fast Bus Non-reversing

154.9

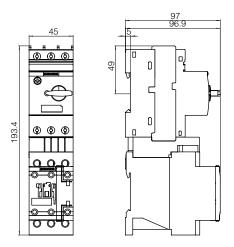
3RA2210 Fast Bus Reversing



- 1) Lockable in OFF position. Padlock diameter 5 mm.
- 2) When a front auxiliary is installed on the contactor, add 44 mm to the depth of the contactor.

Dimensions, 3RV102 with 3RT101

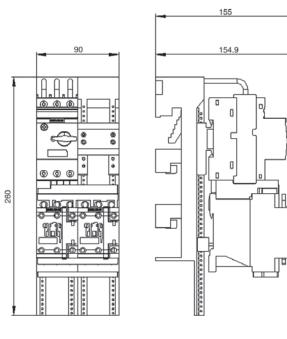
3RA2120 Fast Bus Non-reversing



- 1) Lockable in OFF position. Padlock diameter 5 mm.
- 2) When a front mount auxiliary is installed on the contactor, add 44 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.

3RA2220 Fast Bus Reversing



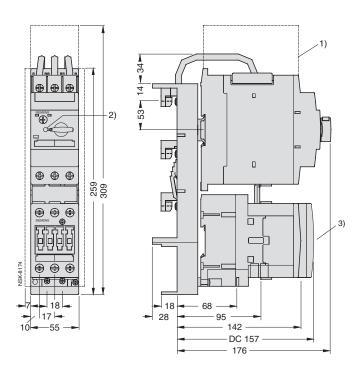
SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

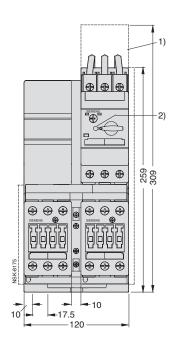
Dimensions

3RV103 with 3RT103

3RA1130 Fast Bus Non-reversing

3RA1230 Fast Bus Reversing





Lateral clearance to grounded components minimum 6 mm.

- 1) Arcing space
- 2) Lockable in OFF position with padlock diameter 5 mm.
- When a front mount auxiliary is installed on the contactor, add 49 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.

SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

Dimensions

3RV104 with 3RT104



Lateral clearance to grounded components minimum 6 mm.

- 1) Arcing space
- 2) Lockable in OFF position with padlock diameter 5 mm.
- 3) When a front mount auxiliary is installed on the contactor, add 49 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.





Contents	Pages
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3RM1 Compact - Hybrid Starters

Overview	6/2
General Data	6/3
Selection and ordering data	6/4
Accessories	6/5 - 6/8
Tochnical Data	6/9 - 6/10





Compact – Hybrid Starters SIRIUS 3RM1 Motor Starters

Overview



Overview



3RM12 motor starter with reversing functionality and electronic overload protection

SIRIUS 3RM1 motor starters are compact devices with a width of 22.5 mm, combining a large number of functions in a single enclosure. They consist of combinations of relay contacts, power semiconductors (hybrid technology), and a solid-state overload relay for operational switching of three-phase motors up to 3 HP (at 480 V).

Feature	Value
Rated current (wide setting range of the electronic overload release)	0.1 0.5 A 0.4 2.0 A 1.6 7.0 A (UL=6.1A)
Rated operational voltage	48 500 V
Rated frequency	50/60 Hz
Rated control supply voltage	24 V DC, 110 V DC, 110 230 V AC
Trip class	CLASS 10A

The 3RM1 motor starters with overload protection with wide setting range are offered as 3RM10 direct-on-line starters and 3RM12 reversing starters and as versions with safety-related shutdown.

Characteristic	3RM10	3RM11	3RM12	3RM13
Direct-on-line starters	✓	✓		
Reversing starters			✓	✓
Overload protection with wide setting range	✓	✓	✓	✓
ATEX certification overload protection		✓		✓
Safety-related shutdown up to SIL 3 / PLe $$		✓		✓

Hybrid technology

The 3RM1 motor starters combine the benefits of semiconductor technology and relay technology. This combination is also known as hybrid technology. The hybrid technology in the motor starter is characterized by the following features:

- The inrush current is is conducted briefly via the semiconductors.
 - Advantage: protection of relay contacts, long service life due to low wear
- The continuous current is conducted via relay contacts. Advantage: lower heat losses compared with the semiconductor.
- Shutdown is implemented again via the semiconductor.
 Advantage: the contacts are only slightly exposed to arcs, and this results in a longer service life.

Functional density/space savings

The 3RM1 motor starters combine the functions direct/reversing starting and overload protection and safety-related shutdown in a single device, without changing the 22.5mm width.

For simple applications (such as starting and reversing three-phase loads with overload protection), motor starter combinations of power contactors and a solid-state overload relay, for example, can be replaced by a single 3RM1 starter. The more functions are required, the more devices can be replaced. The footprint area required for each motor starter in the control cabinet is reduced by values of 64 to 82%.

In the case of assemblies and grouped starter units there are further advantages.

Wiring overhead

By combining various functions in a single device, wiring overhead is reduced. The greater the number of starters, the greater the saving in wiring. Savings can be made in:

- mains wiring and space reduction with the use of the 3RM19 three phase infeed system
- wiring of the reversing contactor assembly thanks to the integrated design
- reduction of control cables for the coils in group applications with the 3ZY12 device connectors

These savings reduce the time required for the wiring itself, while at the same time reducing both the risk of wiring errors and the amount of testing required after control cabinets have been completed.

Configuration and inventory

The wide setting range of the electronic overload release (up to 1:5) reduces the cost of inventory and the considerations involved in configuration where the actual motor current to be expected is concerned. Compared with protection equipment with thermal overload protection, only 3 versions are now required to cover a current range of 0.1 to 7 A with 3RM1, instead of 17 versions.

Connection methods

The 3RM1 is available with screw terminal, push-in terminals or a combination of both..

Push-in terminals are a form of spring-type connection allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

Fine-stranded or stranded conductors with no end finishing are wired using a screwdriver (with a 3.0 x 0.5 mm blade).

As with other spring-type terminals, a screwdriver is also required to release the conductor. The same tool as above can be used for this purpose.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

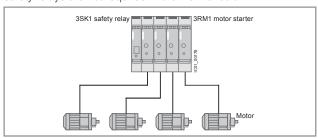
(1)	Screw terminals
8	Spring-type terminals
	The terminals are indicated in the corresponding tables by the symbols shown on blue backgrounds.

6/2

SIRIUS

Safety-related shutdown/safety integration

Thanks to the redundant design of the main circuit and internal monitoring, safety-related shutdown in accordance with SIL 3 / PLe is possible by shutting down the control supply voltage with 3RM11 Failsafe and 3RM13 Failsafe motor starters. Additional safety relays are not required in the main circuit.



Combination of four SIRIUS 3RM1 Failsafe motor starters with SIRIUS 3SK1 safety relay to allow safety-related collective disconnection of connected motors

3RM1 motor starters are ideal for combining with the 3SK1 safety relay (see Chapter 13 "Safety Technology"→"SIRIUS 3SK1 Safety Relays"). They can be combined by means of:

- conventional wiring
- a special device connector

This makes it very simple to shut down connected motors collectively. The wiring, and ultimately the shutting down of the control supply voltage in Emergency Stop situations, is performed via the device connector. There is no further need for complex looping of the connecting cables.

Feedback to the control system

The electronic output in the 24 V DC control voltage version of the 3RM10 and 3RM12 motor starters allows the status of the connected motor to be reported to the higher-level control system. If the motor starter is controlled via inputs IN1 to 2, once the motor has been switched on and has started up correctly the output "OUT" is set.

Compact – Hybrid Starters

SIRIUS 3RM1 Motor Starters

Infeed system for the main circuit

The 3RM19 infeed system available as an accessory for the main circuit with three-phase busbars allows fast, virtually error-free wiring of motor starters on the mains connection side and may reduce the number of short-circuit protective devices.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for efficient industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS Industrial Controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

With 3RM1 motor starters, control cabinets warm up less because power losses have been reduced by operation:

- Lower intrinsic power loss (than comparable motor starters with thermal overload trips) thanks to electronic current analysis
- Lower control circuit power losses (compared with conventional switching devices) as a result of electronic control of switching points
- Thanks to the above advantages, additional energy savings are possible because less cooling is required and a more compact design is possible

Product advantages

The SIRIUS 3RM1 motor starters offer a number of benefits:

- Greater endurance and reduced heat losses thanks to hybrid technology
- Less space required in the control cabinet (64 to 82%) as a result of higher functional density
- Less wiring and testing required as a result of integrating several functions into a single device
- Lower costs for stock keeping and configuration as a result of the wide setting range of the electronic overload release (up to 1:5)
- Fast wiring without tools for rigid conductors or conductors equipped with end sleeves thanks to push-in spring-type connections
- Motor status feedback to the higher-level control system in the case of 3RM10 and 3RM12 motor starters in the 24 V DC version
- Virtually error-free wiring on the mains connection side and reduction in short-circuit protective devices by means of 3RM19 comb busbar and infeed system

Compact – Hybrid Starters Hybrid Starters

• Revised • 09/30/14



3RM1 up to 3HP

Selection and ordering data

- Direct and reversing starters in 22.5mm width
- Electronic overload protection class 10
- Coil voltages 24VDC, 110-230VAC and 110VDC
- Screw Terminals or Spring Loaded Terminals
- Group Installation possible with fuse or UL489 breaker
- SCCR up to 100kA with J fuses
- Comb busbar accessories for easy group assembly
- Removeable terminals



3RM1007-1AA04 3RM1207-2AA04

3RM110.-1AA.4

3RM130.-1AA.4

3RM10 motor starter for direct-on-line starting with electronic overload protection											with			
UL ra	0	Amp ratings		Single- HP rati				-phase tings®		Signa conta	-	All Screw Terminals ⊕	All Spring Loaded Terminals	Mixed [®] Spring Loaded & Screw Terminals
FLA	LRA	AC53	AC51	115V	200V	230V	200V	230V	460V	NO	NC	Order No.	Order No.	Order No.
Rate	d cont	rol supp	oly vo	ltage (J _s = 24	VDC								
0.5	3.5	0.5	-	_	_	_	_	_	_	1	1	3RM1□01-1AA04	3RM1□01-2AA04	3RM1□01-3AA04
2	14	2	_	_	_	1/8	1/3	1/3	3/4	1	1	3RM1□02-1AA04	3RM1□02-2AA04	3RM1□02-3AA04
6.1	43	7	10	1/4	1/2	1/2	1	1 ½	3	1	1	3RM1□07-1AA04	3RM1□07-2AA04	3RM1□07-3AA04
Rate	d cont	rol supp	oly vo	Itage (J _s = 11	0-230	VAC 5	60/60 H	lz and	110 V	DC			
0.5	3.5	0.5	- 1	_	_	_	_	_	_	1	1	3RM1□01-1AA14	3RM1□01-2AA14	3RM1□01-3AA14
2	14	2	_	_	_	1/8	1/3	1/3	3/4	1	1	3RM1□02-1AA14	3RM1□02-2AA14	3RM1□02-3AA14
6.1	43	7	10	1/4	1/2	1/2	1	1 ½	3	1	1	3RM1□07-1AA14	3RM1□07-2AA14	3RM1□07-3AA14
								S	Standard Safet	DOL S		0	0	0

3RM12 motor starter for reversing with electronic overload protection										with				
UL rat	0	Amp ratings	8		-phase tings ①			-phase tings ①		Signa	-	All Screw Terminals	All Spring Loaded Terminals	Mixed ^② Spring Loaded & Screw Terminals
FLA	LRA	AC53	AC51	115V	200V	230V	200V	230V	460V	NO	NC	Order No.	Order No.	Order No.
Rate	d cont	rol sup	oply vo	ltage	U _s = 24	VDC								
0.5	3.5	0.5	_	_	_	_	_	_	_	1	1	3RM1□01-1AA04	3RM1□01-2AA04	3RM1□01-3AA04
2	14	2		_	_	1/8	1/3	1/3	3/4	1	1	3RM1□02-1AA04	3RM1□02-2AA04	3RM1□02-3AA04
6.1	43	7	10	1/4	1/2	1/2	1	1 ½	3	1	1	3RM1□07-1AA04	3RM1□07-2AA04	3RM1□07-3AA04
Rate	Rated control supply voltage U_S = 110-230 VAC 50/60 Hz and 110 VDC													

Standard Reversing Starter Safety Reversing Starter

3/4

3

1/8

1/2

1/3



3RM1□01-1AA14

3RM1□02-1AA14

3RM1□07-1AA14



3RM1□01-2AA14

3RM1□02-2AA14

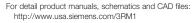
3RM1□07-2AA14



3RM1□01-3AA14

3RM1□02-3AA14

3RM1□07-3AA14



10

1/4

0.5

2

For accessories, see page 6/6 and 6/8 For technical data, see page 6/9 and 6/10 For additional Compact Starters up to 25HP at 480V,

see the 3RA6 series located in section 4

0.5

6.1 43

2

3.5

14

① Selection depends on motor full load amps. Horsepower ratings are for reference only.

② Mixed terminal versions have spring loaded terminals for the control wiring and screw terminals on the mains.

This offers faster control wiring while still being able to use the 3RM19 comb busbar system on the mains.

Accessories



Overview

Accessories for 3RM1 motor starters

The following accessories are available for the 3RM1 motor starter:

- · 3-phase infeed system for the main circuit
- · Device connectors for the control circuit
- · Spare terminals for main and control circuits
 - With screw terminals
 - With push-in spring-type terminals
- · Push-in lugs for wall mounting the motor starters
- Sealable cover as protection against unauthorized access

Three-phase infeed system (3RM19 three-phase busbar system)

Special three-phase busbar systems can be used to provide an easy, time-saving and safe means of feeding two or more 3RM1 motor starters with screw terminals.

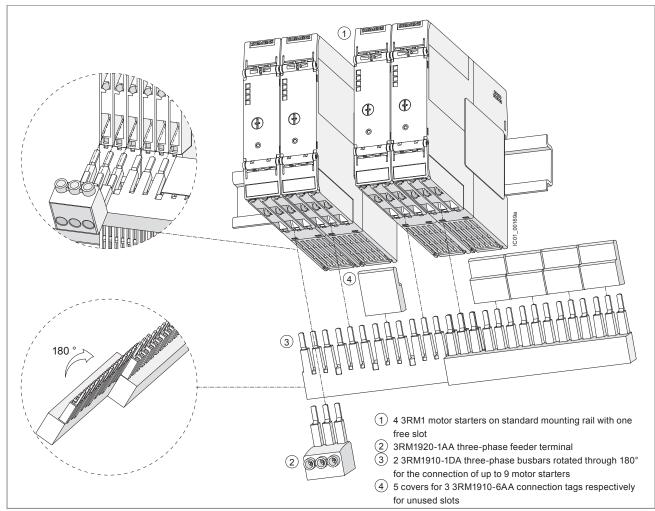
These busbars are available in three lengths, thus allowing 2, 3 or 5 motor starters (arranged side-by-side) to be connected at the same time. More than 5 devices can be connected by clamping the connection tags of an additional busbar rotated by 180° (e.g. 6 devices using one 5-pole busbar and one 2-pole busbar).

Compact - Hybrid Starters

A single motor starter can be removed from the assembly without loosening the terminal screws of neighboring motor starters.

The maximum summation current must not exceed 25 A. Primary infeed is connected via a three-phase infeed terminal.

The three-phase busbars are finger-safe but empty connection tags must be fitted with covers.



3RM19 infeed system with three-phase infeed terminal: In the above example, two three-phase busbars (5-pole busbars) rotated through 180° allow up to 9 3RM1 motor starters to be connected. Contact with the unused connection tags in unoccupied positions is prevented safely by the covers.

Compact - Hybrid Starters

SIRIUS 3RM1 Motor Starters

Accessories



The outlay for cabling between the devices is reduced using device connectors snapped onto a mounting rail, or screwed onto a level mounting panel (one device connector per motor starter).

Using the device connectors only for feeding in the control supply voltage

By using device connectors, several motor starters can be jointly supplied with a control supply voltage of 24 V DC. This requires the control supply voltage to be applied to the A1 and A2 terminals of only one motor starter.

Up to ten motor starters can be connected with device connectors. The 24 V DC control supply voltage must be within the operating range of 0.9 to 1.1 for this purpose. If the full operating range of 0.8 to 1.25 is to be used, no more than five motor starters can be used.

If the motor starters are not to be interconnected side-by-side, device daisy chain connectors must be used for the gaps.

When removing a motor starter, the corresponding device connector must be replaced by a device daisy chain connector if the control voltage is not to be interrupted for motor starters on the right.

The last motor starter in a row can be placed on a device termination connector. Flush termination of the configuration is thus possible.

Using device connectors in conjunction with 3SK1 safety relays

Interconnection of several Standard or Failsafe version motor starters into a group can also be used for joint disconnection by a 3SK1 safety relay.

To provide for the simultaneous and safe shutdown of several motor starters via a SIRIUS 3SK1 Safety Relay, you can simply interconnect the devices without additional wiring using a device connector.

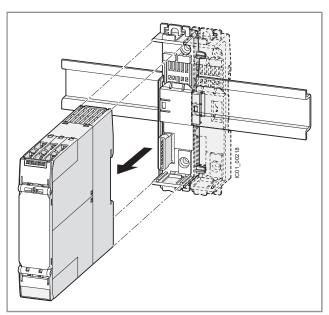
The motors can then also be shut down safely according to SIL 3 / PLe with the motor starters.

Up to five motor starters can be operated on one safety relay with device connectors. If the motor starters are not to be interconnected side-by-side, device loop through connectors must be used for the gaps.

The last motor starter in a row must be placed on a device termination connector. This closes the circuits that were built up with the connectors.

For 3SK1 safety relays and associated device connectors see Chapter 13 "Safety Technology" → "SIRIUS 3SK1 Safety Relays"





Device connectors snapped onto a standard mounting rail to allow the joint connection of the control supply voltage for 3RM1 motor starters or connection to the 3SK1 safety relays

Usage restrictions for accessories

- The 3RM19 3-phase infeed system for the main circuit can only be used with 3RM1 motor starters with screw terminals.
- The device connectors are only suitable for 3RM1 motor starters with a control supply voltage of 24 V DC.

Compact – Hybrid Starters 3RM1 Hybrid Starters

3RM1 Accessories

2

3

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6

Selection and ordering data	1		
		Order No.	Pack Units
Device connectors for bus	ing the control supply connection to 3RM1 Starters		
	Device connector type 2, 7-pole, 22.5mm Use for: • Beginning left hand connector • Subsequent positions where a starter is present • Maximum of five starters per system	3ZY1212-2EA00	1
	Device loop through connector type 2, 7-pole, 22.5mm Use for: • When 22.5mm spacing is required and no starter is present	3ZY1212-2AB00	1
	Device termination connector type 2, 7-pole, 22.5mm Use for: • Terminating connector for the right hand position • Terminating cover is assembled to 3ZY1212-2EA00	3ZY1212-2FA00	1

Screw

Spring

		Terminals 🕀	Terminals $\stackrel{\circ}{\Box}$	
		Order No.	Order No.	Pack Units
Removable terminals for 3RM1	Starters			
	Power Terminals (Line and Load) 2-pole, 12-20 AWG	3ZY1122-1BA00	3ZY1122-2BA00	6
	Control Terminals 3-pole, 14-20 AWG (Screw) 3-pole, 14-16 AWG (Spring)	3ZY1131-1BA00	3ZY1131-2BA00	6
Further accessories				
P	Push-in lugs for wall mounting 2 lugs per starter are required. Standard pack quantity is su	fficient for 5 starters	3ZY1311-0AA00	10
	Seal covers for 3RM1 starters Protection of current setting dial lockable	3ZY1321-2AA00	5	
	Cooling pins for removable terminals For mechanical coding of removable terminals		3ZY1440-1AA00	

For detail product manuals, schematics and CAD files: http://www.usa.siemens.com/3RM1

Compact – Hybrid Starters 3RM1 Hybrid Starters

3RM1 Accessories



Selection and ordering data

	Туре	Version	Order No.	Pack
3RM19 three-phase infeed sys with screw terminals on the m				
	Three-phase feeder terminal		3RM1920-1AA	1
	Three-phase busbar system	For 2 motor starters	3RM1910-1AA	1
		For 3 motor starters	3RM1910-1BA	1
		For 5 motor starters	3RM1910-1DA	1
	Protective covers For finger safety / yellow	For unused slots	3RM1910-6AA	1





Technical Data

Application

3RM1 motor starters are designed for applications in which small motors have to be connected in the most confined spaces.

Main areas of use

- · Conveyor systems
- · Logistics systems
- Production machines
- Machine tools
- Small elevators

Standards and approvals

The motor starter complies with the following standards:

- IEC/EN 60947-4-2
- UL 508
- ATEX (available soon)
- IEC 61508-1: SIL 3 (available soon)
- ISO 13849: PLe (available soon)

Technical specifications

Туре			3RM1
Mechanical components and enviro	nment		
Dimensions (W x H x D) • Width • Height • Depth	T W	mm mm mm	22.5 100 136.5 (from the standard mounting rail) 141.6 (entire enclosure depth)
Ambient temperature • During operation • During storage • During transport		°C °C °C	-25 +60 -40 +70 -40 +70
Installation altitude at height above sea le	evel maximum	m	4 000
Shock resistance			6g/11 ms
Vibration resistance			1 6 Hz, 15 mm; 20 m/s², 500 Hz
IP degree of protection			IP20
Mounting position	±10° ±10° × × × × × × × × × × × × × × × × × × ×		

Electromagnetic compatibility (EMC)

- Emitted interference
 Conducted RF interference emission according to CISPR11
- Non-conducted RF interference emission according to CISPR11

Interference immunity

- Electrostatic discharge according to IEC 61000-4-2
- Conducted interference injection as high frequency interference according to IEC 61000-4-6
- Conducted interference BURST according to IEC 61000-4-4
 Conducted interference phase-to-ground SURGE according to IEC 61000-4-5
 Conducted interference phase-to-phase SURGE according to IEC 61000-4-5

Class A for Industrial applications. Class B for residential, business and commercial applications.

Class A for industrial applications. Class B for residential, business and commercial applications.

4 kV contact discharge / 8 kV air discharge 10 V

2 kV / 5 kHz 2 kV

1 kV

Type Main circuit Rated operational voltage maximum Operating frequency 1 rated value				
Rated operational voltage maximum Operating frequency 1 rated value		3RM1 .01	3RM1 .02	3RM1 .07
Operating frequency 1 rated value				
• 1 rated value	V	500		
2 rated value	Hz Hz	50 60		
Rated insulation voltage	V	600		
Rated impulse withstand voltage	kV	6		
Rated operational current at 400 V at AC	А	0.5	2	7 ¹⁾
Active power loss, typical	W	0.02	0.3	3.3
Minimum load in % of I_M	%	20		
Adjustable current response value • of the inverse-time delayed overload release	А	0.1 0.5	0.4 2	1.6 7 ¹⁾

¹⁾ UL rating is 6.1A at 480V

Compact – Hybrid Starters SIRIUS 3RM1 Motor Starters

Technical data



Туре		3RM1AA04	3RM1AA14
Control circuits			
Type of voltage of the control supply voltage		DC	AC/DC
Control supply voltage 1			
• At DC	V	24	110
• At 50 Hz - At AC	V	_	110 230
Frequency of the control supply voltage			
1 rated value	Hz	_	50
2 rated value	Hz	_	60
Operating range factor of the control supply voltage rated value			
• At DC		0.8 1.25	0.85 1.1
• At 50 Hz			0.05
- At AC		_	0.85 1.1
Control current	Α	0.08	0.05
Input voltage at the digital input			
• At DC	V	24	110
• At AC	V	_	110 230
- Rated value			
Input voltage at the digital input with signal <1>			
• At DC	V	19.2 30	93 121
• At AC	V	—	93 253
Input current at the digital input with signal <1> typical	А	0.01	0.002

Туре		3RM114	3RM124
Connection methods			
Connectable conductor cross-section for main contacts			
• Solid	mm ²	0.5 4	
Finely stranded			
- With end sleeves	mm ²	0.5 2.5	
- Without end sleeves	mm ²	_	0.5 4
Connectable conductor cross-section for auxiliary contacts			
• Solid	mm ²	0.5 2.5	0.5 1.5
Finely stranded			
- With end sleeves	mm ²	0.5 2.5	0.5 1
- Without end sleeves	mm ²	_	0.5 1.5
AWG number as coded connectable conductor cross-section			
For main contacts		20 12	
For auxiliary contacts		20 14	20 16

Note:

All the above technical specifications are relevant for selecting the motor starters. Details about installation conditions and the use of the motor starters, and particularly about the derating of the rated current, can be found in the manual and the data sheets located at www.usa.siemens.com/3RM1.

Motor Starters, Soft Starters and Load Feeders

Contents	Pages
Introduction	7/2
For Operation in the Control Cabinet 3RW Soft Starters	7.60
General data	//3
3RW30 for standard applications Overview	
Technical specifications	7/90
3RW40 for standard applications	
Overview	
3RW44 for high-feature applications	
Configuration	
Class 73/74 Enclosed Softstarter applicatio	
Overview	7/30 7/30 7/31 - 7/41 7/42



3RW30





3RW40



3RW44



Class 73/74

7/1

Motor Starters, Soft Starters and Load Feeders

Introduction

Overview



3RW40 soft starters

3RW44 soft starters









Class 73/74 Enclosed Order No.

7/4

7/8

7/16

7/82

3RW30

3RW40

Class 73/74

For op	era	tion	in	the c	ont	rol	cabi	net

ard applications	standard	or	starters i	soft	3RW

- Application areas
- Fans
- Building/construction machines
- Escalators
- Air conditioning systems Assembly lines
- Operating mechanisms
- Pumps - Presses
- Transport systems
- Fans
- Compressors and coolers
- SIRIUS 3RW30 soft starters for soft starting and smooth ramp-down of three-3RW30 soft starters phase asynchronous motors
 - Performance range of up to 75 Hp (at 460 V)

 - SIRIUS 3RW40 soft starters with the integral functions
 - Solid-state motor overload and intrinsic device protection and

 - Adjustable current limiting
 for the soft starting and stopping of three-phase asynchronous motors
 Performance range of up to 300 Hp (at 460 V)
- 3RW soft starters for high-feature applications
 - Application areas
 - Pumps
 - Compressors Industrial refrigerating systems
 - Conveying systems
- Fans
- Cooling systemsWater transport
- Hydraulics

• In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44

- soft starters provide numerous functions for higher-level requirements
- Performance range
- Up to 900 Hp (at 460 V) in inline circuit and Up to 1600 Hp (at 460 V) in inside-delta circuit

For enclosed applications

Enclosures in NEMA 1, 3, 4, & 12 types UL/CSA listed

- Complete starter includes 3RW40 or 3RW44 and CPT
- Performance Range of up to 600 Hp (at 460 V)
- Combination options include circuit breaker or fusible disconnect
- · Application areas:
- Compressors
- Pumps
- Stamping presses Cooling towers
- Chippers and debarkers
- Molding and extruding
- Lumber processing
- Pulp & paper processing - Conveyors
- HVAC

3RW Soft Starters

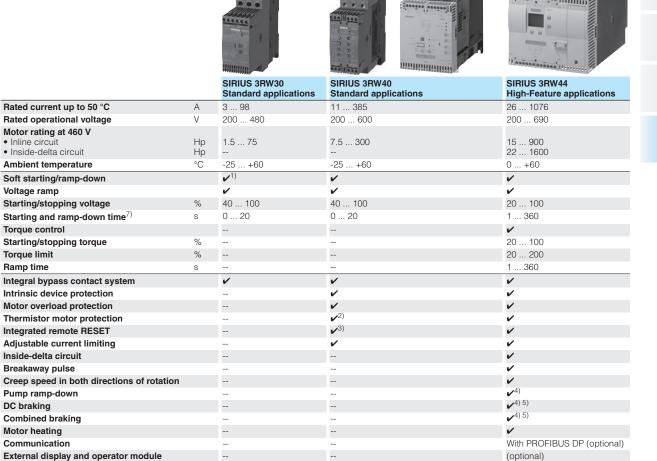
General Data

Overview

The advantages of the SIRIUS soft starters at a glance:

- Soft starting and smooth ramp-down
- Stepless starting
- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network

- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system



Soft starting under heavy starting conditions Configuring support

Screw terminals Spring-type terminals

UL/CSA CE marking

Error logbook **Event list**

Slave pointer function Trace function

Number of parameter sets

Win-Soft Starter, Electronic Application Selector, Technical Assistance Tel.: 1-800-333-7421

2 controlled phases

- ✓ Function is available; -- Function is not available.

Operating measured value display

Programmable control inputs and outputs

Parameterization software (Soft Starter ES) Power semiconductors (thyristors)

- Only soft starting available for 3RW30.
 Optional up to size S3 (device variant).
 Available for 3RW40 2. to 3RW40 4.; optional for 3RW40 5. and 3RW40 7..
 Calculate soft starter and motor with size allowance where required.

2 controlled phases

5) Not possible in inside-delta circuit.

Trace function with Soft Starter ES software. 7) Actual motor start times are load dependent.

You can find further information on the Internet at: www.usa.siemens.com/softstarters

7/3

3 controlled phases

Siemens Industry, Inc. Industrial Controls Catalog

3RW Soft Starters

3RW30

for standard applications

Overview

The SIRIUS 3RW30 soft starters reduce the motor voltage through variable phase control and increase it in ramp-like mode from a selectable starting voltage up to mains voltage. During starting, these devices limit the torque as well as the current and prevent the shocks which arise during direct starts or wye-delta starts. In this way, mechanical loads and mains voltage dips can be reliably reduced.

Soft starting reduces the stress on the connected equipment and results in lower wear and therefore longer periods of trouble-free production. The selectable start value means that the soft starters can be adjusted individually to the requirements of the application in question and unlike wye-delta starters are not restricted to two-stage starting with fixed voltage ratios.¹⁾

The SIRIUS 3RW30 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that minimal power loss is used at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

Various versions of the SIRIUS 3RW30 soft starters are available:

- Standard version for fixed-speed three-phase motors, sizes S00, S0, S2 and S3, with integrated bypass contact system
- Version for fixed-speed three-phase motors in a 22.5 mm enclosure without bypass

Soft starters rated up to 75 Hp (at 460 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple start-up are just three of the many advantages of this soft starter.

Application

The 3RW30 soft starters are suitable for soft starting of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time. Due to continuous voltage influencing, current and torque peaks, which are unavoidable in the case of wye-delta starters, for instance, do not occur.

Application areas

- Pumps
- Heat pumps
- Hydraulic pumps
- Presses
- Conveyors
- Roller conveyor
- Screw conveyors

¹⁾ Actual motor start times are load dependent.

Selection and ordering data











· sminner	100			11111			MERRINA	1)		minimum X		WHITE &	
3RW30 18	-1BB14			V30 28-1BB	14		3RW30	38-1BB	14	3RW30 47-1BB14		3RW30 03-2CB54	
Ambient to Rated operational current I_e^{-1}	Rated tion mo	power of otors for r	induc- ated	Ambient to Rated opera- tional cur- rent I_e^{-1}	Rated	power of	f induction		Size	Order No.	List Price \$ per PU	PS*	Weight per PU approx.
	230 V	400 V	500 V		200 V	230 V	460 V	575 V					
Α	kW	kW	kW	А	hp	hp	hp	hp					
Rated of	peratio	nal volt	tage <i>U_e</i>	200 48	0 V								
• With scre													
3.6 6.5 9	0.75 1.5 2.2	1.5 3 4	 	3 4.8 7.8	0.5 1 2	0.5 1 2	1.5 3 5	 	S00 S00 S00	3RW30 13-1BB□4 3RW30 14-1BB□4 3RW30 16-1BB□4		1 unit 1 unit 1 unit	0.580 0.580 0.580
12.5 17.6	3	5.5 7.5		11 17	3	3	7.5 10		S00 S00	3RW30 17-1BB□4 3RW30 18-1BB□4		1 unit 1 unit	0.580 0.580
• With spri	-			17	0	J			000	0111100 10-1BB=+		Tunit	0.000
3.6 6.5 9	0.75 1.5 2.2	1.5 3 4	 	3 4.8 7.8	0.5 1 2	0.5 1 2	1.5 3 5	 	S00 S00 S00	3RW30 13-2BB□4 3RW30 14-2BB□4 3RW30 16-2BB□4		1 unit 1 unit 1 unit	0.580 0.580 0.580
12.5 17.6	3 4	5.5 7.5		11 17	3	3	7.5 10		S00 S00	3RW30 17-2BB□4 3RW30 18-2BB□4		1 unit 1 unit	0.580 0.580
With screen	ew termi	inals											
25 32 38	5.5 7.5 11	11 15 18.5	 	23 29 34	5 7.5 10	5 7.5 10	15 20 25	 	S0 S0 S0	3RW30 26-1BB□4 3RW30 27-1BB□4 3RW30 28-1BB□4		1 unit 1 unit 1 unit	0.690 0.690 0.690
• With spri	ing-type	terminal	S										
25 32 38	5.5 7.5 11	11 15 18.5	 	23 29 34	5 7.5 10	5 7.5 10	15 20 25	 	S0 S0 S0	3RW30 26-2BB□4 3RW30 27-2BB□4 3RW30 28-2BB□4		1 unit 1 unit 1 unit	0.690 0.690 0.690
• With scre	ew-type	or spring	g-type tei	rminals									
45 63 72	11 18.5 22	22 30 37	 	42 58 62	10 15 20	15 20 20	30 40 40	 	S2 S2 S2	3RW30 36-□BB□4 3RW30 37-□BB□4 3RW30 38-□BB□4	4	1 unit 1 unit 1 unit	1.200 1.200 1.200
• With scre	ew-type	or spring	g-type tei	rminals									
80 106	22 30	45 55		73 98	20 30	25 30	50 75		S3 S3	3RW30 46-□BB□4 3RW30 47-□BB□4		1 unit 1 unit	1.710 1.710
Order No.	supple	ment for	connec	tion types									
With screWith spri			s ²⁾							1 2			
		ment for	rated co	ontrol supp	ly volta	ge $U_{\rm s}$							
• 24 V AC/ • 110 23										0			

Soft starters for easy starting conditions and high switching frequency, rated operational voltage U_e 200 ... 400 V, rated control supply voltage U_s 24 ... 230 V AC/DC 3 0.55 1.1 -- 2.6 0.5 0.5 -- -- 22.5 m 22.5 mm

• With screw terminals

• With spring-type terminals

Stand-alone installation.
 Power connection: screw terminals.

3RW30 03-1CB54

3RW30 03-2CB54

1 unit 0.207 1 unit 0.188

Selection of the soft starter depends on the rated motor current.

The SIRIUS 3RW30 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device.

Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see technical specifications (see technical information on page 7/43).

Siemens Industry, Inc. Industrial Controls Catalog

For Operation in the Control Cabinet 3RW Soft Starters

3RW30

for standard applications

Accessories

	For soft starte Type	ers Size	Motor starter protectors Size	Order No.	List Price \$ per PU	PS*	Weight per PU approx
							kg
Auxiliary terminals							
	Auxiliary ter	minals,	3-pole				
	3RW30 4.	S3		3RT19 46-4F		1 unit	0.035
Covers for soft start							
Notice of the state of the stat		uch prot	box terminals ection to be fitted at the box termi- per device)	3RT19 36-4EA2 3RT19 46-4EA2		1 unit 1 unit	0.020 0.025
cea le	For complyin	g with th oox term	cable lugs and busbar connection ne phase clearances and as touch inal is removed contactor)	3RT19 46-4EA1		1 unit	0.040
Link modules to mot	tor starter pro	otecto	'S				
	3RW30 13, 3RW30 14, 3RW30 16, 3RW30 17, 3RW30 18	S00	S0	3RA19 21-1A		10 units	0.028
	3RW30 26	S0	S0	3RA19 21-1A		10 units	0.028
1 .6 .0	3RW30 36	S2	S2	3RA19 31-1A		5 units	0.033
	3RW30 46, 3RW30 47	S3	S3	3RA19 41-1A		5 units	0.072
Operating instructio	ns ¹⁾						
	For soft starte	ers					
	3RW30 1. 3RW30 2. 3RW30 3. 3RW30 4.	S00 S0 S2 S3		3ZX10 12-0RW30-2	PDA1		

¹⁾ The operating instructions are included in the scope of supply.

	Version	Functionality Functions	Order No. List Price per l		Weight per PU approx. kg
Covers and push-in I	ugs (only for 3F	(W30 03)			
	Sealable covers	For securing against unauthorized adjust- ment of setting knobs	3RP1 902	5 units	0.004
3RP1 902 3RP1 903	Push-in lugs For screw fixing		3RP1 903	10 units	0.002

for standard applications

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 300 % $I_{
m 1 motor}$),
The soft starter rating can be selected to be as high as the rating of the motor used.

Application	Conveyor be	t Roller conveyor	Compressor	Small fan	Pump	Hydraulic pump
Starting parameters						
• Voltage ramp and current limiting - Starting voltage % - Starting time s	70 10	60 10	50 20	40 20	40 10	40 10

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during start-up. Actual start times are load dependent.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

Configuration

The 3RW solid-state motor controllers are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

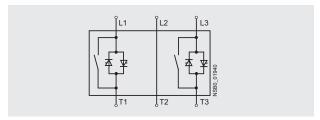
If necessary, an overload relay for heavy starting must be selected where long starting times are involved. PTC sensors are recommended.

In the motor feeder between the SIRIUS 3RW soft starter and the motor, no capacitive elements are permitted (e. g. no reactivepower compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft

All elements of the main circuit (such as fuses, controls and overload relays) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

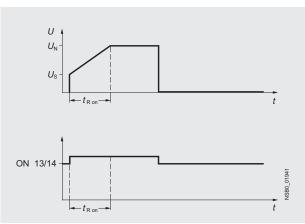
When induction motors are switched on, voltage drops normally appear on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter

Power electronics schematic circuit diagram



A bypass contact system is already integrated in the 3RW30 soft starter and therefore does not have to be ordered separately.

Status graphs



Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:

http://www.siemens.de/sanftstarter > Software

More information can be found on the Internet at: http://www.sea.siemens.com/softstarters

7/7

3RW Soft Starters

3RW40

for standard applications

Overview

SIRIUS 3RW40 soft starters have all the same advantages as the 3RW30 soft starters.

The SIRIUS 3RW40 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that minimal power is used at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

At the same time this soft starter comes with additional integrated functions such as adjustable current limiting, motor overload and intrinsic device protection, and optional thermistor motor protection on some models.

Internal intrinsic device protection prevents the thermal overloading of the thyristors and the power section defects this can cause. As an option the thyristors can also be protected by semiconductor fuses from short-circuiting.

Thanks to integrated status monitoring and fault monitoring, this compact soft starter offers many different diagnostics options. Up to four LEDs and relay outputs permit differentiated monitoring and diagnostics of the operating mechanism by indicating the operating state as well as for example mains or phase failure, missing load, non-permissible tripping time/class setting, thermal overloading or device faults.

Soft starters rated up to 300 Hp (at 460 V) for standard applications in three-phase systems are available. Extremely small sizes, low power losses and simple start-up are just three of the many advantages of the SIRIUS 3RW40 soft starters.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RW40 soft starter sizes S0 to S12 are suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e.

See "Appendix" -> "Standards and approvals" -> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".

Application

The SIRIUS 3RW40 solid-state soft starters are suitable for soft starting and stopping of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time and disturbing direct current components are eliminated in addition. This not only enables the two-phase starting of motors up to 300 Hp (at 460 V) but also avoids the current and torque peaks which occur e. g. with wye-delta starters.

Application areas

- Pumps
- Heat pumps
- Hydraulic pumps
- Presses
- Conveyors
- Roller conveyor
- Screw conveyors
- Escalators
- Small fans
- Centrifugal blowers
- Bow thrusters
- Stirrers
- Extruders
- Lathes
- Milling machines

for standard applications

Selection and ordering data







3RW40 38-1BB14

Ambient ter	mperature	50 °C			Size	Order No.	List	PS*	Weight per
Rated operational current I_e^{-1}		ower of indu doperational					Price \$ per PU		PU approx.
	200 V	230 V	460 V	575 V					
А	hp	hp	hp	hp					kg
Rated op	erational	voltage L	<mark>e 200</mark> 4	80 V					
 With scre 	w terminals	3							
11 23 29 34	3 5 7.5 10	3 5 7.5 10	7.5 15 20 25	 	S0 S0 S0 S0	3RW40 24-1BB□4 3RW40 26-1BB□4 3RW40 27-1BB□4 3RW40 28-1BB□4		1 unit 1 unit 1 unit 1 unit	0.770 0.770 0.770 0.770
• With sprir			25		50	3HW4U 20-1DDL14		i unit	0.770
11	ig-type ten 3	3	7.5		S0	3RW40 24-2BB□4		1 unit	0.770
23	5	5	15		S0	3RW40 26-2BB□4		1 unit	0.770
29 34	7.5 10	7.5 10	20 25		S0 S0	3RW40 27-2BB□4		1 unit 1 unit	0.770 0.770
					50	3RW40 28-2BB□4		i unit	0.770
• With scre	w or spring 10	g-type termir 15	30		S2	3RW40 36-□BB□4		1 unit	1.350
42 58	15	20	30 40		S2 S2	3RW40 37-□BB□4		1 unit	1.350
62	20	20	40		S2	3RW40 38-□BB□4		1 unit	1.350
 With scre 	w or spring	g-type termir	nals						
73	20	25	50		S3	3RW40 46-□BB□4		1 unit	1.900
98	30	30	75		S3	3RW40 47-□BB□4		1 unit	1.900
		voltage L	e 400 6	000 V					
With scre	w terminais		7.5	40		0011140 04 4DD		4	0.770
11 23			7.5 15	10 20	S0 S0	3RW40 24-1BB□5 3RW40 26-1BB□5		1 unit 1 unit	0.770 0.770
29			20	25	S0	3RW40 27-1BB□5		1 unit	0.770
34			25	30	S0	3RW40 28-1BB□5		1 unit	0.770
 With sprir 	ng-type terr	minals							
11			7.5	10	S0	3RW40 24-2BB□5		1 unit	0.770
23 29			15 20	20 25	S0 S0	3RW40 26-2BB□5 3RW40 27-2BB□5		1 unit 1 unit	0.770 0.770
34			25	30	S0	3RW40 28-2BB□5		1 unit	0.770
With scre	w or spring	g-type termin	als						
42			30	40	S2	3RW40 36-□BB□5		1 unit	1.350
58			40	50	S2	3RW40 37-□BB□5		1 unit	1.350
62			40	60	S2	3RW40 38-□BB□5		1 unit	1.350
	w or spring	g-type termir							
73			50 75	60	S3	3RW40 46-□BB□5		1 unit	1.900
98				75	S3	3RW40 47-□BB□5		1 unit	1.900
Urder No. :	supplemer	nt for conne	ection type	S					

Order No. supplement for connection types

- With screw terminals
- With spring-type terminals²⁾

Order No. supplement for rated control supply voltage $U_{\rm S}$

- 24 V AC/DC 110 ... 230 V AC/DC
- 1) Stand-alone installation without auxiliary fan.



Selection of the soft starter depends on the rated motor current. The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens the solid starter for the solid starter and signal starters are Wiles Soft Starter. For use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures other than 50°C, see technical information on page 7/55

²⁾ Power connection: screw terminals.

3RW Soft Starters

3RW40 for standard applications







3RW40 38-1TB04



3RW40 47-1TB04

0111110 20 11801				0111			01111 17 17 17 17 17 17 17 17 17 17 17 17		
Ambient tem					Size	Order No.	List Price \$	PS*	Weight per PU approx.
Rated operational current $I_e^{1)}$			iction moto I voltage <i>U</i> e				per PU		το αρριοχ.
	200 V	230 V	460 V	575 V					
Α	hp	hp	hp	hp					kg
Rated operated con-	nistor mo trol supp	otor prote ly voltage	ction,						
 With screv 									
11 23	3 5	3 5	7.5 15		S0 S0	3RW40 24-1TB04 3RW40 26-1TB04		1 unit 1 unit	0.770 0.770
29	7.5	7.5	20		S0	3RW40 27-1TB04		1 unit	0.770
34	10	10	25		S0	3RW40 28-1TB04		1 unit	0.770
• With spring	g-type tern	ninals							
11	3	3	7.5		S0	3RW40 24-2TB04		1 unit	0.770
23 29	5 7.5	5 7.5	15 20		S0 S0	3RW40 26-2TB04 3RW40 27-2TB04		1 unit 1 unit	0.770 0.770
34	10	10	25		S0	3RW40 28-2TB04		1 unit	0.770
With screv	v or spring	type termin	nals						
42	10	15	30		S2	3RW40 36-□TB04		1 unit	1.350
58	15	20	40		S2	3RW40 37-□TB04		1 unit	1.350
62	20	20	40		S2	3RW40 38-□TB04		1 unit	1.350
• With screv									
73 98	20 30	25 30	50 75		S3 S3	3RW40 46-□TB04 3RW40 47-□TB04		1 unit 1 unit	1.900 1.900
Rated ope						01111110 47 - 111104		T difft	1.500
with thern				, ,					
rated con	trol supp	ly voltag	e U _s 24 V	AC/DC					
 With screv 	v terminals								
11			7.5	10	S0	3RW40 24-1TB05		1 unit	0.770
23 29			15 20	20 25	S0 S0	3RW40 26-1TB05 3RW40 27-1TB05		1 unit 1 unit	0.770 0.770
34			25	30	S0	3RW40 28-1TB05		1 unit	0.770
With spring	g-type tern	ninals							
11			7.5	10	S0	3RW40 24-2TB05		1 unit	0.770
23			15	20	S0	3RW40 26-2TB05		1 unit	0.770
29 34			20 25	25 30	S0 S0	3RW40 27-2TB05 3RW40 28-2TB05		1 unit 1 unit	0.770 0.770
				30	30	3HW40 20-21B03		T UTIL	0.770
 With screv 42 	v or spring	-type termin	30	40	S2	3RW40 36-□TB05		1 unit	1.350
42 58			40	50	S2 S2	3RW40 37-□TB05		1 unit	1.350
62			40	60	S2	3RW40 38-□TB05		1 unit	1.350
With screv	v or spring	-type termi	nals						
73			50	60	S3	3RW40 46-□TB05		1 unit	1.900
98			75	75	S3	3RW40 47-□TB05		1 unit	1.900
Order No. s		t for conne	ection type	s					
- 1 A C + I	and the second second second								

- With screw terminals
- With spring-type terminals²⁾

Selection of the soft starter depends on the rated motor current. The SIRIUS 3RW40 solid-state soft starters are designed for

easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40° C, see technical information on page 7/55

¹⁾ Stand-alone installation without auxiliary fan.

²⁾ Power connection: screw terminals.

for standard applications





3RW40 76-6BB44

Ambient ten	nperature 5	0 °C			Size	Order No.	List	PS*	Weight per
Rated operational current $I_e^{1)}$	e 1)						Price \$ per PU		PU approx.
	200 V	230 V	460 V	575 V					
Α	hp	hp	hp	hp					kg
Rated ope	erational	voltage <i>U</i>	/ _e 200 4	60 V					
 With screw 	v or spring-	type termin	nals						
117 145	30 40	40 50	75 100		S6	3RW40 55-□BB□4 3RW40 56-□BB□4		1 unit 1 unit	4.900 6.900
With screw	With screw or spring-type terminals								
205 248	60 75	75 100	150 200		S12	3RW40 73-□BB□4 3RW40 74-□BB□4		1 unit 1 unit	8.900 8.900
315 385	100 125	125 150	250 300			3RW40 75-□BB□4 3RW40 76-□BB□4		1 unit 1 unit	8.900 8.900
Rated ope	erational	voltage <i>U</i>	/ _e 400 6	00 V					
 With screw 	v or spring-	type termin	nals						
117 145		 	75 100	100 150	S6	3RW40 55-□BB□5 3RW40 56-□BB□5		1 unit 1 unit	4.900 6.900
With screv	v or spring-	type termin	nals						
205 248			150 200	200 250	S12	3RW40 73-□BB□5 3RW40 74-□BB□5		1 unit 1 unit	8.900 8.900
315 385			250 300	300 400		3RW40 75-□BB□5 3RW40 76-□BB□5		1 unit 1 unit	8.900 8.900

6

Order No. supplement for connection types²⁾

- With screw terminalsWith spring-type terminals

Order No. supplement for the rated control supply voltage $U_s^{(3)}$

- 115 V AC
- 230 V AC
- 1) Stand-alone installation.
- ²⁾ Power connection: busbar connection.
- 3) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note: Selection of the soft starter depends on the rated motor current.

The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40° C, see technical information on page 7/55

For Operation in the Control Cabinet 3RW Soft Starters

3RW40 for standard applications

Accessories

Accessories							
	For soft starte Type	ers Size	Version	Order No.	List Price \$ per PU	PS*	Weight per PU approx. kg
Box terminal blocks	for soft starte	ers					
	For round an 3RW40 5. 3RW40 7.	S6 S12	• Up to 70 mm ² • Up to 120 mm ² • Up to 240 mm ²	3RT19 55-4G 3RT19 56-4G 3RT19 66-4G		1 unit 1 unit 1 unit	0.230 0.260 0.676
Auxiliary terminals	A.v.iliam. tam		2 male				
	Auxiliary terr 3RW40 4.	ninais, S3	з-роїе	3RT19 46-4F		1 unit	0.035
Covers for soft start				011113 40 41		T GITT	0.000
	Terminal cov Additional tou (2 units requir 3RW40 3. 3RW40 4.	ich prot red per \$2 \$3	box terminals ection to be fitted at the box terminals device)	3RT19 36-4EA2 3RT19 46-4EA2	2	1 unit 1 unit	0.020 0.025
SOUTH TO THE STATE OF THE STATE	3RW40 5. 3RW40 7.	S6 S12		3RT19 56-4EA2 3RT19 66-4EA2		1 unit 1 unit	0.030 0.040
and the	Terminal cov 3RW40 4. 3RW40 5. 3RW40 7.	ers for S3 S6 S12	cable lugs and busbar connections For complying with the phase clear- ances and as touch protection if box terminal is removed (2 units required per contactor)	3RT19 46-4EA1 3RT19 56-4EA1 3RT19 66-4EA1	I	1 unit 1 unit 1 unit	0.040 0.070 0.130
	Sealing cove	rs					
	3RW40 2. to 3RW40 4.	S0, S2, S3		3RW49 00-0PB	10	1 unit	0.005
1 11	3RW40 5. and 3RW40 7.	S12		3RW49 00-0PB	00	1 unit	0.010
Modules for RESET	Modules for a	nge 0.85 nption 8 2 s 4 quency	80 VA AC, 70 W DC, s,	3RU19 00-2AB 3RU19 00-2AF: 3RU19 00-2AM	71	1 unit 1 unit 1 unit	0.066 0.067 0.066
AND S	Mechanical F	RESET	comprising				
<i>j</i> r:	3RW40 5. and	d S6 ,	Resetting plungers, holders and	3RU19 00-1A		1 unit	0.038
	3RW40 7.	S12	formers • Suitable pushbutton IP65, Ø 22 mm,	3SB30 00-0EA	11	1 unit	0.020
5			12 mm stroke • Extension plunger	3SX13 35		1 unit	0.004
	For Ø 6.5 mm	holes i banel th	holder for RESET n the control panel; ickness 8 mm • Length 400 mm • Length 600 mm	3RU19 00-1B 3RU19 00-1C		1 unit 1 unit	0.063 0.073

¹⁾ Remote RESET already integrated in the 3RW40 2. to 3RW40 4. soft starters.

3RW Soft Starters

	3RW40
for standard	applications

	For soft starters Type Size		Motor starter protectors Size	Order No.	List Price \$ per PU	PS*	Weight per PU approx.
Link washilaa ta w	atau atautau ni		•				kg
Link modules to m	3RW40 24, 3RW40 26	S0	S0	3RA19 21-1A		10 units	0.028
18	3RW40 36	S2	S2	3RA19 31-1A		5 units	0.033
	3RW40 46, 3RW40 47	S3	S3	3RA19 41-1A		5 units	0.072
Fans (to increase s positions different	witching freq from the norn	uency a	and for device mounting in ition)				
	3RW40 2.	S0		3RW49 28-8VB00		1 unit	0.010
	3RW40 3., 3RW40 4.	S2, S3		3RW49 47-8VB00		1 unit	0.020
Operating instructi							
	For soft start						
	3RW40 2. 3RW40 3. 3RW40 4.	S0 S2 S3		3ZX10 12-0RW40-1	AA1		
	3RW40 5. 3RW40 7.	S6 S12		3ZX10 12-0RW40-2	DA1		

 $^{^{\}mbox{\scriptsize 1})}$ The operating instructions are included in the scope of supply.

They are also available on the Internet at: www.usa.siemens.com/softstarters

Spare parts

	For soft starters Type	Size	Version Rated control supply voltage <i>U</i> _s	Order No.	List Price \$ per PU	PS*	Weight per PU approx. kg
Fans	Fans						
	3RW40 5BB3. 3RW40 5BB4.	S6 S6	115 V AC 230 V AC	3RW49 36-8VX30 3RW49 36-8VX40		1 unit 1 unit	0.300 0.300
	3RW40 7BB3. 3RW40 7BB4.	S12 S12	115 V AC 230 V AC	3RW49 47-8VX30 3RW49 47-8VX40		1 unit 1 unit	0.500 0.500

1

2

5

6

7

3RW Soft Starters

3RW40

for standard applications

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 350 % $I_{\rm n\ motor}$), The soft starter rating can be selected to be as high as the rating of the motor used.

Application		Conveyor belt	Roller conveyor	Small fan	Pump	Hydraulic pump
Starting parameters						
 Voltage ramp and current limiting 						
 Starting voltage 	%	70	60	40	40	40
- Starting time	S	10	10	10	10	10
- Current limit value		$5 \times I_{M}$	$5 \times I_{M}$	$4 \times I_{M}$	$4 \times I_{M}$	$4 \times I_{M}$
Ramp-down time	S	5	5	0	10	0

Application examples for heavy starting (Class 20)

Heavy starting Class 20 (up to 40 s with 350 % $I_{\text{n motor}}$). The soft starter has to be selected at least one rating class higher than the motor used.

Application		Stirrer	Centrifuge
Starting parameters			
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	40 20 4 × I _M	40 20 4 x <i>I</i> _M
Ramp-down time		0	0

Note:

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during start-up. Actual start times are load dependent.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

3RW Soft Starters

3RW40 for standard applications

Configuration

The 3RW solid-state soft starters are designed for easy starting conditions. In the event of severe conditions or increased switching frequency, it may be necessary to choose a larger device. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

Where long starting times are involved, the integrated solid-state overload relay for heavy starting should not be disconnected. PTC sensors are recommended. This also applies for the smooth ramp-down because during the ramp-down time an additional current loading applies in contrast to free ramp-down.

In the case of high switching frequencies in S4 mode, Siemens recommends the use of PTC sensors. For corresponding device versions with integrated thermistor motor protection or separate thermistor evaluation devices see Industrial Controls catalog Chapter 11 "Function Relays, Interfaces and Converters".

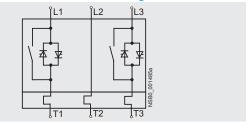
In the motor feeder between the SIRIUS 3RW soft starter and the motor, no capacitive elements are permitted (e. g. no reactive-power compensation equipment, PFC capacitors). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

Note:

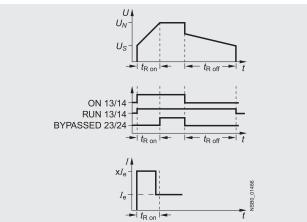
When induction motors are switched on, voltage drops normally appear on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Power electronics schematic circuit diagram



A bypass contact system and solid-state overload relay are already integrated in the 3RW40 soft starter and therefore do not have to be ordered separately.

Status graphs¹⁾



Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:

<u>www.usa.siemens.com/softstarters</u> > Software

More information can be found on the Internet at: www.usa.siemens.com/softstarters

1) $U_n = \text{Full Voltage}$

²⁾ U_S = Starting (Initial) Voltage

3) $t_{\rm R}$ = Time Running

 $^{4)}$ $I_{\rm e}$ = Rated operational current

3RW Soft Starters

3RW44

for high-feature applications

Overview

In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements. They cover a performance range up to 900 Hp (at 460 V) in the inline circuit and up to 1600Hp (at 460 V) in the inside-delta circuit.

The SIRIUS 3RW44 soft starters are characterized by a compact design for space-saving and clearly arranged control cabinet layouts. For optimized motor starting and stopping the innovative SIRIUS 3RW44 soft starters are an attractive alternative with considerable savings potential compared to applications with a frequency converter. The new torque control and adjustable current limiting enable the High-Feature soft starters to be used in nearly every conceivable task. They guarantee the reliable avoidance of sudden torque applications and current peaks during motor starting and stopping. This creates savings potential when calculating the size of the switchgear and when servicing the machinery installed. Whether it's for inline circuits or insidedelta circuits – the SIRIUS 3RW44 soft starter offers savings especially in terms of size and equipment costs.

The bypass contacts already integrated in the soft starter bypass the thyristors after a motor ramp-up is detected. This results in a further reduction in the heat loss occuring during operation of the soft starter.

Combinations of various starting, operating and ramp-down possibilities ensure an optimum adaptation to the application-specific requirements. Operation and commissioning can be performed with the menu-controlled keypad and a menu-prompted, multi-line graphical display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a previously selected language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation.

Applicable standards

- IEC 60947-4-2
- UL/CSA

Soft Starter ES parameterization software

Soft Starter ES software is used for the parameterization, monitoring and service diagnostics of SIRIUS 3RW44 High Feature soft starters.

Application

The SIRIUS 3RW44 solid-state soft starters are suitable for the torque-controlled soft starting and smooth ramp-down as well as braking of three-phase asynchronous motors.

Application areas, e. g.

- Pumps
- Fans
- Compressors
- Water transport
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills
- Saws
- Crushers
- Mixers
- Centrifuges
- · Industrial cooling and refrigerating systems

Selection and ordering data











1 unit

	may.							
3RW44 27-1E	3C44	3RW44 3	6-6BC44	3RW	44 47-6BC44	3RW44 58-6BC44	3RW44 66-6B0	C44
Ambient tem	perature 50	°C			Order No.	List	PS*	Weight per
Rated operational current I_e		ower of indu operational	ction motors voltage <i>U</i> _e			Price \$ per PU		PU approx.
	200 V	230 V	460 V	575 V				
Α	hp	hp	hp	hp				kg
Inline circu	uits ²⁾ , rate	d operation	onal voltag	je 200 46	0 V			
26 32 42	7.5 10 10	7.5 10 15	15 20 25	 	3RW44 22-□BC 3RW44 23-□BC 3RW44 24-□BC	 ⊒4	1 unit 1 unit 1 unit	6.500 6.500 6.500
51 68 82	15 20 25	15 20 25	30 50 60	 	3RW44 25-□BC 3RW44 26-□BC 3RW44 27-□BC	 ⊒4	1 unit 1 unit 1 unit	6.500 6.500 6.500
 With spring With screw	ı-type termii		поп турса		3 1			
100	30	30	75		3RW44 34-□BC		1 unit	7.900
117 145	30 40	40 50	75 100		3RW44 35-□BC 3RW44 36-□BC		1 unit 1 unit	7.900 7.900
180	50	60	125		3RW44 43-□BC		1 unit	11.500
215 280	60 75	75 100	150 200		3RW44 44-□BC 3RW44 45-□BC		1 unit 1 unit	11.500 11.500
315 385	100 125	125 150	250 300		3RW44 46-□BC 3RW44 47-□BC	□ 4	1 unit 1 unit	11.500 11.500
494 551	150 150	200 200	400 450		3RW44 53-□BC 3RW44 54-□BC		1 unit 1 unit	50.000 50.000
615	200	250	500		3RW44 54-□BC		1 unit	50.000
693	200	250	550		3RW44 56-□BC		1 unit	50.000
780 850	250 300	300 350	600 700		3RW44 57-□BC 3RW44 58-□BC		1 unit 1 unit	50.000 50.000

3RW44 65-□BC□4

3RW44 66-□BC□4

2 6

Order No. supplement for connection types

• With spring-type terminals

350

350

· With screw terminals

Order No. supplement for the rated control supply voltage $U_s^{(1)}$

400

• 115 V AC

970

1076

• 230 V AC

800

900

Soft starter selection depends on the rated motor current.

The 3RW44 solid-state soft starters are designed for normal starting (Class 10). (Inertia load of the overall operating mechanism J_{Load} <10 x J_{Motor} ; starting current 350 % x I_{e} for 20 s similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. See Technical specifications for information about rated currents for ambient temperatures > 40 °C and switching frequency.

78.000

78.000

¹⁾ Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

 $^{^{2)}}$ For inside delta selection, see page 7/75.

3RW Soft Starters

3RW44

for high-feature applications

Ambient temp	perature 50	°C			Order No.	List	PS*	Weight per
Rated operational current $I_{\rm e}$	for rated	l operationa	iction motors I voltage <i>U</i> e			Price \$ per PU		PU approx.
	200 V	230 V	460 V	575 V				
А	hp	hp	hp	hp				kg
Inline circu	ıits ²⁾ , rate	ed operation	onal volta	ge 400 600	V			
26			15	20	3RW44 22-□BC□5		1 unit	6.500
32 42			20 25	25 30	3RW44 23-□BC□5 3RW44 24-□BC□5		1 unit 1 unit	6.500 6.500
51			30	40	3RW44 25-□BC□5		1 unit	6.500
68			50	50	3RW44 26-□BC□5		1 unit	6.500
82			60	75	3RW44 27-□BC□5		1 unit	6.500
Order No. su	pplement	for connect	tion types					
With springWith screw		nals			3 1			
100			75	75	3RW44 34-□BC□5		1 unit	7.900
117 145			75 100	100 125	3RW44 35-□BC□5 3RW44 36-□BC□5		1 unit 1 unit	7.900 7.900
180 215			125 150	150 200	3RW44 43-□BC□5 3RW44 44-□BC□5		1 unit 1 unit	11.500 11.500
280			200	250	3RW44 45-□BC□5		1 unit	11.500
315			250	300	3RW44 46-□BC□5		1 unit	11.500
385			300	400	3RW44 47-□BC□5		1 unit	11.500
494			400	500	3RW44 53-□BC□5		1 unit	50.000
551			450	550	3RW44 54-□BC□5		1 unit	50.000
615			500	600	3RW44 55-□BC□5		1 unit	50.000
693 780			550 600	700 800	3RW44 56-□BC□5 3RW44 57-□BC□5		1 unit 1 unit	50.000 50.000
850			700	850	3RW44 58-□BC□5		1 unit	50.000
970			800	1000	3RW44 65-□BC□5		1 unit	78.000
1076			900	1100	3RW44 66-□BC□5		1 unit	78.000
Order No. su	pplement	for connect	tion types					
With springWith screw		nals			2 6			
Order No. su	pplement	for the rate	d control su	ipply voltage ί	J _s ¹⁾			
• 115 V AC					3			
 230 V AC 					4			

Soft starter selection depends on the rated motor current.

The 3RW44 solid-state soft starters are designed for normal starting (Class 10). (Inertia load of the overall operating mechanism J_{Load} <10 x J_{Motor} ; starting current 350 % x I_{e} for 20 s similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. See Technical specifications for information about rated currents for ambient temperatures > 40 °C and switching frequency.

¹⁾ Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

²⁾ For inside delta selection, see page 7/75.

3RW Soft Starters

3RW44 for high-feature applications

Ambient tem	perature 50) °C			Order No.	List	PS*	Weight per
Rated operational current $I_{\rm e}$	for ratec	ower of indu I operationa	l voltage U _e			Price \$ per PU		PU approx
	200 V	230 V	460 V	575 V				
A	hp	hp	hp	hp				kg
Inline circ	uits, rated	operatio	nal voltag	e 400 690 \	V			
26			15	20	3RW44 22-□BC□6		1 unit	6.500
32			20	25	3RW44 23-□BC□6		1 unit	6.500
42			25	30	3RW44 24-□BC□6		1 unit	6.500
51			30	40	3RW44 25-□BC□6		1 unit	6.500
68 82			50 60	50 75	3RW44 26-□BC□6 3RW44 27-□BC□6		1 unit	6.500 6.500
				75	3HW44 27-LBCL6		1 unit	0.500
Order No. seWith springWith screw	g-type termi		tion types		3 1			
100			75	75	3RW44 34-□BC□6		1 unit	7.900
117			75	100	3RW44 35-□BC□6		1 unit	7.90
145			100	125	3RW44 36-□BC□6		1 unit	7.900
180			125	150	3RW44 43-□BC□6		1 unit	11.500
215			150	200	3RW44 44-□BC□6		1 unit	11.50
280			200	250	3RW44 45-□BC□6		1 unit	11.50
315			250	300	3RW44 46-□BC□6		1 unit	11.50
385			300	400	3RW44 47-□BC□6		1 unit	11.500
494			400	500	3RW44 53-□BC□6		1 unit	50.000
551			450	550	3RW44 54-□BC□6		1 unit	50.000
615			500	600	3RW44 55-□BC□6		1 unit	50.000
693			550	700	3RW44 56-□BC□6		1 unit	50.000
780			600	800	3RW44 57-□BC□6		1 unit	50.000
850			700	850	3RW44 58-□BC□6		1 unit	50.000
970			800	1000	3RW44 65-□BC□6		1 unit	78.000
1076			900	1100	3RW44 66-□BC□6		1 unit	78.00
Order No. s	upplement	for connec	tion types					
With springWith screw		nals			2 6			
Order No. s	upplement	for the rate	ed control s	upply voltage	U _s ¹⁾			
• 115 V AC • 230 V AC					3 4			

¹⁾ Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

Soft starter selection depends on the rated motor current.

The 3RW44 solid-state soft starters are designed for normal starting (Class 10). (Inertia load of the overall operating mechanism J_{Load} <10 x J_{Motor} ; starting current 350 % x $I_{\rm e}$ for 20 s similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. See Technical specifications for information about rated currents for ambient temperatures > 40 °C and switching frequency.

2

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Introduction

Overview



SIRIUS ES engineering software (E-SW)

The programs of the SIRIUS ES software family enable:

- Clearly arranged configuring of device functions and their parameters online and offline
- Efficient diagnostics functions and display of the most important measured values
- Time savings through shorter startup times.

The SIRIUS ES programs such as Motor Starter ES, Soft Starter ES and SIMOCODE ES are available in three versions which differ in user-friendliness, scope of functions and price (for details see the descriptions of the individual products).

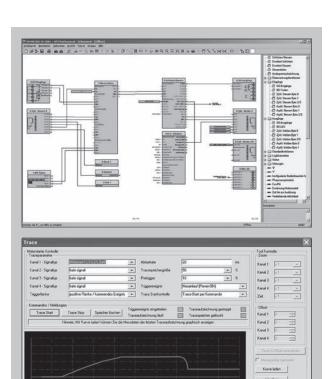
SIRIUS ES	Basic	Standard	Premium
	Dasic	Standard	Premum
Local interface on the device (system interface)	V	V	/
Basic functions for parameterizing the devices			
Parameter assignment	~	~	~
Operating	~	~	~
Diagnostics	~	~	~
• Test	~	~	~
Standard functionality			
 Parameterizing with the integrated graphics editor¹⁾ 		•	V
 Creating typicals 		~	~
 Exporting parameters 		~	~
Complete functionality			
Group functions			~
S7 Routing			~
 Teleservice through MPI 			~
 STEP7 Object Manager 			~
PROFIBUS interface			~

¹⁾ Depending on SIRIUS ES program.

Application

In addition to device-specific parameterization, the programs of the SIRIUS ES software family also provide the following functionality in a uniform look and feel. These functions are available in many SIRIUS ES programs.

- Standards-conform printouts
 The programs of the SIRIUS ES software family greatly simplify machine documentation. Parameterization printouts according to EN ISO 7200 are possible. The elements to be printed are easy to select and compile as required.
- Easy creation of parameter templates
 Parameter templates can be created for devices and applications with only minimum differences in their parameters. These templates contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be customized, e. g. by the startup engineer.
- Group function
 For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS. In conjunction with templates it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
 The premium versions of the SIRIUS ES software families support the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance and it shortens response times for service purposes.



Efficient engineering and startup with graphic interfaces and diagnostics options

Types of delivery and license

The programs of the SIRIUS ES software family are available as follows:

- Floating license the license for any one user at any one time
- Authorizes any one user
- Independent of the number of installations (unlike the single license which is allowed to be installed once only)
- Only the actual use of the program has to be licensed
- Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal).

Following delivery versions are available in addition for the programs of the SIRIUS ES software family:

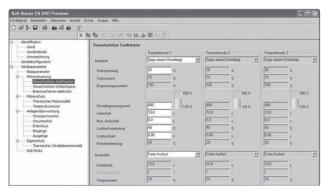
Upgrade
 Upgrade from an old to a new version with expanded functions, e. g. upgrade from Motor Starter ES 2006 to Motor Starter ES 2007

Powerpack
 Special pack for switching within the same software version to a more powerful version with more functionality,
 e. g. Powerpack Motor Starter ES 2007 for switching from Standard to Premium

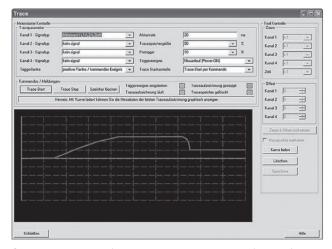
Software Update Service
 To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades

Soft Starter ES

Overview



Easy and clearly arranged parameter setting of the 3RW44 soft starter with Soft Starter ES 2007



Graphic presentation of measured values with the trace function (oscilloscope function) of Soft Starter ES 2007 Standard and Premium

Soft Starter ES 2007

The Soft Starter ES software permits the quick and easy parameterization, monitoring and diagnostics of SIRIUS 3RW44 High Feature soft starters for service purposes. The device parameters can be configured directly on the PC and transferred to the soft starter through a serial cable or an optional PROFIBUS inter-

The advantages of Soft Starter ES:

- · Clearly arranged configuring of device functions and their parameters - online and offline
- · Effective diagnostics functions on the soft starter and display of the most important measured values
- Trace function (oscilloscope function) for recording measured values and events (in the Soft Starter ES Standard and Premium software versions).

Efficient engineering with new program versions

The Soft Starter ES software program is available in three versions which differ in their user-friendliness, scope of functions

Soft starters ES	Basic	Standard	Premium
Access through the local interface on the device	V	V	V
Parameter assignment	~	~	V
Operating	~	~	V
Diagnostics	~	~	V
Creating templates		✓ 1)	V
Exporting parameters		~	V
Comparison functions		~	V
Standards-conform printout according to EN ISO 7200		/	/
Service data (slave pointer, statistics data)		~	•
Access through PROFIBUS			V
Group functions			V
Teleservice through MPI			V
S7 Routing			V
STEP7 Object Manager			V

Templates with Service Pack 1 and higher.

More functions

pile as required.

- Standards-conform printouts The software tool greatly simplifies machine documentation. Parameterization printouts according to EN ISO 7200 are possible. The elements to be printed are easy to select and com-
- Easy creation of parameter templates Parameter templates can be created for devices and applications with only minimum differences in their parameters. These templates contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be adapted, e. g. by the startup engineer.
- Group function

For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS. In conjunction with typicals it is even possible to selectively adapt the same parameters in any number of parameterizations.

 Teleservice through MPI
 The Soft Starter ES Premium version supports the use of MPI
 Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

Soft Starter ES

Types of delivery and license

Soft Starter ES is available as follows:

- Floating license the license for any one user at any one time
 - Authorizes any one user
 - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
 - Only the actual use of the program has to be licensed
 - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal).

Following delivery versions are available in addition for Soft Starter ES 2007:

Upgrade

Upgrade from an old to a new version with expanded functions, e. g. upgrade from Soft Starter ES 2006 to Soft Starter ES 2007

Powerpack

Special pack for switching within the same software version to a more powerful version with more functionality, e. g. Powerpack Soft Starter ES 2007 for switching from Standard to Premium

• Software Update Service

To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades

New licensing procedure

To make licensing easier, the three versions of Soft Starter ES are available with immediate effect with the following license:

14 day trial license for Premium functions: for test and evaluation purposes, included on every product CD, available also in the download file of the SIRIUS Soft Starter ES 2007 program at www.sea.siemens.com/softstarters.

System requirements

Soft Starter ES 2007 parameterization, start-up and diagnostics software for the SIRIUS 3RW44 soft starter	Basic/Standard Premium			
	Firmware version ≥ *E04* 1)	Firmware version ≥ *E06* ²⁾		
Operating system	Windows 2000 (Service Pack 3 or 4), Windows XP Professional (Service Pack 2), Windows Vista Ultimate 32/ Business 32 ³⁾			
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows Vista)			
RAM	≥ 512 MB/≥ 1 GB (Windows Vista)			
Free space on hard disk	≥ 150 MB			
CD-ROM/DVD drive	Yes (only when installing from CD)			
Serial interface (COM)	Yes			
PC cable/parameterization cable/connection cable	Yes			
PROFIBUS communication module (optional)	Yes			

SIRIUS 3RW44 with firmware version ≥ *E04*. Installed in starters delivered after December 2005.

Selection and ordering data

Parameterization and service software for SIRIUS 3RW44 soft starters

- Can be run under WIN 2000/WIN XP PROF/Windows Vista Ultimate 32/Business 32
- Without PC cable

Version	Order No.	List Price \$ per PU	PS*	Weight per PU approx. kg
Soft Starter ES 2007 Basic				
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface • License key on USB stick, Class A, including CD	3ZS1 313-4CC10-0	YA5	1 unit	0.230
Soft Starter ES 2007 Standard				
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface • License key on USB stick, Class A, including CD	3ZS1 313-5CC10-0	YA5	1 unit	0.230

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²⁾ SIRIUS 3RW44 with firmware version ≥ *E06*. Installed in starters delivered after May 2006.

³⁾ Windows Vista Ultimate 32/ Business 32 from Soft Starter ES 2007+SP1.

Soft Starter ES

	Version	Order No.	List Price \$ per PU	PS*	Weight per PU approx.
	Upgrade for Soft Starter ES 2006	3ZS1 313-5CC10-0YE5		1 unit	0.230
	Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface				3.200
	Powerpack for Soft Starter ES 2007 Basic	3ZS1 313-5CC10-0YD5		1 unit	0.230
	Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface				
	Software Update Service	3ZS1 313-5CC10-0YL5		1 unit	0.230
	For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface				
Soft Starter ES 20					
	Floating license for one user				
	E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS				
	License key on USB stick, Class A, including CD	3ZS1 313-6CC10-0YA5		1 unit	0.230
	Upgrade for Soft Starter ES 2006	3ZS1 313-6CC10-0YE5		1 unit	0.230
	Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS				
	Powerpack for Soft Starter ES 2007 Standard	3ZS1 313-6CC10-0YD5		1 unit	0.230
	Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS				
	Software Update Service	3ZS1 313-6CC10-0YL5		1 unit	0.230
	For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface or PROFIBUS				
PC cables					
	For PC/PG communication with SIRIUS 3RW44 soft starters	3UF7 940-0AA00-0		1 unit	0.150
	Through the system interface, for connecting to the serial interface of the PC/PG				
3UF7 940-0AA00-0					
Serial/USB				ar sa	0.450
S G	For PC/PG communication with SIRIUS 3RW44 soft starters Through the system interface, for connecting to the USB interface of the PC/PG	3UF7 946-0AA00-0		1 unit	0.150

3RW Soft Starters

3RW44 for high-feature applications

Accessories

Accessories					
	For Version soft starters	Order No.	List Price \$ per PU	PS*	Weight per PU approx. kg
PROFIBUS communi					9
	Modules can be plugged into the soft starters for integrating the starters in the PROFIBUS network with DPV1 slave functionality. On Y-link the soft starter has only DPV0 slave functionality.	3RW49 00-0KC00		1 unit	0.320
3RW49 00-0KC00					
PROFINET communi	cation modules				
	For 3RW44 soft starter integration in the PROFINET network, suitable for devices with firmware version E12 or higher	3RW49 00-0NC00		1 unit	0.320
3RW49 00-0NC00					
External display and	operator modules				
THE PARTY OF THE P	For indicating and operating the functions provided by the soft starter using an externally mounted display and operator module in degree of protection IP54, N1, N12 (e. g. in the control cabinet door)	3RW49 00-0AC00		1 unit	0.320
	Connection cables				
3RW49 00-0AC00	From the device interface (serial) of the 3RW44 soft starter to the external display and operator module • Length 0.5 m, flat • Length 0.5 m, round • Length 1.0 m, round • Length 2.5 m, round	3UF7 932-0AA00-0 3UF7 932-0BA00-0 3UF7 937-0BA00-0 3UF7 933-0BA00-0		1 unit 1 unit 1 unit 1 unit	0.020 0.050 0.100 0.150
Box terminal blocks					
3RT19	3RW44 2. Included in the scope of supply 3RW44 3. • Up to 70 mm² • Up to 120 mm² 3RW44 4. • Up to 240 mm²	3RT19 55-4G 3RT19 56-4G 3RT19 66-4G		1 unit 1 unit 1 unit	0.230 0.260 0.676

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For Operation in the Control Cabinet 3RW Soft Starters

3RW44

for high-feature applications

Spare parts

	For Version soft starters	Order No.	List Price \$ per PU	PS*	Weight per PU approx.
	Туре				kg
Covers for soft s	starters Starters				
	Terminal covers for box terminals				
	Additional touch protection to be fitted at the box terminals (2 units required per device)				
	3RW44 2. and 3RW44 3.	3RT19 56-4EA2		1 unit	0.030
	3RW44 4.	3RT19 66-4EA2		1 unit	0.040
100	Terminal covers for cable lugs and busbar connections				
	3RW44 2. and 3RW44 3.	3RT19 56-4EA1		1 unit	0.070
and ded	3RW44 4.	3RT19 66-4EA1		1 unit	0.130
3RT19 .6-4EA1					
Operating instru	ctions ¹⁾				
	For 3RW44 soft starters	3ZX10 12-0RW44-	1AA1		
Fans					
	Fans				
	3RW442. and 115 V AC 3RW44 3. 230 V AC	3RW49 36-8VX30 3RW49 36-8VX40		1 unit 1 unit	0.300 0.300
	3RW44 4. 115 V AC 230 V AC	3RW49 47-8VX30 3RW49 47-8VX40		1 unit 1 unit	0.500 0.500
3RW49	3RW44 115 V AC 5. and 230 V AC 3RW44 6. ²⁾	3RW49 57-8VX30 3RW49 57-8VX40		1 unit 1 unit	0.800 0.800
	3RW44 6. ³⁾ 115 V AC 230 V AC	3RW49 66-8VX30 3RW49 66-8VX40		1 unit 1 unit	0.300 0.300

¹⁾ The operating instructions are included in the scope of supply.

²⁾ 3RW44 6. mounting on output side.

³⁾ For mounting on front side.

for high-feature applications

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 350 % $I_{\rm n\ motor}$). The soft starter rating can be selected to be as high as the rating of the motor used.

Application		Conveyor belt	Roller conveyor	Compressor	Small fan	Pump	Hydraulic pump
Starting parameters ¹⁾							
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	70 10 Deactivated	60 10 Deactivated	50 10 4 × I _M	30 10 4 × I _M	30 10 Deactivated	30 10 Deactivated
Torque rampStarting torqueEnd torqueStarting time		60 150 10	50 150 10	40 150 10	20 150 10	10 150 10	10 150 10
Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms
Ramp-down mode		Smooth ramp- down	Smooth ramp- down	Free ramp-down	Free ramp-down	Pump ramp-down	Free ramp-down

Application examples for heavy starting (Class 20)

Heavy starting Class 20 (up to 40 s with 350 % $I_{\rm n\ motor}$), The soft starter has to be selected one rating class higher than the motor used.

Application		Mixer	Centrifuge	Milling machine
Starting parameters ¹⁾				
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	30 30 4 × I _M	30 30 4 × I _M	30 30 4 × I _M
 Torque ramp Starting torque End torque Starting time 		30 150 30	30 150 30	30 150 30
 Breakaway pulse 		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down or DC braking

Application examples for very heavy starting (Class 30)

Very heavy starting Class 30 (up to 60 s with 350 % $I_{\rm n\ motor}$), The soft starter has to be selected two rating classes higher than the motor used.

The dest oldstor side to be des	ooloa iii	o rating oldoood riighor triair tri	o motor dood.		
Application		Large fan	Mill	Crushers	Circular saw/bandsaw
Starting parameters ¹⁾					
 Voltage ramp and current limiting Starting voltage Starting time Current limit value 	% S	30 60 4 × I _M	50 60 4 × I _M	50 60 4 × I _M	30 60 4 × <i>I</i> _M
Torque rampStarting torqueEnd torqueStarting time		20 150 60	50 150 60	50 150 60	20 150 60
 Breakaway pulse 		Deactivated (0 ms)	80 %, 300 ms	80 %, 300 ms	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down	Free ramp-down

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during start-up.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

¹⁾ Actual motor starting times are load dependent.

3RW Soft Starters

3RW44

for high-feature applications

Circuit concept

The SIRIUS 3RW44 soft starters can be operated in two different types of circuit.

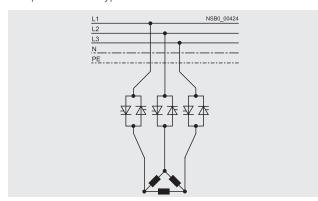
• Inline circuit

The controls for isolating and protecting the motor are simply connected in series with the soft starter. The motor is connected to the soft starter with three cables.

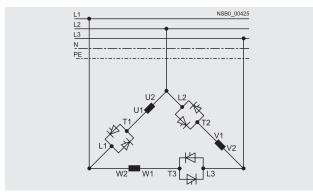
• Inside-delta circuit

The wiring is similar to that of wye-delta starters. The phases of the soft starter are connected in series with the individual motor windings. The soft starter then only has to carry the phase current, amounting to about 58 % of the rated motor current (conductor current).

Comparison of the types of circuit



Inline circuit: Rated current $I_{\rm e}$ corresponds to the rated motor current $I_{\rm n}$, 3 cables to the motor



Inside-delta circuit:

Rated current $I_{\rm P}$ corresponds to approx. 58 % of the rated motor current $I_{\rm R}$, 6 cables to the motor (as with wye-delta starters)

Which circuit?

Using the inline circuit involves the lowest wiring outlay. If the soft starter to motor connections are long, this circuit is preferable. With the inside-delta circuit there is double the wiring complexity but a smaller size of device can be used at the same rating. It is also recommended to use an isolating contactor in series with each motor winding.

Thanks to the choice of operating mode between the inline circuit and inside-delta circuit, it is always possible to select the most favorable solution.

The braking function is possible only in the inline circuit.

Configuration

The 3RW44 solid-state soft starters are designed for normal starting. In case of heavy starting or increased starting frequency, a larger device must be selected.

For long starting times it is recommended to have a PTC sensor in the motor. This also applies for the ramp-down modes smooth ramp-down, pump ramp-down and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down.

In the motor feeder between the SIRIUS 3RW soft starter and the motor, no capacitive elements are permitted (e. g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately.

A bypass contact system and solid-state overload relay are already integrated in the 3RW44 soft starter and therefore do not have to be ordered separately.

The harmonic component load for starting currents must be taken into consideration for the selection of motor starter protectors (selection of release).

Note

When induction motors are switched on, voltage drops normally appear on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Device interface, PROFIBUS DP communication module, Soft Starter ES parameterizing and operating software

The 3RW44 electronic soft starters have a PC interface for communicating with the Soft Starter ES software or for connecting the external display and operator module. If the optional PROFIBUS communication module is used, the 3RW44 soft starter can be integrated in the PROFIBUS network and communicate using the GSD file or Soft Starter ES Premium software.

For Operation in the Control Cabinet 3RW Soft Starters

3PW44

for high-feature applications

System Manual for SIRIUS 3RW44

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices. This manual can be downloaded off the internet.

Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded free of charge from:

www.usa.siemens.com/softstarters > Software

More information can be found on the Internet at: www.usa.siemens.com/softstarters

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3RW Soft Starters

Soft starters for enclosed applications

Overview

The family of 3RW40 and 3RW44 softstarters are available in stand alone enclosed control designs for smooth starting and stopping of standard NEMA design B three phase inductive motors, thus eliminating physical stresses to the system and load while minimizing starting current. These pre-engineered enclosed designs offer convenience and flexibility in and UL/CSA certified offering. Enclosed styles are available in combination and non-combination configurations through 600HP and system voltages of 200V, 230V, 480V, and 600V.

The Class 73 offers either the 3RW40 or 3RW44 in a non-combination style offering. These non-combination styles come standard with a choice of Type 1, 3R, 12, 4 NEMA rated enclosure, a control transformer, Sirius softstarter with built-in overload and bypass, line side power terminal block, and a reset pushbutton. The enclosed offering can be powerfully matched with a wide variety of factory modified options such as pushbutton control, pilot lights, metering and other control options such as isolation contactors and emergency start bypass starters. 3RW44 enclosed styles are also available with optional through the door keypad and Profibus communication.

The Class 74 offering includes all of the features of the Class 73 in a combination style design. Standard options are either a circuit breaker or fusible disconnect providing short circuit protection and soft starting in one package.

Application

The Class 73/74 product is a fully enclosed solid state reduced voltage starter designed for a wide variety of industrial applications. The enclosed softstarter offerings are ideal for new as well as existing applications where total motor controls is required.

Proper selection based on application data is made simple following these easy steps:

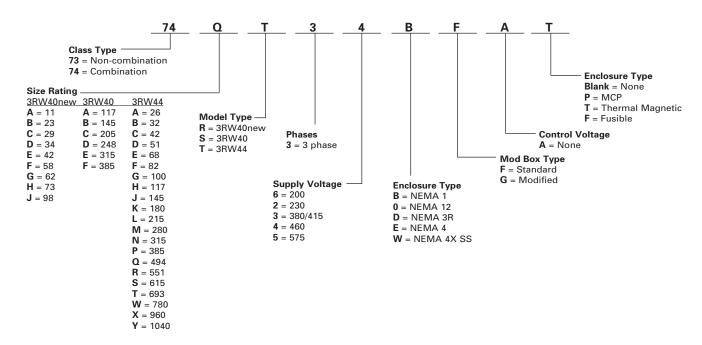
- Select proper RVSS by application
 - Select the 3RW40 versus the 3RW44 using the application info provided in the open section of the catalog
- Select the rating chart for normal starting or sever duty starting
 - Normal starting is rated at 350% of rated motor current IM for 10 seconds and based on starts per hour – representative of a class 20 application.
 - Severe starting is rated at 350% of rated motor current Im for 20 seconds and based on starts per hour – representative of a Class 20 application
- Select model using Motor nameplate data
 - Identify correct motor voltage column
 - Select rate current or HP row
 - Find ordering number under desired enclosure type column (e.g. NEMA 1)
 - Select appropriate system voltage
- Select factory modification on page 6/40¹⁾

Example

3RW44, N12, CB disconnect, 460V, 200HP with a start/stop and red run light

Order No. 74MT34BFAP A1 FC

Product Nomenclature



Some modifications will require a larger 'Modified' box than the standard box e.g. Isolation contactor, space heater, etc. See page 7/42 for instructions.

3RW Soft Starters

Size S0-S3 Non-Combo



3RW40 Enclosed features:

- Available in NEMA 1,12,3R,4, and 4 stainless steel
- Compact size
- Built-in Bypass contactor
- Voltage ramp up and ramp down
- Current limit adjustment of 125 550%
- Internal overload class 10,15,or 20
- Internal self protection
- Fault monitoring
- Isolation Contactor

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW40 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/58
- ► For dimensional drawings see page 7/94.

Class 73 non-combination starters include:

- NEMA rated enclosure
- 3RW40 Sirius softstarter with built-in OL and bypass
- Control Circuit Transformer
- Line side power terminal block
- Reset button
- Isolation Contactor

Ideal applications for 3RW40 enclosed softstarters

- Fans
- Pumps
- Easy starting loads starting in less than 10 seconds

Class 73 starters are built to UL and CSA standards

3RW40 for Standard Applications

Enclosed Non-Combination (Starter Only)

Rated	MAX	HP ^①			KW	Class 10 Light [Outy (350% * I	e for 10s)	2							
Operating	200V	230V	460V	575V	380V	OPEN Style (Starter Only)	NEMA 1	List Price \$	NEMA 3R	List Price \$	NEMA 12	List Price \$	NEMA 4	List Price \$	NEMA 4/4X Stainless Steel	List Price \$
11	3	3	7.5	_	6	3RW4024-1BB14	73AR3_BFA		73AR3_DFA		73AR3_0FA		73AR3_EFA		73AR3_WFA	
23	5	7.5	15	_	13	3RW4026-1BB14	73BR3_BFA		73BR3_DFA		73BR3_0FA		73BR3_EFA		73BR3_WFA	
29	7.5	10	20	_	16	3RW4027-1BB14	73CR3_BFA		73CR3_DFA		73CR3_0FA		73CR3_EFA		73CR3_WFA	
34	10	10	25	_	18	3RW4028-1BB14	73DR3_BFA		73DR3_DFA		73DR3_0FA		73DR3_EFA		73DR3_WFA	
42	10	15	30	_	23	3RW4036-1BB14	73ER3_BFA		73ER3_DFA		73ER3_0FA		73ER3_EFA		73ER3_WFA	
58	15	20	40	_	31	3RW4037-1BB14	73FR3_BFA		73FR3_DFA		73FR3_0FA		73FR3_EFA		73FR3_WFA	
62	20	20	40	_	33	3RW4038-1BB14	73GR3_BFA		73GR3_DFA		73GR3_0FA		73GR3_EFA		73GR3_WFA	
73	20	25	50	_	39	3RW4046-1BB14	73HR3_BFA		73HR3_DFA		73HR3_0FA		73HR3_EFA		73HR3_WFA	
98	30	30	75	_	52	3RW4047-1BB14	73JR3_BFA		73JR3_DFA		73JR3_0FA		73JR3_EFA		73JR3_WFA	
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	

 $^{{}^{\}scriptsize\textcircled{\tiny\dag}}$ Starter size is dependent on the name plate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40 °C

3RW Soft Starters

3RW40 Size S0-S3 Circuit Breaker



- 3RW40 Enclosed features:
 Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in Bypass contactor
- Voltage ramp up and ramp down
- Current limit adjustment of 125 550%
- Internal overload class 10, 15, or 20
- Internal self protection
- Fault monitoring
- Isolation Contactor

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW40 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/58
- ► For dimensional drawings see page 7/94.

Class 74 non-combination starters include:

- NEMA rated enclosure
- Circuit Breaker disconnect with shunt trip
- 3RW40 Sirius softstarter with built-in OL and bypass
- Control Circuit Transformer
- Isolation Contactor

Ideal applications for 3RW40 enclosed softstarters

- Fans
- Pumps
- Easy starting loads starting in less than 10 seconds

Class 74 starters are built to UL and CSA standards

3RW40 for Standard Applications

Enclosed Circuit Breaker Combination (Starter With Circuit Breaker Disconnect)

Rated	MAX	(HP①			KW	Class 10 Light I	Outy (350% * I	e for 10s)	2							
Operating		230V	460\	575V	380V	OPEN Style (Starter Only)	NEMA 1	List Price \$	NEMA 3R	List Price \$	NEMA 12	List Price \$	NEMA 4	List Price \$	NEMA 4/4X Stainless Steel	List Price \$
11	3	3	7.5	_	6	3RW4024-1BB14	74AR3_BFAP		74AR3_DFAP		74AR3_0FAP		74AR3_EFAP		74AR3_WFAP	
23	5	7.5	15	_	13	3RW4026-1BB14	74BR3_BFAP		74BR3_DFAP		74BR3_0FAP		74BR3_EFAP		74BR3_WFAP	
29	7.5	10	20	_	16	3RW4027-1BB14	74CR3_BFAP		74CR3_DFAP		74CR3_0FAP		74CR3_EFAP		74CR3_WFAP	
34	10	10	25	_	18	3RW4028-1BB14	74DR3_BFAP		74DR3_DFAP		74DR3_0FAP		74DR3_EFAP		74DR3_WFAP	
42	10	15	30	_	23	3RW4036-1BB14	74ER3_BFAP		74ER3_DFAP		74ER3_0FAP		74ER3_EFAP		74ER3_WFAP	
58	15	20	40	_	31	3RW4037-1BB14	74FR3_BFAP		74FR3_DFAP		74FR3_0FAP		74FR3_EFAP		74FR3_WFAP	
62	20	20	40	_	33	3RW4038-1BB14	74GR3_BFAP		74GR3_DFAP		74GR3_0FAP		74GR3_EFAP		74GR3_WFAP	
73	20	25	50	_	39	3RW4046-1BB14	74HR3_BFAP		74HR3_DFAP		74HR3_0FAP		74HR3_EFAP		74HR3_WFAP	
98	30	30	75	_	52	3RW4047-1BB14	74JR3_BFAP		74JR3_DFAP		74JR3_0FAP		74JR3_EFAP		74JR3_WFAP	
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	

2 Starter selection is dependent on type of application. le = FLA rating of motor

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C

3RW Soft Starters

3RW40 Size S0-S3 Fusible



3RW40 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in Bypass contactor
- Voltage ramp up and ramp down
- Current limit adjustment of 125 550%
- Internal overload class 10,15,or 20
- Internal self protection
- Fault monitoring
- Isolation Contactor

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW40 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/58
- ► For dimensional drawings see page 7/94.

Class 73 non-combination starters include:

- NEMA rated enclosure
- Fusible Disconnect
- 3RW40 Sirius softstarter with built-in OL and bypass
- Control Circuit Transformer
- Isolation Contactor

Ideal applications for 3RW40 enclosed softstarters

- Fans
- Pumps
- Easy starting loads starting in less than 10 seconds

Class 74 starters are built to UL and CSA standards

3RW40 for Standard Applications

Enclosed Fusible Combination (Starter With Fusible Disconnect)

Rated	MAX	HP ^①			кw	Class 10 Light I	Outy (350% * I	e for 10s)	2							
Operating		230V	460V	575V	380V	OPEN Style (Starter Only)	NEMA 1	List Price \$	NEMA 3R	List Price \$	NEMA 12	List Price \$	NEMA 4	List Price \$	NEMA 4/4X Stainless Steel	List Price \$
11	3	3	7.5	_	6	3RW4024-1BB14	74AR3_BFAF		74AR3_DFAF		74AR3_0FAF		74AR3_EFAF		74AR3_WFAF	
23	5	7.5	15	_	13	3RW4026-1BB14	74BR3_BFAF		74BR3_DFAF		74BR3_0FAF		74BR3_EFAF		74BR3_WFAF	
29	7.5	10	20	_	16	3RW4027-1BB14	74CR3_BFAF		74CR3_DFAF		74CR3_0FAF		74CR3_EFAF		74CR3_WFAF	
34	10	10	25	_	18	3RW4028-1BB14	74DR3_BFAF		74DR3_DFAF		74DR3_0FAF		74DR3_EFAF		74DR3_WFAF	
42	10	15	30	_	23	3RW4036-1BB14	74ER3_BFAF		74ER3_DFAF		74ER3_0FAF		74ER3_EFAF		74ER3_WFAF	
58	15	20	40	_	31	3RW4037-1BB14	74FR3_BFAF		74FR3_DFAF		74FR3_0FAF		74FR3_EFAF		74FR3_WFAF	
62	20	20	40	_	33	3RW4038-1BB14	74GR3_BFAF		74GR3_DFAF		74GR3_0FAF		74GR3_EFAF		74GR3_WFAF	
73	20	25	50	_	39	3RW4046-1BB14	74HR3_BFAF		74HR3_DFAF		74HR3_0FAF		74HR3_EFAF		74HR3_WFAF	
98	30	30	75	_	52	3RW4047-1BB14	74JR3_BFAF		74JR3_DFAF		74JR3_0FAF		74JR3_EFAF		74JR3_WFAF	
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	

② Starter selection is dependent on type of application. le = FLA rating of motor

 $[\]odot$ Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C



- 3RW40 Enclosed features:

 Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Voltage ramp up and ramp down
- Current limit adjustment of 125 550%
- Internal overload class 10, 15, or 20
- Internal self protection
- Fault monitoring

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW40 is designed for normal starting applications (Class 10 applications).
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.

Class 74 non-combination starters include:

- NEMA rated enclosure
- Circuit breaker disconnect with shunt trip
- 3RW40 Sirius softstarter with built-in OL and bypass
- Control circuit transformer

Ideal applications for 3RW40 enclosed softstarters:

- Fans
- Pumps
- Building/construction machines
- Presses
- Escalators
- Transport systems
- Air conditioning systems
- Ventilators
- Assembly lines

Class 74 starters are built to UL and CSA standards.

For all technical information, please consult the 2006 Industrial Controls Catalog or contact your local sales support center.

3RW40 for Standard Applications

Enclosed Circuit Breaker Combination (Starter with Circuit Breaker Disconnect)

Rated	MAX	HP①			KW	Class 10 Light Du	uty (35	0% * lm	for 10s)@									
Operating						OPEN Style			List		Li	st		List		List	NEMA 4/4X	List
Current	200V	230V	460V	575V	380V	(Starter Only)	NEMA	۱ 1	Price \$	NEMA 3R		rice \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
117	30	40	75	_	56	3RW4055-6BB34		3 BFAP		74AS3 D			74AS3 OFAI		74AS3 EFAP		74AS3 WFAP	
	40					3RW4056-6BB34		3 BFAP		_					_		_	
145	_	50	100		75					74BS3_D			74BS3_0FAI		74BS3_EFAP		74BS3_WFAP	
205	60	75	150	—	112	3RW4073-6BB34	74CS	3_BFAP		74CS3_D	FAP		74CS3_0FAF	•	74CS3_EFAP			
248	75	100	200	_	149	3RW4074-6BB34	74DS	3_BFAP		74DS3_D	FAP		74DS3_0FAI	•	74DS3_EFAP			
315	100	125	250	_	186	3RW4075-6BB34	74ES	3_BFAP		74ES3_DI	FAP		74ES3_0FAF)	74ES3_EFAP			
385	125	150	300	_	224	3RW4076-6BB34	74FS3	B_BFAP		74FS3_DF	AP		74FS3_0FAF)	74FS3_EFAP			
						200V		6		6			6		G		6	
								U		U			U		U		· ·	
						230V		2		2			2		2		2	
						380V		3		3			3		3		3	
						460V		4		4			4		4		4	
117	 	_	75	100	_	3RW4055-6BB35	74AS	35BFAP		74AS35D	FAP		74AS350FAF	•	74AS35EFAP		74AS35WFAP	
145	l_	_	100	150	_	3RW4056-6BB35	74BS	35BFAP		74BS35D	FAP		74BS350FAF)	74BS35EFAP		74BS35WFAP	
205	1—	_	150	200	_	3RW4073-6BB35	74CS	35BFAP		74CS35DI	FAP		74CS350FAF)	74CS35EFAP			
248	_	_	200	250	_	3RW4074-6BB35	74DS	35BFAP		74DS35D	FAP		74DS350FAF		74DS35EFAP			
315	l—	_	250	300	_	3RW4075-6BB35	74ES	35BFAP		74ES35DF	AP		74ES350FAF)	74ES35EFAP			
385	l—	_	300	400	_	3RW4076-6BB35	74FS3	35BFAP		74FS35DF	AP		74FS350FAP	1	74FS35EFAP			

Enclosed Circuit Breaker Combination (Starter with Circuit Breaker Disconnect)

Rated	MAX	HP①			KW .	Class 20 Severe	Duty (350% *	le for 20s)@	0							
Operating						OPEN Style		List		List		List		List	NEMA 4/4X	List
Current	200V	230V	460V 5	575V	380V	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
112	30	40	75 -	-	56	3RW4055-6BB34	74AS3_BFAP		74AS3_D	AP	74AS3_0FAF)	74AS3_EFAP		74AS3_WFAP	
132	40	50	100 -	_	75	3RW4056-6BB34	74BS3_BFAP		74BS3_D	AP	74BS3_0FAF	•	74BS3_EFAP		74BS3_WFAP	
185	60	60	125 -	- 1	93	3RW4073-6BB34	74CS3_BFAP		74CS3_DF	AP	74CS3_0FAP	1	74CS3_EFAP			
205	60	75	150 -	_	112	3RW4074-6BB34	74DS3_BFAP		74DS3_DI	AP	74DS3_0FAP)	74DS3_EFAP			
280	75	100	200 -	-	149	3RW4075-6BB34	74ES3_BFAP		74ES3_DF	AP	74ES3_0FAP		74ES3_EFAP			
340	100	125	250 -	_	186	3RW4076-6BB34	74FS3_BFAP		74FS3_DF	AP	74FS3_0FAP		74FS3_EFAP			
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	
112	_	_	75	75	_	3RW4055-6BB35	74AS35BFAP		74AS35DF	AP	74AS350FAP		74AS35EFAP		74AS35WFAP	
132	_	_	100	125	_	3RW4056-6BB35	74BS35BFAP		74BS35DI	AP	74BS350FAF)	74BS35EFAP		74BS35WFAP	
185	<u> </u>	_	125	150	_	3RW4073-6BB35	74CS35BFAP		74CS35DF	AP	74CS350FAP		74CS35EFAP			
205		_	150	200	_	3RW4074-6BB35	74DS35BFAP		74DS35DF	AP	74DS350FAP		74DS35EFAP			
280		_	200	250	_	3RW4075-6BB35	74ES35BFAP		74ES35DF	AP	74ES350FAP		74ES35EFAP			
340		_	250	300	_	3RW4076-6BB35	74FS35BFAP		74FS35DF	AP	74FS350FAP		74FS35EFAP			

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

② Starter selection is dependent on type of application. Im = FLA rating of motor.



3RW40 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Voltage ramp up and ramp down
- Current limit adjustment of 125 550%
- Internal overload class 10, 15, or 20
- Internal self protection
- Fault monitoring

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW40 is designed for normal starting applications (Class 10 applications).
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.

Class 74 combination starters include:

- NEMA rated enclosure
- Fusible disconnect
- 3RW40 Sirius softstarter with built-in OL and bypass
- Control circuit transformer

Ideal applications for 3RW40 enclosed softstarters:

- Fans
- Pumps
- Building/construction machines
- Presses
- Escalators
- Transport systems
- Air conditioning systems
- Ventilators
- Assembly lines

Class 74 starters are built to UL and CSA standards.

For all technical information, please consult the 2006 Industrial Controls Catalog or contact your local sales support center.

3RW40 for Standard Applications

Enclosed Fusible Combination (Starter with Fusible Disconnect)

Rated	MAX	HP①			KW	Class 10 Light Di	ıty (35	0% * Im	for 10s)@								
Operating	0001/	0001/	400\/	C3C\ /	000\/	OPEN Style	NIEN AA		List	NIEN AA OD	List	NIENAA AO	List	NIEN 4A 4	List	NEMA 4/4X	List
Current	200V	23UV	460V	5/5/	380V	(Starter Only)	NEMA	\ I	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
117	30	40	75	_	56	3RW4055-6BB34		3_BFAF		74AS3_DFA	F	74AS3_0FAF		74AS3_EFAF		74AS3_WFAF	
145	40	50	100	_	75	3RW4056-6BB34	74BS	3_BFAF		74BS3_DFA	F	74BS3_0FAF		74BS3_EFAF		74BS3_WFAF	
205	60	75	150	_	112	3RW4073-6BB34	74CS	3_BFAF		74CS3_DFA	F	74CS3_0FAF		74CS3_EFAF		_	
248	75	100	200	_	149	3RW4074-6BB34	74DS	3_BFAF		74DS3_DFA	F	74DS3_0FAF		74DS3_EFAF			
315	100	125	250	_	186	3RW4075-6BB34	74ES	3_BFAF		74ES3_DFA	F	74ES3_0FAF		74ES3_EFAF			
385	125	150	300	_	224	3RW4076-6BB34	74FS3	B_BFAF		74FS3_DFAI	•	74FS3_0FAF		74FS3_EFAF			
						200V		6		6		6		6		6	
						230V		2		2		2		2		2	
								2		2		2		2		2	
						380V		3		3		3		3		3	
						460V		4		4		4		4		4	
117		_	75	100		3RW4055-6BB35		35BFAF		74AS35DFA		74AS350FAF		74AS35EFAF		74AS35WFAF	
145	—	—	100	150	- 1	3RW4056-6BB35	74BS	35BFAF		74BS35DFAI	F	74BS350FAF		74BS35EFAF		74BS35WFAF	
205	_	_	150	200	_	3RW4073-6BB35	74CS	35BFAF		74CS35DFA	F	74CS350FAF		74CS35EFAF			
248		_	200	250	-	3RW4074-6BB35	74DS	35BFAF		74DS35DFA	F	74DS350FAF		74DS35EFAF			
315		_	250	300	— I	3RW4075-6BB35	74ES	35BFAF		74ES35DFAI	•	74ES350FAF		74ES35EFAF			
385		_	300	400	-	3RW4076-6BB35	74FS3	35BFAF		74FS35DFAF	:	74FS350FAF		74FS35EFAF			

Enclosed Fusible Combination (Starter with Fusible Disconnect)

						iation (otarto)											
Rated	MAX	HP1			KW	Class 20 Severe	Duty (3	350% * I	e for 20s)@)							
Operating						OPEN Style			List		List		List		List	NEMA 4/4X	List
Current	200V	230V	460V	575V	380V	(Starter Only)	NEMA	۱ 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
	_					(11100 ψ						11100 φ		11100 ψ
112	30	40		_	56	3RW4055-6BB34		3_BFAF		74AS3_DF/		74AS3_0FAF		74AS3_EFAF		74AS3_WFAF	
132	40	50	100	—	75	3RW4056-6BB34	74BS	3_BFAF		74BS3_DFA	ι F	74BS3_0FAF		74BS3_EFAF		74BS3_WFAF	
185	60	60	125	_	93	3RW4073-6BB34	74CS	3_BFAF		74CS3_DF/	∖ F	74CS3_0FAF		74CS3_EFAF			
205	60	75	150	_	112	3RW4074-6BB34	74DS	3_BFAF		74DS3_DF/	\F	74DS3_0FAF		74DS3_EFAF			
280	75	100	200	_	149	3RW4075-6BB34	74ES	3_BFAF		74ES3_DFA	.F	74ES3_0FAF		74ES3_EFAF			
340	100	125	250	_	186	3RW4076-6BB34	74FS3	BFAF		74FS3_DFA	F	74FS3_0FAF		74FS3_EFAF			
						200V		6		6		6		6		6	
						230V		2		2		2		2		2	
						380V		3		3		3		3		3	
						460V		4		4		4		4		4	
112	l—	_	75	75	_	3RW4055-6BB35	74AS	35BFAF		74AS35DF/	√ F	74AS350FAF		74AS35EFAF		74AS35WFAF	
132	l—	_	100	125	_	3RW4056-6BB35	74BS	35BFAF		74BS35DFA	F	74BS350FAF		74BS35EFAF		74BS35WFAF	
185	_	_	125	150	_	3RW4073-6BB35	74CS	35BFAF		74CS35DFA	.F	74CS350FAF		74CS35EFAF			
205	l—	_	150	200		3RW4074-6BB35	74DS	35BFAF		74DS35DF/	ι F	74DS350FAF		74DS35EFAF			
280	l—	_	200	250	_	3RW4075-6BB35	74ES	35BFAF		74ES35DFA	F	74ES350FAF		74ES35EFAF			
340		_	250	300		3RW4076-6BB35	74FS3	35BFAF		74FS35DFA	F	74FS350FAF		74FS35EFAF			

 $[\]odot$ Starter size is dependent on the nameplate Full Load Amps (FLA) rating $\,$ of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

7

Siemens Industry, Inc. Industrial Controls Catalog

 $[\]ensuremath{@}$ Starter selection is dependent on type of application. Im = FLA rating of motor.



- 3RW44 Enclosed features:

 Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Multiple starting/stopping techniques including torque control
- Internal overload class 5, 10, 15, 20, or 30
- Built-in graphical LCD keypad
- Internal self protection
- Fault monitoring
- 3 parameter sets
- Communication capable via opt. Profibus module
- Programmable inputs and outputs External keypad available

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW44 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.

Class 73 non-combination starters include:

- NEMA rated enclosure
- 3RW44 Sirius softstarter with built-in OL and bypass
- Control circuit transformer
- Reset button

Ideal applications for 3RW44 enclosed softstarters:

- Fans
- Pumps
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills saws
- Crushers and grinders
- Mixers
- HVAC systems

The 3RW44 severe duty rating table should be applied for high inertia applications such rock crushers, chippers, screw compressors, ect.

Class 73 starters are built to UL and CSA standards.

3RW44 For High Feature Applications

Enclosed Non-Combination (Starter Only)

Rated	MAXI	HP ^①		кw	Class 10 Light I	Duty (350% *	Im for 10s))2							
Operating				1	OPEN Style		List		List		List		List	NEMA 4/4X	List
Current	200V	230V	460V 575V	380V	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
26	7.5	7.5	15 —	12	3RW4422-1BC34	73AT3_BFA		73AT3_DFA		73AT3_0FA		73AT3_EFA		73AT3_WFA	
32		10	20 —	15	3RW4423-1BC34	73BT3_BFA		73BT3_DFA		73BT3_0FA		73BT3_EFA		73BT3_WFA	
42	10	15	25 —	19	3RW4424-1BC34	73CT3_BFA		73CT3_DFA		73CT3_0FA		73CT3_EFA		73CT3_WFA	
51		15	30 —	22	3RW4425-1BC34	73DT3_BFA		73DT3_DFA		73DT3_0FA		73DT3_EFA		73DT3_WFA	
68		25	50 —	37	3RW4426-1BC34	73ET3_BFA		73ET3_DFA		73ET3_0FA		73ET3_EFA		73ET3_WFA	
		30	60 —	45	3RW4427-1BC34	73FT3_BFA		73FT3_DFA		73FT3_0FA		73FT3_EFA		73FT3_WFA	
		30	75 —	56	3RW4434-6BC34	73GT3_BFA		73GT3_DFA		73GT3_0FA		73GT3_EFA		73GT3_WFA	
117		40	75 —	56	3RW4435-6BC34	73HT3_BFA		73HT3_DFA		73HT3_0FA		73HT3_EFA		73HT3_WFA	
145		50	100 —	75	3RW4436-6BC34	73JT3_BFA		73JT3_DFA		73JT3_0FA		73JT3_EFA		73JT3_WFA	
180		60	125 —	93	3RW4443-6BC34	73KT3_BFA		73KT3_DFA		73KT3_0FA		73KT3_EFA		73KT3_WFA	
215		75	150 —	112	3RW4444-6BC34	73LT3_BFA		73LT3_DFA		73LT3_0FA		73LT3_EFA		73LT3_WFA	
280		100	200 —	149	3RW4445-6BC34	73MT3_BFA		73MT3_DFA		73MT3_0FA		73MT3_EFA		73MT3_WFA	
315		125	250 —	186	3RW4446-6BC34	73NT3_BFA		73NT3_DFA		73NT3_0FA		73NT3_EFA		73NT3_WFA	
385	-	150	300 —	224	3RW4447-6BC34	73PT3_BFA		73PT3_DFA		73PT3_0FA		73PT3_EFA		73PT3_WFA	
494		200	400 —	298	3RW4453-6BC34	730T3_BFA		730T3_DFA		730T3_0FA		73QT3_EFA			
551		200	450 —	336	3RW4454-6BC34	73RT3_BFA		73RT3_DFA		73RT3_0FA		73RT3_EFA			
615		250	500 —	373	3RW4455-6BC34	73ST3_BFA		73ST3_DFA		73ST3_0FA		73ST3_EFA			
693		250	550 —	410	3RW4456-6BC34	73TT3_BFA		73TT3_DFA		73TT3_0FA		73TT3_EFA			
780		250	600 —	447	3RW4457-6BC34	73WT3_BFA		73WT3_DFA		73WT3_0FA					
970		350	800 —	597	3RW4465-6BC34	73YT3_BFA				73YT3_0FA					
1076	350	400	900 —	972	3RW4466-6BC34	73ZT3_BFA				73ZT3_0FA					
					200V	6		6		6		6		6	
					230V	2		2		2		•			
				1 1		_		2		2		2		2	
1					380V	3		3		3		3		3	
26	_	_	15 20	_	380V	3		3		3		3		3	
26 32	_	_	15 20 20 25	_	380V 460V	3 4		3 4		3 4		3 4		3	
	_ _ _			_	380V 460V 3RW4422-1BC35	3 4 73AT35BFA		3 4 73AT35DFA		3 4 73AT350FA		3 4 73AT35EFA		3 4 73AT35WFA	
32	_ _ _ _		20 25	_ _ _ _	380V 460V 3RW4422-1BC35 3RW4423-1BC35	3 4 73AT35BFA 73BT35BFA		3 4 73AT35DFA 73BT35DFA		3 4 73AT350FA 73BT350FA		3 4 73AT35EFA 73BT35EFA		3 4 73AT35WFA 73BT35WFA	
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32 42 51 68 82 100 117 145 180 215 280 315 385 494 551 615			20 25 30 30 40 50 75 75 75 100 105 125 150 200 200 250 250 300 400 400 500 700		380V 460V 3RW4422-1BC35 3RW4424-1BC35 3RW4424-1BC35 3RW4425-1BC35 3RW4425-1BC35 3RW4434-6BC35 3RW4434-6BC35 3RW4434-6BC35 3RW4443-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4454-6BC35	3 4 73AT35BFA 73BT35BFA 73BT35BFA 73ET35BFA 73GT35BFA 73GT35BFA 73GT35BFA 73HT35BFA 73KT35BFA 73KT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73GT35BFA 73GT35BFA 73GT35BFA 73GT35BFA 73GT35BFA 73GT35BFA 73GT35BFA 73GT35BFA		3 4 73AT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73HT35DFA 73KT35DFA 73KT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA		3 4 73AT350FA 73BT350FA 73CT350FA 73CT350FA 73GT350FA 73GT350FA 73HT350FA 73KT350FA 73MT350FA 73MT350FA 73MT350FA 73MT350FA 73OFA 73GT350FA 73GT350FA 73GT350FA 73GT350FA 73GT350FA 73GT350FA 73GT350FA 73GT350FA		3 4 73AT35EFA 73BT35EFA 73BT35EFA 73ET35EFA 73ET35EFA 73GT35EFA 73GT35EFA 73KT35EFA 73KT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA		3 4 73AT35WFA 73BT35WFA 73CT35WFA 73CT35WFA 73GT35WFA 73GT35WFA 73HT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA	
32 42 51 68 82 100 117 145 180 215 280 315 385 494 551 615 693			20 25 30 30 40 50 75 75 75 100 125 150 200 200 200 400 450 600 550 750		380V 460V 3RW4422-1BC35 3RW4423-1BC35 3RW4424-1BC35 3RW4425-1BC35 3RW4426-1BC35 3RW4427-1BC35 3RW4435-6BC35 3RW4435-6BC35 3RW4443-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4455-6BC35 3RW4455-6BC35	3 4 73AT35BFA 73BT35BFA 73CT35BFA 73CT35BFA 73GT35BFA 73HT35BFA 73HT35BFA 73HT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73T35BFA 73T35BFA 73T35BFA 73T35BFA		3 4 73AT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73KT35DFA 73KT35DFA 73KT35DFA 73KT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA		3 4 73AT350FA 73BT350FA 73CT350FA 73ET350FA 73GT350FA 73HT350FA 73HT350FA 73KT350FA 73MT350FA 73MT350FA 73MT350FA 73MT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA		3 4 73AT35EFA 73BT35EFA 73BT35EFA 73ET35EFA 73ET35EFA 73HT35EFA 73HT35EFA 73HT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73ST35EFA 73ST35EFA 73ST35EFA 73ST35EFA 73ST35EFA 73ST35EFA		3 4 73AT35WFA 73BT35WFA 73CT35WFA 73CT35WFA 73GT35WFA 73GT35WFA 73HT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA	
32 42 51 68 82 100 117 145 180 215 280 315 385 494 551 615 693 780			20 25 25 30 30 40 50 50 75 75 75 100 100 125 125 150 200 250 250 300 300 400 500 700 550 750 600 850		380V 460V 3RW4422-1BC35 3RW4424-1BC35 3RW4425-1BC35 3RW4425-1BC35 3RW4426-1BC35 3RW4435-6BC35 3RW4435-6BC35 3RW4435-6BC35 3RW4446-6BC35 3RW4446-6BC35 3RW4446-6BC35 3RW4446-6BC35 3RW4445-6BC35 3RW4453-6BC35 3RW4453-6BC35	3 4 73A735BFA 73B735BFA 73C735BFA 73C735BFA 73G735BFA 73G735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA 73H735BFA		3 4 73AT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73HT35DFA 73KT35DFA 73KT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA 73GT35DFA		3 4 73AT350FA 73BT350FA 73CT350FA 73CT350FA 73GT350FA 73GT350FA 73HT350FA 73HT350FA 73MT350FA 73MT350FA 73MT350FA 73MT350FA 73MT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA		3 4 73AT35EFA 73BT35EFA 73BT35EFA 73ET35EFA 73ET35EFA 73GT35EFA 73GT35EFA 73KT35EFA 73KT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA 73GT35EFA		3 4 73AT35WFA 73BT35WFA 73CT35WFA 73CT35WFA 73GT35WFA 73GT35WFA 73HT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA	
32 42 51 68 82 100 117 145 180 215 280 315 385 494 551 615 693			20 25 30 30 40 50 75 75 75 100 125 150 200 200 200 400 450 600 550 750	$\left - \right $	380V 460V 3RW4422-1BC35 3RW4423-1BC35 3RW4424-1BC35 3RW4425-1BC35 3RW4426-1BC35 3RW4427-1BC35 3RW4435-6BC35 3RW4435-6BC35 3RW4443-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4445-6BC35 3RW4455-6BC35 3RW4455-6BC35	3 4 73AT35BFA 73BT35BFA 73CT35BFA 73CT35BFA 73GT35BFA 73HT35BFA 73HT35BFA 73HT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73MT35BFA 73T35BFA 73T35BFA 73T35BFA 73T35BFA		3 4 73AT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73BT35DFA 73KT35DFA 73KT35DFA 73KT35DFA 73KT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73MT35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA 73T35DFA		3 4 73AT350FA 73BT350FA 73CT350FA 73ET350FA 73GT350FA 73HT350FA 73HT350FA 73KT350FA 73MT350FA 73MT350FA 73MT350FA 73MT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA 73CT350FA		3 4 73AT35EFA 73BT35EFA 73BT35EFA 73ET35EFA 73ET35EFA 73HT35EFA 73HT35EFA 73HT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73MT35EFA 73ST35EFA 73ST35EFA 73ST35EFA 73ST35EFA 73ST35EFA 73ST35EFA		3 4 73AT35WFA 73BT35WFA 73CT35WFA 73CT35WFA 73GT35WFA 73GT35WFA 73HT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA 73KT35WFA	

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

② Starter selection is dependent on type of application. Im = FLA rating of motor.



3RW44 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Multiple starting/stopping techniques including torque control
- Internal overload class 10, 15, or 20
- Built-in graphical LCD keypad
- Internal self protection
- Fault monitoring
- 3 parameter sets
- Communication capable via opt. Profibus module
- Programmable inputs and outputs
- External keypad available

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW44 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.

Class 73 non-combination starters include:

- NEMA rated enclosure
- 3RW44 Sirius softstarter with built-in OL and bypass
- Control circuit transformer
- Line side power terminal block
- Reset button

Ideal applications for 3RW44 enclosed softstarters:

- Fans
- Pumps
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills saws
- Crushers and grinders
- Mixers
- HVAC systems

The 3RW44 severe duty rating table should be applied for high inertia applications such rock crushers, chippers, screw compressors, ect.

Class 73 starters are built to UL and CSA standards.

3RW44 For High Feature Applications

Enclosed Non-Combination (Starter Only)

Rated	MAX	HP ^①			KW	Class 20 Sever	Duty (350%	* Im for 2	Os) ^②							
Operating						OPEN Style		List		List		List		List	NEMA 4/4X	List
Current	200V	230V	460V	575V	380V	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
26	7.5	7.5	15	_	12	3RW4422-1BC34	73AT3 BFA		73AT3 DFA		73AT3 OFA		73AT3 EFA		73AT3 WFA	
32	10	10	20	_	15	3RW4423-1BC34	73BT3 BFA		73BT3 DFA		73BT3 OFA		73BT3 EFA		73BT3 WFA	
42	10	15	25	_	19	3RW4424-1BC34	73CT3 BFA		73CT3_DFA		73CT3 OFA		73CT3 EFA		73CT3_WFA	
51	15	15	30	_	22	3RW4425-1BC34	73DT3 BFA		73DT3 DFA		73DT3 OFA		73DT3_EFA		73DT3_WFA	
68	20	25	50	_	37	3RW4426-1BC34	73ET3 BFA		73ET3_DFA		73ET3 OFA		73ET3_EFA		73ET3_WFA	
82	25	30	60	_	45	3RW4427-1BC34	73FT3 BFA		73FT3 DFA		73FT3 OFA		73FT3 EFA		73FT3 WFA	
97	30	30	60	_	45	3RW4434-6BC34	73GT3 BFA		73GT3 DFA		73GT3 OFA		73GT3 EFA		73GT3 WFA	
113	30	40	75	_	56	3RW4435-6BC34	73HT3 BFA		73HT3 DFA		73HT3 0FA		73HT3 EFA		73HT3_WFA	
134	40	50	75	_	56	3RW4436-6BC34	73JT3 BFA		73JT3 DFA		73JT3 OFA		73JT3 EFA		73JT3 WFA	
175	50	60		_	75	3RW4443-6BC34	73KT3 BFA		73KT3 DFA		73KT3 OFA		73KT3 EFA		73KT3_WFA	
195	60	75	125	_	93	3RW4444-6BC34	73LT3 BFA		73LT3_DFA		73LT3 OFA		73LT3_EFA		73LT3_WFA	
243	75	75	150	_	112	3RW4445-6BC34	73MT3 BFA		73MT3_DFA		73MT3_0FA		73MT3_EFA		73MT3_WFA	
263	75	100	200	_	149	3RW4446-6BC34	73NT3 BFA		73NT3_DFA		73NT3_0FA		73NT3_EFA		73NT3_WFA	
326	100	125		_	186	3RW4447-6BC34	73PT3_BFA		73PT3_DFA		73PT3_0FA		73PT3_EFA		73PT3_WFA	
494	150	150	400	_	224	3RW4453-6BC34	730T3 BFA		730T3 DFA		73QT3 OFA		730T3 EFA			
551	150	200	450	_	298	3RW4454-6BC34	73RT3 BFA		73RT3 DFA		73RT3 OFA		73RT3 EFA			
615	200	200	500	_	336	3RW4455-6BC34	73ST3 BFA		73ST3 DFA		73ST3 0FA		73ST3 EFA			
634	200	250	500	_	373	3RW4456-6BC34	73TT3_BFA		73TT3 DFA		73TT3_0FA		73TT3 EFA			
650		250	550	_	410	3RW4457-6BC34	73WT3 BFA		73WT3 DFA		73WT3_0FA		73WT3 EFA			
880	300	350	700	_	522	3RW4465-6BC34	73YT3 BFA		_		73YT3_0FA		_			
940	300	350		_	559	3RW4466-6BC34	73ZT3_BFA				73ZT3_0FA					
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	
26	—	_	15	20		3RW4422-1BC35	73AT35BFA		73AT35DFA		73AT350FA		73AT35EFA		73AT35WFA	
32	—	_	20	25		3RW4423-1BC35	73BT35BFA		73BT35DFA		73BT350FA		73BT35EFA		73BT35WFA	
42	—	_	25	30		3RW4424-1BC35	73CT35BFA		73CT35DFA		73CT350FA		73CT35EFA		73CT35WFA	
51	—	_	30	40	—	3RW4425-1BC35	73DT35BFA		73DT35DFA		73DT350FA		73DT35EFA		73DT35WFA	
68		_	50	50		3RW4426-1BC35	73ET35BFA		73ET35DFA		73ET350FA		73ET35EFA		73ET35WFA	
82	_	_	60	75		3RW4427-1BC35	73FT35BFA		73FT35DFA		73FT350FA		73FT35EFA		73FT35WFA	
97	_	_	60	75	_	3RW4434-6BC35	73GT35BFA		73GT35DFA		73GT350FA		73GT35EFA		73GT35WFA	
113	—	—	75	100		3RW4435-6BC35	73HT35BFA		73HT35DFA		73HT350FA		73HT35EFA		73HT35WFA	
134	—	_	75	125	—	3RW4436-6BC35	73JT35BFA	_	73JT35DFA		73JT350FA		73JT35EFA		73JT35WFA	
175	_	_	100	150	_	3RW4443-6BC35	73KT35BFA		73KT35DFA		73KT350FA		73KT35EFA		73KT35WFA	
195	—	—		200		3RW4444-6BC35	73LT35BFA		73LT35DFA		73LT350FA		73LT35EFA		73LT35WFA	
243	—	—		200		3RW4445-6BC35	73MT35BFA		73MT35DFA		73MT350FA		73MT35EFA		73MT35WFA	
263		—		250		3RW4446-6BC35	73NT35BFA		73NT35DFA		73NT350FA		73NT35EFA		73NT35WFA	
326	_	_		300		3RW4447-6BC35	73PT35BFA		73PT35DFA		73PT350FA		73PT35EFA		73PT35WFA	
494	_	_		500	_	3RW4453-6BC35	73QT35BFA		73QT35DFA		73QT350FA		73QT35EFA			
551		—	450	550		3RW4454-6BC35	73RT35BFA		73RT35DFA		73RT350FA		73RT35EFA			
615		_		600		3RW4455-6BC35	73ST35BFA		73ST35DFA		73ST350FA		73ST35EFA			
693	_	_		650		3RW4456-6BC35	73TT35BFA		73TT35DFA		73TT350FA		73TT35EFA			
780		_		700		3RW4457-6BC35	73WT35BFA		73WT35DFA		73WT350FA		73WT35EFA			
880		_		850		3RW4465-6BC35	73YT35BFA				73YT350FA					
940	_	_	750	900		3RW4466-6BC35	73ZT35BFA				73ZT350FA					
•	•															

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

② Starter selection is dependent on type of application. Im = FLA rating of motor.



3RW44 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Multiple starting/stopping techniques including torque control
- Internal overload class 5, 10, 15, 20, or 30
- Built-in graphical LCD keypad
- Internal self protection
- Fault monitoring
- 3 parameter sets
- Communication capable via opt. Profibus module
- Programmable inputs and outputs
- External keypad available

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW44 is designed for normal starting applications.
- ▶ For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.
- ► For stocked versions see page 7/89.

Class 74 non-combination starters include:

- NEMA rated enclosure
- 3RW44 Sirius softstarter with built-in OL and bypass
- Circuit breaker with disconnect
- Control circuit transformer
- Reset button

Ideal applications for 3RW44 enclosed softstarters:

- Fans
- Pumps
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills saws
- Crushers and grinders
- Mixers
- HVAC systems

The 3RW44 severe duty rating table should be applied for high inertia applications such rock crushers, chippers, screw compressors, ect.

Class 74 starters are built to UL and CSA standards.

3RW44 For High Feature Applications

Enclosed Combination with Circuit Breaker Disconnect

Rated	MAX	HP ^①		к	w	Class 10 Light	Duty (350% * 1	lm for 10s)	2							
Operating						OPEN Style		List		List		List		List	NEMA 4/4X	List
Current	200V			_	80V	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
26		7.5	15 —		2	3RW4422-1BC34	74AT3_BFAP		74AT3_DFAP		74AT3_0FAP		74AT3_EFAP		74AT3_WFAP	
32		10	20 —		5	3RW4423-1BC34			74BT3_DFAP		74BT3_0FAP		74BT3_EFAP		74BT3_WFAP	
42		15	25 —		9	3RW4424-1BC34			74CT3_DFAP		74CT3_0FAP		74CT3_EFAP		74CT3_WFAP	
51	15	15	30 —		2	3RW4425-1BC34			74DT3_DFAP		74DT3_0FAP		74DT3_EFAP		74DT3_WFAP	
68		25	50 —			3RW4426-1BC34			74ET3_DFAP		74ET3_0FAP		74ET3_EFAP		74ET3_WFAP	
82	25	30	60 —		5	3RW4427-1BC34			74FT3_DFAP		74FT3_0FAP		74FT3_EFAP		74FT3_WFAP	
100		30	75 —		6	3RW4434-6BC34			74GT3_DFAP		74GT3_0FAP		74GT3_EFAP		74GT3_WFAP	
117	30	40	75 —		6	3RW4435-6BC34			74HT3_DFAP		74HT3_0FAP		74HT3_EFAP		74HT3_WFAP	
145	40	50	100 —		5	3RW4436-6BC34			74JT3_DFAP		74JT3_0FAP		74JT3_EFAP		74JT3_WFAP	
180	60	60	125 —	1 7	13	3RW4443-6BC34			74KT3_DFAP		74KT3_0FAP		74KT3_EFAP			
215		75	150 —		12	3RW4444-6BC34			74LT3_DFAP		74LT3_0FAP		74LT3_EFAP			
280	75	100	200 —		49		74MT3_BFAP		74MT3_DFAP		74MT3_0FAP		74MT3_EFAP			
315		125	250 —	- 1	86	3RW4446-6BC34			74NT3_DFAP		74NT3_0FAP		74NT3_EFAP			
385		150	300 -		24	3RW4447-6BC34			74PT3_DFAP		74PT3_0FAP		74PT3_EFAP			
494	150	200	400 —		98	3RW4453-6BC34			74QT3_DFAT		74QT3_0FAT		74QT3_EFAT			
551		200	450 —		36	3RW4454-6BC34	_		74RT3_DFAT		74RT3_0FAT		74RT3_EFAT			
615		250	500 —		73	3RW4455-6BC34			74ST3_DFAT		74ST3_0FAT		74ST3_EFAT			
693		250	550 —		10	3RW4456-6BC34	74TT3_BFAT		74TT3_DFAT		74TT3_0FAT		74TT3_EFAT			
780	200	250	600 —	1 '	47	3RW4457-6BC34			74WT3_DFAT		74WT3_0FAT		74WT3_EFAT			
970		350	800 —	۱ ۳	97	3RW4465-6BC34					74YT3_0FAT					
1076	350	400	900 —	- 6	72	3RW4466-6BC34	/4Z13_BFA1				74ZT3_0FAT					
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	
26	_	_	15 20	n _	_	3RW4422-1BC35	74AT35BFAP		74AT35DFAP		74AT350FAP		74AT35EFAP		74AT35WFAP	
32	_	_	20 25		_	3RW4423-1BC35	74BT35BFAP		74BT35DFAP		74BT350FAP		74BT35EFAP		74BT35WFAP	
42	_	_	25 30		_		74CT35BFAP		74CT35DFAP		74CT350FAP		74CT35EFAP		74CT35WFAP	
51	_	_	30 40		_	3RW4425-1BC35			74DT35DFAP		74DT350FAP		74DT35EFAP		74DT35WFAP	
68	_	_	50 50		_	3RW4426-1BC35			74ET35DFAP		74ET350FAP		74ET35EFAP		74ET35WFAP	
82	_	_	60 7		_	3RW4427-1BC35			74FT35DFAP		74FT350FAP		74FT35EFAP		74FT35WFAP	
100	_	_	75 75		_	3RW4434-6BC35			74GT35DFAP		74GT350FAP		74GT35EFAP		74GT35WFAP	
117	_	_	75 10		_		74HT35BFAP		74HT35DFAP		74HT350FAP		74HT35EFAP		74HT35WFAP	
145	_	_	100 12		_	3RW4436-6BC35			74JT35DFAP		74JT350FAP		74JT35EFAP		74JT35WFAP	
180	_	_	125 15			3RW4443-6BC35	74KT35BFAP		74KT35DFAP		74KT350FAP		74KT35EFAP			
215		_	150 20		_	3RW4444-6BC35			74LT35DFAP		74LT350FAP		74LT35EFAP			
280	_	_	200 25		_		74MT35BFAP		74MT35DFAP		74MT350FAP		74MT35EFAP			
315	_	_	250 30		_	3RW4446-6BC35			74NT35DFAP		74NT350FAP		74NT35EFAP			
385	_	_	300 40		_		74PT35BFAP		74PT35DFAP		74PT350FAP		74PT35EFAP			
494	_	_	400 50		_	3RW4453-6BC35	74QT35BFAT		74QT35DFAT		740T350FAT		74QT35EFAT			
551	_	_	450 60		_		74RT35BFAT		74RT35DFAT		74RT350FAT		74RT35EFAT			
615	_	_	500 70		_	3RW4455-6BC35			74ST35DFAT		74ST350FAT		74ST35EFAT			
693	<u> </u>	_	550 75		_	3RW4456-6BC35			74TT35DFAT		74TT350FAT		74TT35EFAT			
780	_	_	600 85		_	3RW4457-6BC35	74WT35BFAT		74WT35DFAT		74WT350FAT		74WT35EFAT			
970	_	_		000 -	_	3RW4465-6BC35	74YT35BFAT				74YT350FAT					
1076	_	_		100 -	_	3RW4466-6BC35					74ZT350FAT					
			300 1	. 50	_											

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

② Starter selection is dependent on type of application. Im = FLA rating of motor.



3RW44 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Multiple starting/stopping techniques including torque control
- Internal overload class 5, 10, 15, 20, or 30
- Built-in graphical LCD keypad
- Internal self protection
- Fault monitoring
- 3 parameter sets
- Communication capable via opt. Profibus module
- Programmable inputs and outputs
- External keypad available

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW44 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.
- ► For stocked versions see page 7/89.

Class 74 non-combination starters include:

- NEMA rated enclosure
- 3RW44 Sirius softstarter with built-in OL and bypass
- · Circuit breaker with disconnect
- Control circuit transformer
- Reset button

Ideal applications for 3RW44 enclosed softstarters:

- Fans
- Pumps
- · Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills saws Crushers and grinders
- Mixers
- HVAC systems

The 3RW44 severe duty rating table should be applied for high inertia applications such rock crushers, chippers, screw compressors, ect.

Class 74 starters are built to UL and CSA standards.

3RW44 For High Feature Applications

Enclosed Combination with Circuit Breaker Disconnect

Rated	MAX	HP ^①			KW	Class 20 Severe	Duty (350%	* Im for 20	0s) [©]							
Operating	0001/	0001/	4001		0001/	OPEN Style	NICRA A	List	NIERAA OD	List	NUTRAL 40	List	NICRA A	List	NEMA 4/4X	List
	_	230V			380V	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
26	7.5	7.5	15	_	12	3RW4422-1BC34	74AT3_BFAP		74AT3_DFAP		74AT3_0FAP		74AT3_EFAP		74AT3_WFAP	
32	10	10	20	_	15	3RW4423-1BC34	74BT3_BFAP		74BT3_DFAP		74BT3_0FAP		74BT3_EFAP		74BT3_WFAP	
42	10	15	25	_	19	3RW4424-1BC34	74CT3_BFAP		74CT3_DFAP		74CT3_0FAP		74CT3_EFAP		74CT3_WFAP	
51	15	15	30	_	22	3RW4425-1BC34	74DT3_BFAP		74DT3_DFAP		74DT3_0FAP		74DT3_EFAP		74DT3_WFAP	
68	20	25	50	_	37	3RW4426-1BC34	74ET3_BFAP		74ET3_DFAP		74ET3_0FAP		74ET3_EFAP		74ET3_WFAP	
82	25	30	60	_	45	3RW4427-1BC34	74FT3_BFAP		74FT3_DFAP		74FT3_0FAP		74FT3_EFAP		74FT3_WFAP	
97	30	30	60	_	45	3RW4434-6BC34	74GT3_BFAP		74GT3_DFAP		74GT3_0FAP		74GT3_EFAP		74GT3_WFAP	
113	30	40	75	_	56	3RW4435-6BC34	74HT3_BFAP		74HT3_DFAP		74HT3_0FAP		74HT3_EFAP		74HT3_WFAP	
134	40	50			56	3RW4436-6BC34	74JT3_BFAP		74JT3_DFAP		74JT3_0FAP		74JT3_EFAP		74JT3_WFAP	
175	50	60			75	3RW4443-6BC34	74KT3_BFAP		74KT3_DFAP		74KT3_0FAP		74KT3_EFAP			
195	60	75			93	3RW4444-6BC34	74LT3_BFAP		74LT3_DFAP		74LT3_0FAP		74LT3_EFAP			
243	75	75	150		112	3RW4445-6BC34	74MT3_BFAP		74MT3_DFAP		74MT3_0FAP		74MT3_EFAP			
263	75	100	200		149	3RW4446-6BC34	74NT3_BFAP		74NT3_DFAP		74NT3_0FAP		74NT3_EFAP			
326	100	125			186	3RW4447-6BC34	74PT3_BFAP		74PT3_DFAP		74PT3_0FAP		74PT3_EFAP			
494	150	150	400	_	224	3RW4453-6BC34	740T3_BFAT		74QT3_DFAT		74QT3_0FAT		74QT3_EFAT			
551	150	200	450		298	3RW4454-6BC34	74RT3_BFAT		74RT3_DFAT		74RT3_0FAT		74RT3_EFAT			
615	200	200	500		336	3RW4455-6BC34	74ST3_BFAT		74ST3_DFAT		74ST3_0FAT		74ST3_EFAT			
634	200	250	500		373	3RW4456-6BC34	74TT3_BFAT		74TT3_DFAT		74TT3_0FAT		74TT3_EFAT			
650	200	250	550		410	3RW4457-6BC34	74WT3_BFAT		74WT3_DFAT		74WT3_0FAT		74WT3_EFAT			
880	300	350			522	3RW4465-6BC34	74YT3_BFAT				74YT3_0FAT					
940	300	350	750	_	559	3RW4466-6BC34	74ZT3_BFAT				74ZT3_0FAT					
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	
26	_	_	15	20		3RW4422-1BC35	74AT35BFAP		74AT35DFAP		74AT350FAP		74AT35EFAP		74AT35WFAP	
32	_	_	20	25		3RW4423-1BC35	74BT35BFAP		74BT35DFAP		74BT350FAP		74BT35EFAP		74BT35WFAP	
42	_	_	25	30		3RW4424-1BC35	74CT35BFAP		74CT35DFAP		74CT350FAP		74CT35EFAP		74CT35WFAP	
51	_	_	30	40		3RW4425-1BC35	74DT35BFAP		74DT35DFAP		74DT350FAP		74DT35EFAP		74DT35WFAP	
68	_	_	50	50		3RW4426-1BC35	74ET35BFAP		74ET35DFAP		74ET350FAP		74ET35EFAP		74ET35WFAP	
82	_	—	60	75		3RW4427-1BC35	74FT35BFAP		74FT35DFAP		74FT350FAP		74FT35EFAP		74FT35WFAP	
97	_	_	60	75	<u> </u>	3RW4434-6BC35	74GT35BFAP		74GT35DFAP		74GT350FAP		74GT35EFAP		74GT35WFAP	
113	<u> </u>	_	75	100		3RW4435-6BC35	74HT35BFAP		74HT35DFAP		74HT350FAP		74HT35EFAP		74HT35WFAP	
134	_	—	75	125		3RW4436-6BC35	74JT35BFAP		74JT35DFAP		74JT350FAP		74JT35EFAP		74JT35WFAP	
175	_	_	100	150	<u> </u>	3RW4443-6BC35	74KT35BFAP		74KT35DFAP		74KT350FAP		74KT35EFAP			
195	_	—	125	200		3RW4444-6BC35	74LT35BFAP		74LT35DFAP		74LT350FAP		74LT35EFAP			
243	_	_	150	200	_	3RW4445-6BC35	74MT35BFAP		74MT35DFAP		74MT350FAP		74MT35EFAP			
263	_	_	200	250	_	3RW4446-6BC35	74NT35BFAP		74NT35DFAP		74NT350FAP		74NT35EFAP			
326	_	_	250	300		3RW4447-6BC35	74PT35BFAP		74PT35DFAP		74PT350FAP		74PT35EFAP			
494	<u> </u>	_	400	500	<u> </u>	3RW4453-6BC35	740T35BFAT		740T35DFAT		74QT350FAT		74QT35EFAT			
551	_	_	450	550		3RW4454-6BC35	74RT35BFAT		74RT35DFAT		74RT350FAT		74RT35EFAT			
615	_	_		600		3RW4455-6BC35	74ST35BFAT		74ST35DFAT		74ST350FAT		74ST35EFAT			
693	_	_	500			3RW4456-6BC35	74TT35BFAT		74TT35DFAT		74TT350FAT		74TT35EFAT			
780	_	_				3RW4457-6BC35	74WT35BFAT		74WT35DFAT		74WT350FAT		74WT35EFAT			
880	_	_	700	850		3RW4465-6BC35	74YT35BFAT				74YT350FAT					
940	_	_		900	_	3RW4466-6BC35	74ZT35BFAT				74ZT350FAT					
0.10			, 00	300	$\overline{}$	J 1100 0D 000					. IL 10001 A1					

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

② Starter selection is dependent on type of application. Im = FLA rating of motor.



3RW44 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Multiple starting/stopping techniques including torque control
- Internal overload class 5, 10, 15, 20, or 30
- Built-in graphical LCD keypad
- Internal self protection
- Fault monitoring
- 3 parameter sets
- Communication capable via opt. Profibus module
- Programmable inputs and outputs
- External keypad available

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW44 is designed for normal starting applications.
- ► For factory modifications see page 7/42.
- ► For complete derating and application info see page 7/69.
- ► For dimensional drawings see page 7/94.

Class 74 non-combination starters include:

- NEMA rated enclosure
- 3RW44 Sirius softstarter with built-in OL and bypass
- Fusible disconnect
- Control circuit transformer
- Reset button

Ideal applications for 3RW44 enclosed softstarters:

- Fans
- Pumps
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills saws
- Crushers and grinders
- Mixers
- HVAC systems

The 3RW44 severe duty rating table should be applied for high inertia applications such rock crushers, chippers, screw compressors, ect.

Class 74 starters are built to UL and CSA standards.

For all technical information, please consult the 2006 Industrial Controls Catalog or contact your local sales support center.

3RW44 For High Feature Applications

Enclosed Combination with Fusible Disconnect

Rated	MAX	HP ^①		KW	Class 10 Light I	Outy@(350% *		s)							
Operating					OPEN Style		List		List		List		List	NEMA 4/4X	List
Current			460V 575V	_	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
26		7.5	15 —	12	3RW4422-1BC34	74AT3_BFAF		74AT3_DFAF		74AT3_0FAF		74AT3_EFAF		74AT3_WFAF	
32		10	20 —	15	3RW4423-1BC34	74BT3_BFAF		74BT3_DFAF		74BT3_0FAF		74BT3_EFAF		74BT3_WFAF	
42	10	15	25 —	19	3RW4424-1BC34	74CT3_BFAF		74CT3_DFAF		74CT3_0FAF		74CT3_EFAF		74CT3_WFAF	
51	1	15	30 —	22	3RW4425-1BC34	74DT3_BFAF		74DT3_DFAF		74DT3_0FAF		74DT3_EFAF		74DT3_WFAF	
68	20	25	50 —	37	3RW4426-1BC34	74ET3_BFAF		74ET3_DFAF		74ET3_0FAF		74ET3_EFAF		74ET3_WFAF	
82	25	30	60 —	45	3RW4427-1BC34	74FT3_BFAF		74FT3_DFAF		74FT3_0FAF		74FT3_EFAF		74FT3_WFAF	
100	30	30	75 —	56	3RW4434-6BC34	74GT3_BFAF		74GT3_DFAF		74GT3_0FAF		74GT3_EFAF		74GT3_WFAF	
117	30	40	75 —	56	3RW4435-6BC34	74HT3_BFAF		74HT3_DFAF		74HT3_0FAF		74HT3_EFAF		74HT3_WFAF	
145	40	50	100 —	75	3RW4436-6BC34	74JT3_BFAF		74JT3_DFAF		74JT3_0FAF		74JT3_EFAF		74JT3_WFAF	
180		60	125 —	93	3RW4443-6BC34	74KT3_BFAF		74KT3_DFAF		74KT3_0FAF		74KT3_EFAF			
215	60	75	150 —	112	3RW4444-6BC34	74LT3_BFAF		74LT3_DFAF		74LT3_0FAF		74LT3_EFAF			
280	75	100	200 —	149	3RW4445-6BC34	74MT3_BFAF		74MT3_DFAF		74MT3_0FAF		74MT3_EFAF			
315		125	250 —	186	3RW4446-6BC34	74NT3_BFAF		74NT3_DFAF		74NT3_0FAF		74NT3_EFAF			
385 494	125 150	150 200	300 — 400 —	224	3RW4447-6BC34 3RW4453-6BC34	74PT3_BFAF 74QT3_BFAF		74PT3_DFAF		74PT3_0FAF 74QT3_0FAF		74PT3_EFAF			
				336		_				_					
551 615	150 200	200 250	450 — 500 —	373	3RW4454-6BC34 3RW4455-6BC34	74RT3_BFAF 74ST3_BFAF				74RT3_0FAF 74ST3_0FAF					
693	200	250	550 —	3/3	3RW4456-6BC34	74313_BFAF				74313_UFAF					
780		250	600 —	447	3RW4457-6BC34	74113_BFAF				74113_UFAF 74WT3_0FAF					
700	200	230	000 —	447	3NVV4437-0DU34	74VV I3_DFAF				74VV 13_UFAF					
					200V	6		6		6		6		6	
					230V	2		2		2		2		2	
					380V	3		3		3		3		3	
					460V	4		4		4		4		4	
26		—	15 20		3RW4422-1BC35	74AT35BFAF		74AT35DFAF		74AT350FAF		74AT35EFAF		74AT35WFAF	
32		_	20 25		3RW4423-1BC35	74BT35BFAF		74BT35DFAF		74BT350FAF		74BT35EFAF		74BT35WFAF	
42		_	25 30		3RW4424-1BC35	74CT35BFAF		74CT35DFAF		74CT350FAF		74CT35EFAF		74CT35WFAF	
51		_	30 40		3RW4425-1BC35	74DT35BFAF		74DT35DFAF		74DT350FAF		74DT35EFAF		74DT35WFAF	
68		_	50 50	-	3RW4426-1BC35	74ET35BFAF		74ET35DFAF		74ET350FAF		74ET35EFAF		74ET35WFAF	
82		_	60 75	-	3RW4427-1BC35	74FT35BFAF		74FT35DFAF		74FT350FAF		74FT35EFAF		74FT35WFAF	
100	-	_	75 75	-	3RW4434-6BC35	74GT35BFAF		74GT35DFAF		74GT350FAF		74GT35EFAF		74GT35WFAF	
117		_	75 100	-	3RW4435-6BC35	74HT35BFAF		74HT35DFAF		74HT350FAF		74HT35EFAF		74HT35WFAF	
145			100 125	-	3RW4436-6BC35	74JT35BFAF		74JT35DFAF		74JT350FAF		74JT35EFAF		74JT35WFAF	
180		_	125 150		3RW4443-6BC35	74KT35BFAF		74KT35DFAF		74KT350FAF		74KT35EFAF			
215	-	_	150 200		3RW4444-6BC35	74LT35BFAF		74LT35DFAF		74LT350FAF		74LT35EFAF			
280	-	_	200 250		3RW4445-6BC35	74MT35BFAF		74MT35DFAF		74MT350FAF		74MT35EFAF			
315	-	_	250 300		3RW4446-6BC35	74NT35BFAF		74NT35DFAF		74NT350FAF		74NT35EFAF			
385			300 400	-	3RW4447-6BC35	74PT35BFAF		74PT35DFAF		74PT350FAF		74PT35EFAF			
494	-	_	400 500		3RW4453-6BC35	74QT35BFAF				74QT350FAF					
551		_	450 600		3RW4454-6BC35	74RT35BFAF				74RT350FAF					
615		_	500 700		3RW4455-6BC35	74ST35BFAF				74ST350FAF					
693	-	_	550 750		3RW4456-6BC35	74TT35BFAF				74TT350FAF					
780	-	_	600 850		3RW4457-6BC35	74WT35BFAF				74WT350FAF					

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

② Starter selection is dependent on type of application. Im = FLA rating of motor.



3RW44 Enclosed features:

- Available in NEMA 1, 12, 3R, 4, and 4 stainless steel
- Compact size
- Built-in bypass contactor
- Multiple starting/stopping techniques including torque control
- Internal overload class 5, 10, 15, 20, or 30
- Built-in graphical LCD keypad
- Internal self protection
- Fault monitoring
- 3 parameter sets
- Communication capable via opt. Profibus module
- Programmable inputs and outputs
- External keypad available

Ordering Information

- ► Enclosed devices should be ordered by the FLA of the motor.
- ► The 3RW44 is designed for normal starting applications.
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Class 74 non-combination starters include:

- NEMA rated enclosure
- 3RW44 Sirius softstarter with built-in OL and bypass
- Fusible disconnect
- Control circuit transformer
- Reset button

Ideal applications for 3RW44 enclosed softstarters:

- Fans
- Pumps
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills saws
- Crushers and grinders
- Mixers
- HVAC systems

The 3RW44 severe duty rating table should be applied for high inertia applications such rock crushers, chippers, screw compressors, ect.

Class 74 starters are built to UL and CSA standards.

For all technical information, please consult the 2006 Industrial Controls Catalog or contact your local sales support center.

3RW44 For High Feature Applications

Enclosed Combination with Fusible Disconnect

Rated	MAX	HP ^①			кw	Class 20 Severe	Duty (350%	* Im for 2	0s) [©]							
Operating	0001	0001	400		0001	OPEN Style	NIFRAA 4	List	NICRAA OD	List	NIFER AS	List	NIFA 4	List	NEMA 4/4X	List
	200V			575V	380V	(Starter Only)	NEMA 1	Price \$	NEMA 3R	Price \$	NEMA 12	Price \$	NEMA 4	Price \$	Stainless Steel	Price \$
26	7.5	7.5	15	_	12	3RW4422-1BC34	74AT3_BFAF		74AT3_DFAF		74AT3_0FAF		74AT3_EFAF		74AT3_WFAF	
32	10	10	20	_	15	3RW4423-1BC34	74BT3_BFAF		74BT3_DFAF		74BT3_0FAF		74BT3_EFAF		74BT3_WFAF	
42	10	15	25	_	19	3RW4424-1BC34	74CT3_BFAF		74CT3_DFAF		74CT3_0FAF		74CT3_EFAF		74CT3_WFAF	
51	15	15	30	_	22	3RW4425-1BC34	74DT3_BFAF		74DT3_DFAF		74DT3_0FAF		74DT3_EFAF		74DT3_WFAF	
68	20	25	50	_	37	3RW4426-1BC34	74ET3_BFAF		74ET3_DFAF		74ET3_0FAF		74ET3_EFAF		74ET3_WFAF	
82	25	30	60	_	45	3RW4427-1BC34	74FT3_BFAF		74FT3_DFAF		74FT3_0FAF		74FT3_EFAF		74FT3_WFAF	
97	30	30	60	_	45	3RW4434-6BC34	74GT3_BFAF		74GT3_DFAF		74GT3_0FAF		74GT3_EFAF		74GT3_WFAF	
113	30	40	75	_	56	3RW4435-6BC34	74HT3_BFAF		74HT3_DFAF		74HT3_0FAF		74HT3_EFAF		74HT3_WFAF	
134	40	50	75	_	56	3RW4436-6BC34	74JT3_BFAF		74JT3_DFAF		74JT3_0FAF		74JT3_EFAF		74JT3_WFAF	
175	50	60	100		75	3RW4443-6BC34	74KT3_BFAF		74KT3_DFAF		74KT3_0FAF		74KT3_EFAF			
195	60	75	125		93	3RW4444-6BC34	74LT3_BFAF		74LT3_DFAF		74LT3_0FAF		74LT3_EFAF			
243	75	75	150		112	3RW4445-6BC34	74MT3_BFAF		74MT3_DFAF		74MT3_0FAF		74MT3_EFAF			
263	75	100	200		149	3RW4446-6BC34	74NT3_BFAF		74NT3_DFAF		74NT3_0FAF		74NT3_EFAF			
326	100	125	250		186	3RW4447-6BC34	74PT3_BFAF		74PT3_DFAF		74PT3_0FAF		74PT3_EFAF			
494	150	150	400		298	3RW4453-6BC34	74QT3_BFAF				74QT3_0FAF					
551	150	200	450		336	3RW4454-6BC34	74RT3_BFAF				74RT3_0FAF					
615	200	200	500		373	3RW4455-6BC34	74ST3_BFAF				74ST3_0FAF					
634	200	250	500		373	3RW4456-6BC34	74TT3_BFAF				74TT3_0FAF					
650	200	250	550	_	373	3RW4457-6BC34	74WT3_BFAF				74WT3_0FAF				•	
						200V	6		6		6		6		6	
						230V	2		2		2		2		2	
						380V	3		3		3		3		3	
						460V	4		4		4		4		4	
26	_	_	15	20	_	3RW4422-1BC35	74AT35BFAF		74AT35DFAF		74AT350FAF		74AT35EFAF		74AT35WFAF	
32	_	_	20	25	_	3RW4423-1BC35	74BT35BFAF		74BT35DFAF		74BT350FAF		74BT35EFAF		74BT35WFAF	
42	_	_	25	30	_	3RW4424-1BC35	74CT35BFAF		74CT35DFAF		74CT350FAF		74CT35EFAF		74CT35WFAF	
51	_	_	30	40	_	3RW4425-1BC35	74DT35BFAF		74DT35DFAF		74DT350FAF		74DT35EFAF		74DT35WFAF	
68	_	_	50	50		3RW4426-1BC35	74ET35BFAF		74ET35DFAF		74ET350FAF		74ET35EFAF		74ET35WFAF	
82	_	_	60	75	_	3RW4427-1BC35	74FT35BFAF		74FT35DFAF		74FT350FAF		74FT35EFAF		74FT35WFAF	
97	_	_	60	75	_	3RW4434-6BC35	74GT35BFAF		74GT35DFAF		74GT350FAF		74GT35EFAF		74GT35WFAF	
113		_	75	100		3RW4435-6BC35	74HT35BFAF		74HT35DFAF		74HT350FAF		74HT35EFAF		74HT35WFAF	
134	_	_	75	125		3RW4436-6BC35	74JT35BFAF		74JT35DFAF		74JT350FAF		74JT35EFAF		74JT35WFAF	
175	_	_	100	150	_	3RW4443-6BC35	74KT35BFAF		74KT35DFAF		74KT350FAF		74KT35EFAF			
195		_	125			3RW4444-6BC35	74LT35BFAF		74LT35DFAF		74LT350FAF		74LT35EFAF			
243		_	150			3RW4445-6BC35	74MT35BFAF		74MT35DFAF		74MT350FAF		74MT35EFAF			
263		_	200			3RW4446-6BC35	74NT35BFAF		74NT35DFAF		74NT350FAF		74NT35EFAF			
326	_	_	250			3RW4447-6BC35	74PT35BFAF		74PT35DFAF		74PT350FAF		74PT35EFAF			
494	_	_	400		_	3RW4453-6BC35	74QT35BFAF				74QT350FAF					
551		_	450	550	_	3RW4454-6BC35	74RT35BFAF				74RT350FAF					
615	<u> </u>	_	500		_	3RW4455-6BC35	74ST35BFAF				74ST350FAF					
693	<u> </u>	_	550		_	3RW4456-6BC35	74TT35BFAF				74TT350FAF					
780	_	_		700	_	3RW4457-6BC35	74WT35BFAF				74WT350FAF					
					. '	nomaniata Full Lagr				011	election is dener			. I FI	A	

① Starter size is dependent on the nameplate Full Load Amps (FLA) rating of the motor. HPs are for reference only. Enclosed ratings are at 40°C.

[@] Starter selection is dependent on type of application. Im = FLA rating of motor.

Control Products

Factory Modifications

Modification Available modifications in STANDARD enclosure	3RW Version	Enclosed Style	Enclosure NEMA Type	Mod Suffix	List Price Adder \$
Pilot Devices				·	
Push Buttons		'			'
Start/Stop	3RW40/44	73/74	ALL	A1	
Emergency Stop	3RW40/45	73/75	ALL	ES	
Selector Switches		•		·	·
Hand-Off-Auto	3RW40/44	73/74	ALL	A3	
Hand-Off-Auto with start pushbutton	3RW40/44	73/74	ALL	S3	
Off-On	3RW40/44	73/74	ALL	A4	
Pilot Light	·	·		·	·
Red 'On'	3RW40/44	73/74	ALL	FA	
Green 'On'	3RW40/44	73/74	ALL	FB	
Red 'Run'	3RW40/44	73/74	ALL	FC	
Green 'Run'	3RW40/44	73/74	ALL	FD	
Red 'Off'	3RW40/44	73/74	ALL	FJ	
Green 'Off'	3RW40/44	73/74	ALL	FK	
Amber 'Fault'	3RW40/44	73/74	ALL	FL	
White 'Control Power On'	3RW40/44	73/74	ALL	FW	
Red 'On' Push-to-Test	3RW40/44	73/74	ALL	FS	
Green 'On' Push-to-Test	3RW40/44	73/74	ALL	FT	
Green 'Off' Push-to-Test	3RW40/44	73/74	ALL	FU	
Custom pilot light (state color and nameplate text)	3RW40/44	73/74	ALL	FZ	
Through the Door Metering		'		'	'
External keypad for 3RW44	3RW44	73/74	N1, N12	K1	
Elapse time meter	3RW40/44		N1, N12 (120V)	M5	
Control Options	·	•		•	·
Profibus Communication Module (installed-connection cable not supplied)		73/74	ALL	P1	
Ground Lug - 1 Conductor	3RW40/44	73/74	ALL	L10	
Alarm Package - Includes horn, light, relay & push button	3RW40/44	73/74	N1, N3, N12	M7	
Electronic 8 function timing relay (.05s - 100h) 24V/100-127V supplied mounted and unwired	3RW40/44	73/74	ALL	TR	
· ·				R04	
Control Relay supplied mounted and unwired (4-pole max)			ALL	R22	
				R40	
Circuit Breaker Shunt Trip (included std in 3RW40 versions)	3RW44	74	ALL	L6	
Function identification plate, with marking as specified	3RW40/43	73/74	ALL	N1	
Service Entrance Labeled	3RW40/44	74	ALL	N3	
Terminal Block 3 point	3RW40/44	73/74	ALL	TC3	
Terminal Block 6 point	3RW40/44	73/74	ALL	TC6	
Terminal Block 9 point	3RW40/44	73/74	ALL	TC9	
Terminal Block 12 point	3RW40/44	73/74	ALL	TC12	

A12 Box Options	3RW Version		Enclosed NEMA Type	Mod Suffix	List Price	Adder \$	\$						
	3RW40 new current size (3rd character)				11-23 A,B	29-42 C,D,E	58-73 F,G,H	98 J					
	3RW40 current size (3rd character)	73/74	N1/12/3R/4	A12			117 A	145-205 B,C	248 D	315-385 E,F			
	3RW44 current size (3rd character)				26-42 A,B,C	51-68 D,E	82-117 F,G,H	145-215 J,K,L	280 M	315-385 N,P	494 Q	551-780 R,S,T,W	970-1076 Y,Z
Emergency HP Rated Bypass Starter	3RW40 ^②	73/74	N1/12/3R/4	A12									
	3RW44	73	N1/12/3R/4	A12									
	3NVV44	74	N1/12/3R/4	A12									

Options Requiring the MODIFIED OPTIONS Box Size

To be used with the selections ending in GA*	3RW Version		Enclosed NEMA Type	Mod Suffix	List Price	Adder	\$						
	3RW40 current size (3rd character)						117 A	145-205 B,C	248 D	315-385 E,F			
	3RW44 current size (3rd character)				26-42 A,B,C	51-68 D,E	82-117 F,G,H	145-215 J,K,L	280 M	315-385 N,P	494 Q	551-780 R,S,T,W	970-1076 Y,Z
Contactor Options													
Isolation contactor®	3RW40/44	73/74	N1/12/3R/4	IC									
Extra Capacity CPT													
100 VA Extra	3RW40/44	73/74	ALL	CA									
Control Options													
Space Heater (120V separate control)	3RW40/44	73/74	ALL	SH									
Space Heater with Thermostat (120V separate control)	3RW40/44	73/74	ALL	ST									
Lightning Arrestor	3RW40/44	73/74	ALL	L									

① Limited to N4SS offering

 $[\]ensuremath{@}$ An isolation contactor is included for 3RW40 version with bypass.

③ An isolation contactor is standard on all 3RW40 new styles

3RW30

for standard applications

Overview

The SIRIUS 3RW30 soft starters reduce the motor voltage through variable phase control and increase it in ramp-like mode from a selectable starting voltage up to mains voltage. During starting, these devices limit the torque as well as the current and prevent the shocks which arise during direct starts or wye-delta starts. In this way, mechanical loads and mains voltage dips can be reliably reduced.

Soft starting reduces the stress on the connected equipment and results in lower wear and therefore longer periods of trouble-free production. The selectable start value means that the soft starters can be adjusted individually to the requirements of the application in question and unlike wye-delta starters are not restricted to two-stage starting with fixed voltage ratios.

The SIRIUS 3RW30 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

Various versions of the SIRIUS 3RW30 soft starters are available:

- Standard version for fixed-speed three-phase motors, sizes S00, S0, S2 and S3, with integrated bypass contact system
- Version for fixed-speed three-phase motors in a 22.5 mm enclosure without bypass

Soft starters rated up to 75Hp (at 460 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple commissioning are just three of the many advantages of this soft starter.

Function

The space required by the compact SIRIUS 3RW30 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The <u>bypass contacts</u> of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e. g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this unbalance, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %. The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause.

It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the ongoing dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

- Soft starting with voltage ramp; the starting voltage setting range U_s is 40 % to 100 % and the ramp time t_R can be set from 0 s to 20 s
- Integrated bypass contact system to minimize power loss
- · Setting with two potentiometers
- Simple mounting and commissioning
- Mains voltages at 50/60 Hz, 200 to 480 V
- Two control voltage versions 24 V AC/DC and 110 to 230 V AC/DC
- Wide temperature range from -25 °C to +60 °C
- The built-in auxiliary contact ensures user-friendly control and possible further processing within the system (for status graphs see page 7/53)

2

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4

7

3RW Soft Starters

3RW30

for standard applications

Technical specifications

·							
Туре				3RW30 1., 3RW	/30 2.	3RW30 3., 3RW	/30 4.
Control electronics							
Rated values Rated control supply voltage • Tolerance		Terminal A1/A2	V %	24 ±20	110 230 -15/+10	24 ±20	110 230 -15/+10
Rated control supply current STANDBY During pick-up ON			mA mA mA	< 50 < 100 < 100	6 15 15	20 < 4000 20	< 50 < 500 < 50
Rated frequency Tolerance			Hz %	50/60 ±10			
Control input IN Power consumption with version • 24 V DC • 110/230 V AC			mA mA	ON/OFF Approx. 12 AC: 3/6; DC: 1.5	5/2		
Relay outputs			IIIA	AC. 3/0, DC. 1.0)/3		
Output 1 Rated operational current	ON	13/14	A A	Operating indica 3 AC-15/AC-14 1 DC-13 at 24 V	at 230 V,		
Protection against overvoltages Short-circuit protection				4 A gL/gG opera	eans of varistor throug ational class; is not included in scop		
Operating indications			LEDs	DEVICE	STATE/BYPASSED/ FAILURE	DEVICE	STATE/BYPASSED/ FAILURE
Off Start Bypass				Green Green Green	Off Green flashing Green	Green Green Green	Off Green flashing Green
Error signals • 24 V DC:				Off Off	Red Red	Off Off	Red Red
Electrical overloading of bypass (reset by removing IN command) Missing mains voltage, phase failure, missing load Device fault				Yellow Green Red	Red Red Red	 Green Red	Red Red
Туре				3RW30 1 3R	W30 4.		
Control times and negonitary						Factory default	t .
Control times and parameters Control times Closing time (with connected control voltage) Closing time (automatic/mains contactor mode)			ms ms	< 50 < 300			
Mains failure bridging time Control supply voltage			ms	50			
Mains failure response time ¹⁾ Load circuit			ms	500			
Starting parameters • Starting time • Starting voltage			s %	0 20 40 100		7.5 40	
Start-up detection				No			
Operating mode output 13/14 Rising edge at		command		ON			

¹⁾ Mains failure detection only in standby state, not during operation.

for standard applications

Туре		3RW30 1BB.4 3RW30 4BB.4
Power electronics		
Rated operational voltage Tolerance	V AC %	200 480 -15/+10
Rated frequency Tolerance	Hz %	50/60 ±10
Uninterrupted duty at 40 °C (% of $I_{\rm e}$)	%	115
Minimum load (% of $I_{\rm e}$)	%	10 (at least 2 A)
Maximum cable length between soft starter and motor	m	300
Permissible installation height	m	5000 (derating from 1000, see characteristic curves); higher on request
Permissible mounting position (auxiliary fan not available)		10°-10° 10° 10° 10° 10° 10° 10° 10° 10° 10°
Permissible ambient temperature Operation Storage	°C	-25 +60; (derating from +40) -40 +80
Degree of protection		IP20 for 3RW30 1. and 3RW30 2.; IP00 for 3RW30 3. and 3RW30 4.

Туре		3RW30 13	3RW30 14	3RW30 16	3RW30 17	3RW30 18
Power electronics				40 °C/ 50 °C /60	°C	
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	3.6/ 3.3 /3	6.5/ 6 /5.5	9/ 8 /7	12.5/ 12 /11	17.6/ 17 /14
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx.		0.25	0.5	1	2	4
\bullet During starting with 300 % $I_{ m M}$ (40 °C)	W	6	13	20	20	29
Permissible rated motor current and starts per hour for normal starting (Class 10)						
- Rated motor current $I_{ m M}^{2)}$, starting time 10 s - Starts per hour $^{3)}$	A 1/h	3.6/ 3.3 /3 200/ 150 /70	6.5/ 6 /5.5 87/ 60 /50	9/ 8 /7 50	12.5/ 12 /11 85/ 70 /60	17.6/ 17 /14 62/ 46 /60
- Rated motor current $I_{\mathrm{M}}^{(2)}$, starting time 20 s - Starts per hour $^{(3)}$	A 1/h	3.6/ 3.3 /3 150/ 100 /50	6.5/ 6 /5.5 64/ 46 /28	9/ 8 /7 35	12.5/ 12 /11 62/ 47 /37	17.6/ 17 /14 45/ 32 /43

 $^{^{\}rm 1)}$ Measurement at 60 $^{\rm o}{\rm C}$ according to UL/CSA not required.

 $^{^{3)}}$ For intermittent duty S4 with ON period = 30 %, $T_{\rm u}$ = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

Туре		3RW30 26	3RW30 27	3RW30 28
Power electronics			40 °C/ 50 °C /60 °C	
Load rating with rated operational current I _e ■ Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	25.3/ 23 /21	32.2/ 29 /26	38/ 34 /31
Power loss • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. • During starting with 300 % I _M (40 °C)	W	8 47	13 55	19 64
Permissible rated motor current and starts per hour for normal starting (Class 10)	VV	41	55	04
- Rated motor current ${I_{\rm M}}^2$, starting time 10 s - Starts per hour $^{3)}$	A 1/h	25/ 23 /21 23	32/ 29 /26 23	38/ 34 /31 19
- Rated motor current $I_{\rm M}^{\rm 2)}$, starting time 20 s - Starts per hour $^{\rm 3)}$	A 1/h	25/ 23 /21 15	32/ 29 /26 16	38/ 34 /31 12

¹⁾ Measurement at 60 °C according to UL/CSA not required.

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7

²⁾ With 300 % I_M.

 $^{^{2)}}$ With 300 % $I_{\rm M}.$

³⁾ For intermittent duty S4 with ON period = 30 %, T_u = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

3RW Soft Starters

3RW30

for standard applications

Туре		3RW30 36	3RW30 37	3RW30 38	3RW30 46	3RW30 47				
Power electronics			40 °C/ 50 °C /60 °C							
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	45/ 42 /39	63/ 58 /53	72/ 63 /60	80/ 73 /66	106/ 98 /90				
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6	12	15	12	21				
• During starting with 300 % $I_{\rm M}$ (40 °C)	W	79	111	125	144	192				
Permissible rated motor current and starts per hour for normal starting (Class 10)										
- Rated motor current $I_{\rm M}^{2)}$, starting time 10 s - Starts per hour $^{3)}$	A 1/h	45/ 42 /39 38	63/ 58 /53 23	72/ 63 /60 22	80/ 73 /66 22	106/ 98 /90 15				
- Rated motor current $I_{\rm M}{}^2$, starting time 20 s - Starts per hour 3)	A 1/h	45/ 42 /39 26	63/ 58 /53 15	72/ 63 /60 15	80/ 73 /66 15	106/ 98 /90 10				

 $^{^{\}rm 1)}$ Measurement at 60 $^{\circ}{\rm C}$ according to UL/CSA not required.

 $^{^{2)}}$ With 300 % $\emph{I}_{\textrm{M}}.$

³⁾ For intermittent duty S4 with ON period = 30 %, T_u = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

3RW Soft Starters

for standard applications

Soft starters	Туре		3RW30 1.	3RW30 2.	3RW30 3.	3RW30 4.
Conductor cross-se				_	_	
Screw terminals	Main conductors	2	0 (1 0.5)	0 × (1 0.5)	0 × (1 E = 10)	0 v (0 F 10)
Front clamping point connected	• Solid	mm ²	2 x (1 2.5); 2 x (2.5 6) acc. to IEC 60947	2 x (1 2.5); 2 x (2.5 6) acc. to IEC 60947; max. 1 x 10	2 x (1.5 16)	2 x (2.5 16)
NSB00479	• Finely stranded with end sleeve	mm ²	2 x (1.5 2.5); 2 x (2.5 6)	2 x (1 2.5); 2 x (2.5 6)	1 x (0.75 25)	1 x (2.5 35)
	Stranded	mm^2	'	`	1 x (0.75 35)	1 x (4 70)
	AWG cables Solid Solid or stranded	AWG AWG	2 x (16 12) 2 x (14 10)	2 x (16 12) 2 x (14 10)	1 x (18 2)	1 x (10 2/0)
Rear clamping point	StrandedSolid	AWG mm ²	1 x 8	1 x 8	 2 x (1.5 16)	 2 x (2.5 16)
connected	Finely stranded with end sleeve	mm ²			1 x (1.5 25)	1 x (2.5 50)
	Stranded Stranded	mm ²		 	1 x (1.5 25)	1 x (2.5 50)
SB00480	AWG cables Solid or stranded	AWG			1 x (16 2)	1 x (10 2/0)
Poth clamping points		mm ²				
Both clamping points connected	SolidStranded	mm ²	-		2 x (1.5 16) 2 x (1.5 25)	2 x (2.5 16) 2 x (10 50)
	Finely stranded with end sleeve	mm ²		 	2 x (1.5 25)	2 x (10 30) 2 x (2.5 35)
00481	AWG cables Solid or stranded	AWG			2 x (1.5 10)	2 x (2.3 33) 2 x (10 1/0)
					,	(2 , 2)
	Tightening torque	NM Ib. in	2 2.5 18 22	2 2.5 18 22	4.5 40	6.5 58
	Tools	lb.in	18 22 PZ 2	18 22 PZ 2	40 PZ 2	Allen screw 4 mm
	Degree of protection		IP20	IP20	IP20	IP20
	Degree of protection		IF 20	IF 20	(IP00 terminal compartment)	(IP00 terminal compartment)
Spring-type terminals	Main conductors					
	• Solid	mm^2	1 4	1 10		
	Finely stranded with end sleeve	mm ²	1 2.5	1 6, end sleeves without plastic collar		
	AWG cables					
	Solid or stranded (finely stranded)Stranded	AWG AWG	16 14 16 12	16 10 1 x 8		
	Tools	7	DIN ISO 2380- 1A0; 5 x 3	DIN ISO 2380- 1A0; 5 x 3		
	Degree of protection		IP20	IP20		
Busbar connections	Main conductors					
	 With cable lug acc. to DIN 46234 or max. 20 mm wide 	_				
	StrandedFinely stranded	mm ² mm ²	 			2 x (10 70) 2 x (10 50)
	AWG cables, solid or stranded	AWG				2 × (7 1/0)
Soft atastar-	Tuno		2DW20 4 2DW	20.4		
Soft starters Conductor cross-se	Type		3RW30 1 3RW	ou 4.		
	or 2 conductors can be connected):					
Administration (Screw terminals					
	• Solid	mm ²	2 x (0.5 2.5)			
	Finely stranded with end sleeve AWG cables	mm ²	2 x (0.5 1.5)			
	Solid or strandedFinely stranded with end sleeve	AWG AWG	2 x (20 14) 2 x (20 16)			
	Terminal screwsTightening torque					
	Spring-type terminals	lb.in	7 10.3			
	Solid Finely stranded with end sleeve AWG cables, solid or stranded	mm ² mm ² AWG	2 x (0.25 2.5) 2 x (0.25 1.5) 2 x (24 14)			
	, was capies, solid of strailued	/ W # CI	∠ ∧ (∠¬ 1¬)			

For Operation in the Control Cabinet 3RW Soft Starters

for standard applications

Туре			3RW30 03
Control electronics			
Rated values Rated control supply voltage		V	24 230 AC/DC
Tolerance		%	± 10
Rated control supply current		mA	25 4
Rated frequency at AC		Hz	50/60
Tolerance		%	± 10
Starting time		S	0.1 20 (adjustable)
Starting voltage		%	40 100 (adjustable)
Ramp-down time Power electronics		S	0 20 (adjustable)
Rated operational voltage		V AC	200 400
Tolerance		%	± 10
Rated frequency		Hz	50/60
Tolerance		%	±10
Uninterrupted duty (% of $I_{\rm e}$)		%	100
Minimum load ¹⁾ (% of I_e); at 40 °C		%	9
Maximum conductor length betw		m	100 ²⁾
Degree of protection acc. to IEC	60529		IP20 (IP00 terminal compartment)
Permissible installation height		m	5000 (derating from 1000, see characteristic curves); higher on request
Permissible mounting position			
			10° 10° 10° 10° 10° 10° 10° 10° 10° 10°
Permissible ambient temperature Operation	9	°C	-25 +60; (derating from +40)
Storage		°C	-40 +80
Load rating with rated operation. • Acc. to IEC and UL/CSA ¹⁾ , for inc At 40 °C - At 50 °C - At 60 °C		A A A	3 2.6 2.2
• Acc. to IEC and UL/CSA1), for bu	utt-mounting, AC-53a		
- At 40 °C - At 50 °C		A A	2.6 2.2
- At 60 °C		A	1.8
Power loss			
	ting with uninterrupted rated opera-	W	6.5
tional current (40 °C) approx. • At utilization of max. switching free	equency	W	3
Permissible starts per hour			
• For intermittent duty S4, $T_u = 40$	°C, stand-alone installation vertical	1/h	1500
• ON period = 70 %		% I _e /S	300/0.2
Conductor cross-sections	. Main conductors		
Screw terminals (1 or 2 conductors connectable)	Main conductors Solid	mm ²	1 x (0.5 4);
For standard screwdriver			2 x (0.5 2.5)
size 2 and Pozidriv 2	- Finely stranded with end sleeve	IIIU-	1 x (0.5 2.5); 2 x (0.5 1.5)
	 Stranded AWG cables, solid or stranded 	mm² AWG	2 x (20 14)
	Terminal screwsTightening torque	NM lb.in	M3, PZ2 0.8 1.2 7.1 8.9
	Auxiliary conductors	ma m - ?	1,,,(0,5, 1).
	- Solid	mm ²	1 x (0.5 4); 2 x (0.5 2.5)
	 Finely stranded with end sleeve AWG cables, solid or stranded 	mm² AWG	1 x (0.5 2.5); 2 x (0.5 1.5) 2 x (20 14)
	Terminal screws Tightening torque	NM lb.in	M3, PZ2 0.8 1.2 7 8.9
Spring-type terminals	Main and auxiliary conductors		
	• Solid	mm ²	2 x (0.25 1.5)
	 Finely stranded with end sleeve 	mm ²	2 x (0.25 1)
	AWG cables, action of a stronger of	mm ²	2 x (24 16)
4)	solid or stranded		2) If the control of

¹⁾ The rated motor current (specified on the motor's name plate) should at least amount to the specified percentage of the SIRIUS soft starter unit's

²⁾ If this value is exceeded, problems with line capacities may arise, which can result in false firing.

for standard applications

	Standard	Parameters		
Electromagnetic compatibility Acc. to EN 60947-4-2				
EMC interference immunity				
Electrostatic discharge (ESD)	EN 61000-4-2	±4 kV contact discharge, ±8 kV air discharge		
Electromagnetic RF fields	EN 61000-4-3	Frequency range: 80 2000 MHz with 80 % at 1 kHz Degree of severity 3: 10 V/m		
Conducted RF interference	EN 61000-4-6	Frequency range: 150 kHz 80 MHz with 80 % at 1 kHz Interference 10 V		
RF voltages and RF currents on cables				
• Burst	EN 61000-4-4	±2 kV/5 kHz		
• Surge	EN 61000-4-5	±1 kV line to line ±2 kV line to earth		
EMC interference emission				
EMC interference field strength	EN 55011	Limit value of Class A at 30 1000 MHz, limit value of Class B for 3RW30 2.; 24 V AC/DC		
Radio interference voltage	EN 55011	Limit value of Class A at 0.15 30 MHz, limit value of Class B for 3RW30 2.; 24 V AC/DC		
Radio interference suppression filters				
Degree of noise suppression A (industrial applications)	Not required			
Degree of noise suppression B (applications for residential areas) Control voltage • 230 V AC/DC • 24 V AC/DC	· · · · · · · · · · · · · · · · · · ·			

Degree of noise suppression B cannot be obtained through the use of filters as the strength of the electromagnetic field is not attenuated by the filter

Rated current	Recommended filters ¹⁾							
Soft starters	Voltage range 200 480 V							
	Filter type	Rated current filters	Terminals					
Α		A	mm ²					
45	4EF1512-1AA10	50	16					
63	4EF1512-2AA10		25					
			25					
			25 50					
	Soft starters A 45	Soft starters Voltage range 200 480 V Filter type A 45 4EF1512-1AA10 63 4EF1512-2AA10 72 4EF1512-3AA10 80 4EF1512-3AA10	Soft starters Voltage range 200 480 V Filter type Rated current filters A 45 4EF1512-1AA10 63 4EF1512-2AA10 72 4EF1512-3AA10 90 80 4EF1512-3AA10 90					

¹⁾ The radio interference suppression filter is used to remove the conducted interference from the main circuit. The field-related emissions comply with

degree of noise suppression B. Filter selection applies under standard conditions: 10 starts per hour, start time 4 s at 300 % $I_{\rm e}$.

Type Number	Max. Fuse Class K5, RK5, RK1	Max. Fuse Class J	Short Voltage Circuit	Voltage
Standard short circ	uit ratings 3RW30			
3RW30 13		15 A	5 kA	480 V
3RW30 14		25 A	5 kA	480 V
3RW30 16		36 A	5 kA	480 V
3RW30 17		50 A	5 kA	480 V
3RW30 18		60 A	5 kA	480 V
3RW30 26	100 A	100 A	5 kA	480 V
3RW30 27	125 A	125 A	5 kA	480 V
3RW30 28	125 A	125 A	5 kA	480 V
3RW30 36	175 A	175 A	10 kA	480 V
3RW30 37	250 A	250 A	10 kA	480 V
3RW30 38	250 A	250 A	10 kA	480 V
3RW30 46		300 A	10 kA	480 V
3RW30 47		350 A	10 kA	480 V
High capacity short	t circuit ratings 3RW30			
3RW30 13		15 A	42 kA	480 V
3RW30 14		25 A	42 kA	480 V
3RW30 16		25 A	42 kA	480 V
3RW30 17		25 A	42 kA	480 V
3RW30 18		25 A	42 kA	480 V
3RW30 26	60 A	100 A	42 kA	480 V
3RW30 27	60 A	125 A	42 kA	480 V
3RW30 28	60 A	125 A	42 kA	480 V
3RW30 36	100 A	175 A	30 kA	480 V
3RW30 37	100 A	200 A	30 kA	480 V
3RW30 38	100 A	200 A	30 kA	480 V
3RW30 46	110 A	200 A	42 kA	480 V
3RW30 47	110 A	200 A	42 kA	480 V

For solid-state motor controller, Type 3RW301: Applicable in an enclosure with minimum overall dimensions of 200 by 120 by 200 mm. For solid-state motor controller, Type 3RW302: Applicable in an enclosure with minimum overall dimensions of 370 by 175 by 195 mm. For solid-state motor controller, Type 3RW303: Applicable in an enclosure with minimum overall dimensions of 450 by 220 by 235 mm. For solid-state motor controller, Type 3RW304: Applicable in an enclosure with minimum overall dimensions of 450 by 220 by 235 mm.

3RW Soft Starters

3RW30

for standard applications

Fuse assignment

The type of coordination to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector/circuit breaker and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, semiconductor fuses must be fitted in the motor feeder.

Fused version (line protection only)



		3- / ₫								
Soft starters		Line protection,	maximum		Line contactors					
ToC 1	Rated current		Rated current	Size	(optional)					
Q11 Type	A	F1 Type	A		Q21					
Type of coordination "1" 1 : I_q = 65 kA at 480 V 10 %										
3RW30 03 ²⁾	3	3NA3 805 ³⁾	20	000	3RT10 15					
3RW30 13 3RW30 14	3.6 6.5	3NA3 803-6 3NA3 805-6	10 16	000	3RT10 15 3RT10 15					
3RW30 16 3RW30 17 3RW30 18	9 12.5 17.6	3NA3 807-6 3NA3 810-6 3NA3 814-6	20 25 35	000 000 000	3RT10 16 3RT10 24 3RT10 26					
3RW30 26 3RW30 27 3RW30 28	25 32 38	3NA3 822-6 3NA3 824-6 3NA3 824-6	63 80 80	00 00 00	3RT10 26 3RT10 34 3RT10 35					
3RW30 36 3RW30 37 3RW30 38	45 63 72	3NA3 130-6 3NA3 132-6 3NA3 132-6	100 125 125	1 1 1	3RT10 36 3RT10 44 3RT10 45					
3RW30 46 3RW30 47	80 106	3NA3 136-6 3NA3 136-6	160 160	1	3RT10 45 3RT10 46					

¹⁾ The types of coordination are explained in more detail under "3RA1 Fuseless Load Feeders".

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to www.siemens.com/sitor —> "Products" —> "BETA Protecting"—> "SITOR"

		3-) 1/2			
Soft starters		All-range fuses			Line contactors
ToC 2	Rated current		Rated current	Size	(optional)
Q11 Type	A	F'1 Type	А		Q21
Type of coordi	ination "2" ¹⁾	: I _q = 65 kA at 480 V 1	0 %		
3RW30 03 ²⁾	3	3NE1 813-0 ³⁾	16	000	3RT10 15
3RW30 13 3RW30 14	3.6 6.5	3NE1 813-0 3NE1 813-0	16 16	000	3RT10 15 3RT10 15
3RW30 16 3RW30 17 3RW30 18	9 12.5 17.6	3NE1 813-0 3NE1 813-0 3NE1 814-0	16 16 20	000 000 000	3RT10 16 3RT10 24 3RT10 26
3RW30 26 3RW30 27 3RW30 28	25 32 38	3NE1 803-0 3NE1 020-2 3NE1 020-2	35 80 80	000 00 00	3RT10 26 3RT10 34 3RT10 35
3RW30 36 3RW30 37 3RW30 38	45 63 72	3NE1 020-2 3NE1 820-0 3NE1 820-0	80 80 80	00 000 000	3RT10 36 3RT10 44 3RT10 45
3RW30 46 3RW30 47	80 106	3NE1 021-0 3NE1 022-0	100 125	00 00	3RT10 45 3RT10 46

¹⁾ The types of coordination are explained in more detail under "3RA1 Fuseless Load Feeders"

The type of coordination "2" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

Type of coordination "1"

Type of coordination "2"

The types of coordination are explained in more detail under "3RA1 Fuseless Load Feeders".

These types of coordination are indicated in the Technical specifications by gray backgrounds.

 $^{^{2)}}$ I_{q} = 50 kA at 400 V.

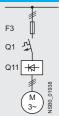
³⁾ 3NA3 805-1 (LV HRC00), 5SB2 61 (DIAZED), 5SE2 201-6 (NEOZED)

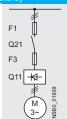
The type of coordination "1" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

 $^{^{2)}}$ $I_{\rm Q}$ = 50 kA at 400 V.

³⁾ No SITOR fuse required! Alternatively: 3NA3 803 (LV HRC00), 5SB2 21 (DIAZED), 5SE2 206 (NEOZED).

Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)





For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to www.siemens.com/sitor —> "Products" —> "BETA Protecting" —> "SITOR"

Soft starters	Semiconductor		fuses, minimum	1	Semiconductor	fuses, maximum		Semiconductor fuses, minimum						
ToC 2	Rated current		Rated current	Size		Rated current	Size		Rated current	Size				
Q11 Type	A	F3 Type	А		F3 Type	A		F3 Type	A					
Type of coor	Type of coordination "2" 1 : I_{q} = 65 kA at 480 V 10 %													
3RW30 03 ²⁾	3													
3RW30 13 3RW30 14	3.6 6.5		 					3NE4 101 3NE4 101	32 32	0				
3RW30 16 3RW30 17 3RW30 18	9 12.5 17.6	 	 	 	 3NE3 221	 100	 1	3NE4 101 3NE4 101 3NE4 101	32 32 32	0 0 0				
3RW30 26 3RW30 27 3RW30 28	25 32 38	 	 	 	3NE3 221 3NE3 222 3NE3 222	100 125 125	1 1 1	3NE4 102 3NE4 118 3NE4 118	40 63 63	0 0 0				
3RW30 36 3RW30 37 3RW30 38	45 63 72	 3NE3 221	 100	 1	3NE3 224 3NE3 225 3NE3 227	160 200 250	1 1 1	3NE4 120 3NE4 121	80 100 	0 0 				
3RW30 46 3RW30 47	80 106	3NE3 222 3NE3 224	125 160	1	3NE3 225 3NE3 231	200 350	1	 	 					

Soft starters		Semicondu	ictor fuses ma	κ.	Semicondu	ctor fuses min.		Semicondu	ctor fuses max		Cylindrical fuses	
ToC 2	Rated current		Rated current	Size		Rated current	Size		Rated current	Size		Rated current
Q11 Type	A	F3 Type	А		F3 Type	A		F3 Type	A		F3 Type	A
Type of coor	dination "2"1)	: I _q = 65 kA	at 480 V 10 %									
3RW30 03 ²⁾	3				3NE8 015-1	25	00	3NE8 015-1	25	00	3NC1 010	10
3RW30 13 3RW30 14	3.6 6.5	 			3NE8 015-1 3NE8 015-1	25 25	00 00	3NE8 015-1 3NE8 015-1	25 25	00 00	3NC2 220 3NC2 220	
3RW30 16 3RW30 17 3RW30 18	9 12.5 17.6	 	 	 	3NE8 015-1 3NE8 015-1 3NE8 003-1	25 25 35	00 00 00	3NE8 015-1 3NE8 018-1 3NE8 021-1	25 63 100	00 00 00	3NC2 220 3NC2 250 3NC2 263	50
3RW30 26 3RW30 27 3RW30 28	25 32 38	3NE4 117 3NE4 118 3NE4 118	50 63 63	0 0 0	3NE8 017-1 3NE8 018-1 3NE8 020-1	50 63 80	00 00 00	3NE8 021-1 3NE8 022-1 3NE8 022-1	100 125 125	00 00 00	3NC2 263 3NC2 280 3NC2 280	80
3RW30 36 3RW30 37 3RW30 38	45 63 72	3NE4 120 3NE4 121	80 100 	0	3NE8 020-1 3NE8 021-1 3NE8 022-1	80 100 125	00 00 00	3NE8 024-1 3NE8 024-1 3NE8 024-1	160 160 160	00 00 00	3NC2 280 	80
3RW30 46 3RW30 47	80 106	 	 		3NE8 022-1 3NE8 024-1	125 160	00 00	3NE8 024-1 3NE8 024-1	160 160	00 00	 	

Soft starters		Line contactors	Motor starter protect	tors	Line protection, r	naximum						
ToC 2	Rated current	(optional)	400 V +10 %	Rated current		Rated current	Size					
Q11		Q21	Q1		F1							
Туре	A		Type	A	Type	Α						
Type of coordination "2" 1 : I_q = 65 kA at 480 V 10 %												
3RW30 03 ²⁾	3	3RT10 15	3RV10 11-1EA10	4	3NA3 805 ³⁾	20	000					
3RW30 13	3.6	3RT10 15	3RV10 21-1FA10	5	3NA3 803-6	10	000					
3RW30 14	6.5	3RT10 15	3RV10 21-1HA10	8	3NA3 805-6	16	000					
3RW30 16	9	3RT10 16	3RV10 21-1JA10	10	3NA3 807-6	20	000					
3RW30 17	12.5	3RT10 24	3RV10 21-1KA10	12.5	3NA3 810-6	25	000					
3RW30 18	17.6	3RT10 26	3RV10 21-1BA10	20	3NA3 814-6	35	000					
3RW30 26 3RW30 27	25	3RT10 26	3RV10 31-4DA10	25	3NA3 822-6	63	00					
3RW30 27 3RW30 28	32 38	3RT10 34 3RT10 35	3RV10 31-4EA10 3RV10 31-4FA10	32 40	3NA3 824-6 3NA3 824-6	80 80	00					
	45	3RT10 36					1					
3RW30 36 3RW30 37	45 63	3RT10 36	3RV10 31-4GA10 3RV10 41-4JA10	45 63	3NA3 130-6 3NA3 132-6	100 125	1					
3RW30 38	72	3RT10 45	3RV10 41-4KA10	75	3NA3 132-6	125	1					
3RW30 46	80	3RT10 45	3RV10 41-4LA10	90	3NA3 136-6	160	1					
3RW30 47	106	3RT10 46	3RV10 41-4MA10	100	3NA3 136-6	160	1					

1) The types of coordination are explained under "3RA1 Fuseless Load Feeders". The type of coordination "2" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit

breaker/fuse), not to any additional components in the feeder. $^{2)}~I_{\rm q}=50$ kA at 400 V. $^{3)}~3{\rm NA}3~805\text{-}1$ (LV HRC00), SSB2 61 (DIAZED).

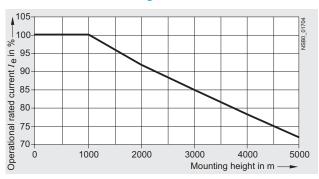
3RW Soft Starters

3RW30

for standard applications

Characteristic curves

Permissible installation height



At an installation height above 2000 m, the max. permissible operational voltage is reduced to 460 V.

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 300 % $I_{\rm 1 motor}$). The soft starter rating can be selected to be as high as the rating of the motor used

Application		Conveyor belt	Roller conveyor	Compressor	Small fan	Pump	Hydraulic pump
Starting parameters							
 Voltage ramp and current limiting 							
 Starting voltage 	%	70	60	50	40	40	40
- Starting time	S	10	10	20	20	10	10

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

For Operation in the Control Cabinet 3RW Soft Starters

for standard applications

Configuration

The 3RW solid-state motor controllers are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

If necessary, an overload relay for heavy starting must be selected where long starting times are involved. PTC sensors are recommended.

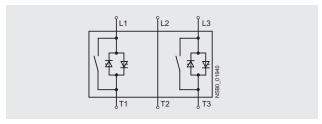
In the motor feeder between the SIRIUS 3RW soft starter and the motor, no capacitive elements are permitted (e. g. no reactivepower compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft

All elements of the main circuit (such as fuses, controls and overload relays) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical

Note:

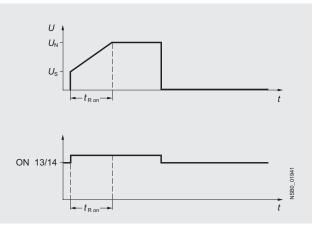
When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram



A bypass contact system is already integrated in the 3RW30 soft starter and therefore does not have to be ordered separately.

Status graphs



Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:

www.usa.siemens.com/softstarters > Software

More information can be found on the Internet at: www.usa.siemens.com/softstarters

3RW Soft Starters

3RW40 for standard applications

Overview

SIRIUS 3RW40 soft starters have all the same advantages as the 3RW30 soft starters.

The SIRIUS 3RW40 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

At the same time this soft starter comes with additional integrated functions such as adjustable current limiting, motor overload and intrinsic device protection, and optional thermistor motor protection. The higher the motor rating, the more important these functions because they make it unnecessary to purchase and install protection equipment such as overload relays.

Internal intrinsic device protection prevents the thermal overloading of the thyristors and the power section defects this can cause. As an option the thyristors can also be protected by semiconductor fuses from short-circuiting.

Thanks to integrated status monitoring and fault monitoring, this compact soft starter offers many different diagnostics options. Up to four LEDs and relay outputs permit differentiated monitoring and diagnostics of the operating mechanism by indicating the operating state as well as for example mains or phase failure, missing load, non-permissible tripping time/class setting, thermal overloading or device faults.

Soft starters rated up to 300 Hp (at 460 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple start-up are just three of the many advantages of the SIRIUS 3RW40 soft starters.

"Increased safety" type of protection EEx e according to ATEXdirective 94/9/EC

The 3RW40 soft starter sizes S0 to S12 are suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e.

See "Appendix" -> "Standards and approvals" -> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".

Function

The space required by the compact SIRIUS 3RW40 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The <u>bypass contacts</u> of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e. g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The starting current of particularly powerful operating mechanisms can place an unjustifiable load on the local supply system. Soft starters reduce this starting current by means of their voltage ramp. Thanks to the <u>adjustable current limiting</u>, the SIRIUS 3RW40 soft starter takes even more pressure off the supply system. It leaves the set start ramp during the ramp-up – the ramp gradient is fixed by the starting voltage and the ramp time – as soon as the selected current limit is reached. From this moment the voltage of the soft starter is controlled so that the current supplied to the motor remains constant. This process is ended either by completion of the motor ramp-up or by tripping by the intrinsic device protection or the motor overload protection. As the result of this function the actual motor ramp-up can well take longer than the ramp time selected on the soft starter.

Thanks to the integrated motor overload protection according to IEC 60947-4-2 there is no need of an additional overload relay on the new soft starters. The rated motor current, the setting of the overload tripping time (Class times) and the reset of the motor overload protection function can be adjusted easily and quickly. Using a 4-step rotary potentiometer it is possible to set different overload tripping times on the soft starter. In addition to Class 10, 15 and 20 it is also possible to switch off the motor overload protection if a different motor management control device is to be used for this function, e. g. with connection to PROFIBUS.

Device versions with thermistor motor protection evaluation are available up to a rating of 55 kW (at 400 V). A "Thermoclick" measuring probe can be connected directly, as can a PTC of type A. Thermal overloading of the motor, open circuits and short-circuits in the sensor circuit all result in the direct disconnection of the soft starter. And if ever the soft starter trips, various reset options are available the same as with intrinsic device protection and motor load protection: manually with the reset button, automatically or remotely through brief disconnection of the control voltage.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this unbalance, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %.

The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause. It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

3RW Soft Starters

3RW40 for standard applications

As an option the thyristors can also be protected by SITOR semiconductor fuses from short-circuiting so that the soft starter is still functional after a short-circuit (type of coordination 2). Three LEDs are used to indicate the operating state as well as possible errors, e. g. non-permissible tripping time (CLASS setting), mains or phase failure, missing load, thermal overloading or device faults.

- \bullet Soft starting with voltage ramp; the starting voltage setting range $U_{\rm S}$ is 40 to 100 % and the ramp time $t_{\rm R}$ can be set from 0 to 20 s. $^{3)}$
- \bullet Smooth ramp-down with voltage ramp; the running down time $t_{\rm off}$ can be set between 0 s to 20 s. $^{3)}$
- Solid-state motor overload and intrinsic device protection
- Optional thermistor motor protection (up to size S3)
- Remote reset (integrated up to size S3, optional for size S6 and larger)
- Adjustable current limiting

- Integrated bypass contact system to minimize power loss
- Setting with potentiometers
- Simple mounting and commissioning
- Integrated status monitoring and fault monitoring
- Mains voltages 50/60 Hz, 200 to 600 V
- Various control voltage versions
- Sizes S0 to S3:
 24 V AC/DC and
 110 to 230 V AC/DC
- 110 to 230 V AC/DC - Sizes S6 to S12: 115 V AC and 230 V AC

Control by way of the internal 24 V DC supply and direct control by means of PLC are possible.

- Wide temperature range from -25 to +60 °C
- Built-in auxiliary contacts ensure user-friendly control and possible further processing within the system (for status graphs see page 7/68)

Technical specifications

Туре		·	3RW40 2.		3RW40 3., 3RW40 4.		
Control electronics							
Rated values Rated control supply voltage • Tolerance		Terminal A1/A2	V %	24 ±20	110 230 -15/+10	24 ±20	110 230 -15/+10
Rated control supply current STANDBY During pick-up ON without fan ON with fan			mA mA mA	< 150 < 200 < 250 < 300	< 50 < 100 < 50 < 70	< 200 < 5000 < 200 < 250	< 50 < 1500 < 50 < 70
Rated frequency Tolerance			Hz %	50/60 ±10			
Control inputs				ON/OFF			
Rated operational current • AC • DC			mA mA	Approx. 12 Approx. 12	3/6 1.5/3	Approx. 12 Approx. 12	3/6 1.5/3
Relay outputs Output 1 Output 2 Output 3 Rated operational current	ON/RUN mode ¹⁾ BYPASSED OVERLOAD/FAILURE	13/14 23/24 95/96/98	A	Operating indication (NO) Bypass indication (NO) Overload/error indication (NC/NO) 3 AC-15/AC-14 at 230 V,			
Protection against overvoltages			А	1 DC-13 at 24 V	ns of varistor through	gh contact	
Short-circuit protection				4 A gL/gG operati	`		

1) Factory	default: ON mode.
Туре	

Туре		3RW40 5. 3RW40 7.			3RW40 7.		
Control electronics							
Rated values Rated control supply voltage • Tolerance		Terminal A1/A2	V AC %	115 -15/+10	230	115 -15/+10	230
Rated control supply current STANE Rated control supply current ON ¹⁾ Rated frequency • Tolerance	DBY		mA mA Hz %	15 440 50/60 ±10	200	15 660 50/60 ±10	360
Control inputs IN Rated operational current Rated operational voltage			mA V DC	ON/OFF Approx. 10 acc. to DIN 19240 24 from internal supply dc+ or external DC supply (acc. to DIN 19240) through terminals and IN			and IN
Relay outputs Output 1 Output 2 Output 3	ON/RUN mode ²⁾ BYPASSED OVERLOAD/FAILURE	13/14 23/24 95/96/98		Operating indication (NO) Bypass indication (NO) Overload/error indication (NC/NO)			
Rated operational current Protection against overvoltages Short-circuit protection			A A	3 AC-15/AC-14 at 230 V, 1 DC-13 at 24 V Protection by means of varistor through contact 4 A gL/gG operational class; 6 A quick (fuse is not included in scope of supply)			
N v v v v v v v v v v v v v v v v v v v				3)			

¹⁾ Values for the coil power consumption at +10 % \emph{U}_{n} , 50 Hz.

3) Actual motor start times are load dependent.

Siemens Industry, Inc. Industrial Controls Catalog 2

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²⁾ Factory default: ON mode.

For Operation in the Control Cabinet 3RW Soft Starters

3RW40

for standard applications

Туре		3RW40 2., 3RW40	0.3 3RW40.4		
Control electronics		3HW40 2., 3HW40	0 3., 3HW40 4.		
Operating indications Off Start Bypass Ramp-down	LEDs	DEVICE Green Green Green Green	STATE/BYPASS Off Green flashing Green Green flashing	ED/FAILURE	OVERLOAD Off Off Off Off
Alarm signals I _e /Class setting not permissible Start inhibited/thyristors too hot		Green Yellow flashing	Not relevant Not relevant		Red flashing Off
Error signals • 24 V: U < 0.75 x U _S or U > 1.25 x U _S • 110 230 V: U < 0.75 x U _S or U > 1.15 x U _S Non-permissible I _e /Class setting for edge 0 −> 1 on input IN Motor protection shut-down (overload thermistor) Thermistor defective (open circuit, short-circuit)		Off Off Green Green Green	Red Red Off Off		Off Off Red flashing Red Red flickering
Thermal overloading of the thyristors Missing mains voltage, phase failure, missing load Device fault		Yellow Green Red	Red Red Red		Off Off Off
Туре		3RW40 5. and 3RW40 7.			
Control electronics	. 50				
Operating indications Off Start Bypass Ramp-down	LEDs	Green Green Green Green Green	STATE/BYPASSED Off Green flashing Green Green flashing	Off Off Off Off	OVERLOAD Off Off Off Off
$ \begin{array}{l} \textbf{Alarm signals} \\ I_e \text{/Class setting not permissible} \\ \textbf{Start inhibited/thyristors too hot} \end{array} $		Green Yellow flashing	Not relevant Not relevant	Not relevant Not relevant	Red flashing Off
Error signals $U < 0.75 \times U_{\rm S}$ or $U > 1.15 \times U_{\rm S}$ Non-permissible $I_{\rm e}$ /Class setting for edge 0 $->$ 1 on input IN Motor protection shut-down		Off Green Green	Off Off Off	Red Red Off	Off Red flashing Red
Thermal overloading of the thyristors Missing mains voltage, phase failure, missing load Device fault		Yellow Green Red	Off Off Off	Red Red Red	Off Off Off

Туре			3RW40	
Durch skip of constitute				Factory default
Protection functions				
Motor protection functions Trips in the event of Trip class to IEC 60947-4-1 Phase failure sensitivity	C %	Class	Thermal overloading of the motor 10/15/20 > 40	10
Overload warning Thermistor protection acc. to IEC 60947-8, type A/IEC Reset option after tripping	60947-5-1		No Yes ¹⁾ Manual/automatic/remote reset ²⁾ (MAN/AUTO/REMOTE ²⁾)	
Recovery time	m	nin	5	
Device protection functions Trips in the event of Reset option after tripping			Thermal overloading of the thyristors or bypass ³⁾ Manual/automatic/remote reset ²⁾	
			(MAN/AUTO/REMOTE ²⁾)	
Recovery time • During overloading of the thyristors • During overloading of the bypass	S S		30 60	
Control times and parameters				
Control times				
Closing time (with connected control voltage) Closing time (automatic/mains contactor mode) Recovery time (closing command in active ramp-dow)	m	ns ns ns	< 50 <300 100	
Mains failure bridging time Control supply voltage	m	ns	50	
Mains failure response time Load circuit	m	ns	500	
Reclosing lockout after overload trip Motor protection trip Device protection trip	m	nin	5	
During overloading of the thyristors During overloading of the bypass	s s		30 60	
Starting parameters Starting time Starting voltage Starting current limit	S %		0 20 40 100 1.3 5 x I_{Θ}	7.5 40 5 × I _e
Ramp-down parameters Ramp-down time			0 20	0
Reset mode parameters (for motor/device protection	Shut-down)	1	0 20	U
Manual reset Automatic reset Remote reset (REMOTE) ²⁾	LEDs LEDs LEDs		Off Yellow Green	Off
Start-up detection			Yes	
Operating mode output 13/14				
Rising edge at Falling edge at	Start command Off command Ramp-down end		ON RUN	ON

¹⁾ Optional up to size S3 (device variant).

²⁾ Integrated remote reset (REMOTE) available only for 3RW40 2. to 3RW40 4.; remote reset with 3RU19 accessory module available for 3RW40 5. and 3RW40 7...

³⁾ Bypass protection up to size S3.

3RW Soft Starters

3RW40

for standard applications

Туре			3RW40 2B.5, 3RW40 3B.5, 3RW40 4B.5		3RW40 5BB.5, 3RW40 7BB.5
Power electronics					
Rated operational voltage Tolerance	V AC %	200 480 -15/+10	400 600 -15/+10	200 460 -15/+10	400 600 -15/+10
Maximum blocking voltage (thyristor)	V AC	1600		1400	1800
Rated frequency Tolerance	Hz %	50/60 ±10			
Uninterrupted duty at 40 °C (% of $I_{\rm e}$)	%	115			
Minimum load (% of minimum selectable rated motor current I_{M})	%	20 (at least 2 A)			
Maximum cable length between soft starter and motor	m	300			
Permissible installation height	m	5000 (derating from 100	00, see characteristi	c curves); higher on	request
Permissible mounting position					
• With auxiliary fan (for 3RW40 2 3RW40 4.)		90° ++++ 90° 22.	.5° 22.5° 6F900		
Without auxiliary fan (for 3RW40 2 3RW40 4.)		(fan integrated in the soft starter			n the soft starter)
Permissible ambient temperature Operation Storage	°C °C	-25 +60; (deratil	ng from +40)		
Degree of protection		IP20 for 3RW40 2. IP00 for 3RW40 3.		IP00	

Туре		3RW40 24	3RW40 26	3RW40 27	3RW40 28
Power electronics			40 °C	C/50 °C/60 °C	
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	12.5/ 11 /10	25.3/ 23 /21	32.2/ 29 /26	38/ 34 /31
Smallest adjustable rated motor current $I_{ m M}$ For the motor overload protection	А	5	10	17	23
Power loss • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. • During starting with 300 % I _M (40°C)	W	2	8 47	13 55	19 64
Permissible rated motor current and starts per hour					
 Normal starting (Class 10) Rated motor current I_M², starting time 3 s Starts per hour³ Rated motor current I_M²⁾⁴, starting time 4 s Starts per hour³ 	A 1/h A 1/h	12.5/ 11 /10 50 12.5/ 11 /10 36	25.3/ 23 /21 23 25.3/ 23 /21 15	32.2/ 29 /26 23 32.2/ 29 /26 16	38/ 34 /31 19 38/ 34 /31 12
 Normal starting (Class 15) Rated motor current I_M²⁾, starting time 4.5 s Starts per hour³⁾ Rated motor current I_M²⁾⁴⁾, starting time 6 s Starts per hour³⁾ 	A 1/h A 1/h	11/ 10 /9 49 11/ 10 /9 36	25.3/ 23 /21 21 25.3/ 23 /21	32.2/ 29 /26 18 32.2/ 29 /26	38/ 34 /31 18 38/ 34 /31 13
 Normal starting (Class 20) Rated motor current I_M²⁾, starting time 6 s Starts per hour³⁾ 	A 1/h	10/ 9 /8 47	21/ 19 /17 21	27/ 24 /21 20	31/ 28 /25 18
- Rated motor current $I_{\rm M}^{2)4)}$, starting time 8 s - Starts per hour $^{3)}$	A 1/h	10/ 9 /8 34	21/ 19 /17 15	27/ 24 /21 14	31/ 28 /25 13

¹⁾ Measurement at 60 °C according to UL/CSA not required.

²⁾ With 300 % IM.

³⁾ For intermittent duty S4 with ON period = 30 %, T_u = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{\}rm 4)}$ Maximum adjustable rated motor current $I_{\rm M}$, dependent on CLASS setting.

3RW Soft Starters

3RW40 for standard applications

Туре		3RW40 36	3RW40 37	3RW40 38	3RW40 46	3RW40 47	
Power electronics		40 °C/ 50 °C /60 °C					
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	45/ 42 /39	63/ 58 /53	72/ 63 /60	80/ 73 /66	106/ 98 /90	
Smallest adjustable rated motor current $I_{\rm M}$ For the motor overload protection	А	23	26	35	43	46	
Power loss • In operation after completed starting with uninterrupted rated operational current (40 °C) approx. • During starting with 300 % $I_{\rm M}$ (40°C)	W	6 79	12 111	15 125	12 144	21 192	
Permissible rated motor current and starts per hour							
• Normal starting (Class 10) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 3 s - Starts per hour ³⁾ - Rated motor current $I_{\rm M}^{\ 2}$, starting time 4 s	A 1/h A	45/ 42 /39 38 45/ 42 /39	63/ 58 /53 23 63/ 58 /53	72/ 63 /60 22 72/ 63 /60	80/ 73 /66 22 80/ 73 /66	106/ 98 /90 15 106/ 98 /90	
- Starts per hour ³⁾	1/h	26	15	15	15	10	
• Normal starting (Class 15) - Rated motor current $I_{\rm M}^{-2}$, starting time 4.5 s - Starts per hour ³⁾	A 1/h	42/ 38 /34 30	50/ 46 /42 34	56/ 52 /46 34	70/ 64 /58 24	84/ 77 /70 23	
- Rated motor current $I_{\rm M}^{\rm ~2)4)}$, starting time 6 s - Starts per hour $^{3)}$	A 1/h	42/ 38 /34 21	50/ 46 /42 24	56/ 52 /46 24	70/ 64 /58 16	84/ 77 /70 17	
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{-2}$, starting time 6 s - Starts per hour ³⁾	A 1/h	38/ 34 /30 30	46/ 42 /38 31	50/ 46 /42 34	64/ 58 /52 23	77/ 70 /63 23	
- Rated motor current $I_{\rm M}^{~2)4}$, starting time 8 s - Starts per hour $^{3)}$	A 1/h	38/ 34 /30 21	46/ 42 /38 22	50/ 46 /42 24	64/ 58 /52 16	77/ 70 /63 16	

 $^{^{\}rm 1)}$ Measurement at 60 °C according to UL/CSA not required.

 $^{^{\}rm 4)}$ Maximum adjustable rated motor current $I_{\rm M}$, dependent on CLASS setting.

Туре		3RW40 55	3RW40 56	3RW40 73	3RW40 74	3RW40 75	3RW40 76		
Power electronics			40 °C/ 50 ° C /60 °C						
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	134/ 117 /100	162/ 145 /125	230/ 205 /180	280/ 248 /215	356/ 315 /280	432/ 385 /335		
Smallest adjustable rated motor current I_{M} For the motor overload protection	А	59	87	80	130	131	207		
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. In operational current (40 °C) approx.	W	60	75	75	90	125	165		
• During starting with 300 % ²⁾ $I_{\rm M}$ (40°C)	W	1043	1355	2448	3257	3277	3600		
Permissible rated motor current and starts per hour									
 Normal starting (Class 10) Rated motor current I_M²⁾, starting time 10 s Starts per hour³⁾ 	A 1/h	134/ 117 /100 20	162/ 145 /125	230/ 205 /180 20	280/ 248 /215 20	356/ 315 /280 16	432/ 385 /335 17		
- Rated motor current $I_{\rm M}^{2)4)$, starting time 20 s - Starts per hour $^{3)}$	A 1/h	134/ 117 /100 7	162/ 145 /125 1.4	230/ 205 /180 9	280/ 248 /215 8	356/ 315 /280 5	432/ 385 /335 5		
 Normal starting (Class 15) Rated motor current I_M²⁾, starting time 15 s Starts per hour³⁾ 	A 1/h	134/ 117 /100	152/ 140 /125	210/ 200 /180 11	250/ 220 /190 13	341/ 315 /280	402/ 385 /335 12		
- Rated motor current $I_{\rm M}^{\rm ~2)4)}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	134/ 117 /100 1.2	152/ 140 /125 1.7	210/ 200 /180 1	250/ 220 /190 6	341/ 315 /280 2	402/ 385 /335 2		
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 20 s - Starts per hour 3)	A 1/h	124/ 112 /100 12	142/ 132 /120 9	200/ 185 /168 10	230/ 205 /180 10	311/ 280 /250 10	10		
- Rated motor current $I_{\rm M}^{\rm 2)4)}$, starting time 40 s - Starts per hour $^{\rm 3)}$	A 1/h	124/ 112 /100 3	142/ 132 /120 3	200/ 185 /168 1	230/ 205 /180 5	311/ 280 /250 1	372/ 340 /305		

 $^{^{\}rm 1)}$ Measurement at 60 $^{\circ}{\rm C}$ according to UL/CSA not required.

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²⁾ With 300 % I_M.

³⁾ For intermittent duty S4 with ON period = 30 %, $T_{\rm U}$ = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode

 $^{^{2)}}$ With 300 % $I_{\rm M}.$

³⁾ For intermittent duty S4 with ON period = 30 %, $T_{\rm u}$ = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{\}rm 4)}$ Maximum adjustable rated motor current $I_{\rm M},$ dependent on CLASS setting.

For Operation in the Control Cabinet 3RW Soft Starters

3RW40

for standard applications

Soft starters	Туре		3RW40 2.	3RW40 3.	3RW40 4.
Conductor cross-sec	ctions				
Screw terminals	Main conductors				
Front clamping point connected	• Solid	mm ²	2 x (1.5 2.5); 2 x (2.5 6) acc. to IEC 60947; max. 1 x 10	2 x (1.5 16)	2 x (2.5 16)
VSB00477	With end sleeve	mm ²	2 x (1.5 2.5); 2 x (2.5 6)	1 x (0.75 25)	1 x (2.5 35)
	Stranded	mm^2		1 x (0.75 35)	1 x (4 70)
	 AWG cables 				
	- Solid	AWG	2 x (16 12)		
	- Solid or stranded	AWG	2 x (14 10)	1 x (18 2)	2 x (10 1/0)
	- Stranded	AWG	1 x 8		
Rear clamping point	• Solid	mm ²		2 x (1.5 16)	2 x (2.5 16)
connected	With end sleeve	mm ²		1 x (1.5 25)	1 x (2.5 50)
	 Stranded 	mm ²		1 x (1.5 35)	1 x (10 70)
1	 AWG cables 				
N S S S S S S S S S S S S S S S S S S S	- Solid or stranded	AWG		1 x (16 2)	2 x (10 1/0)
Both clamping points	• Solid	mm ²		2 x (1.5 16)	2 x (2.5 16)
connected	With end sleeve	mm ²		2 x (1.5 16)	2 x (2.5 35)
	 Stranded 	mm ²		2 x (1.5 25)	2 x (10 50)
184	 AWG cables 				
NSBO	- Solid or stranded	AWG		2 x (16 2)	1 x (10 2/0)
	Tightening torque	NM lb.in	2 2.5 18 22	4.5 40	6.5 58
	Tools		PZ 2	PZ 2	Allen screw 4 mm
	Degree of protection		IP20	IP20 (IP00 terminal compartment)	IP20 (IP00 terminal compartment)
Spring-type terminals	Main conductors			,	, ,
	Solid	mm^2	1 10		
	• Finely stranded with end sleeve	mm ²	1 6 end sleeves with- out plastic collar		
	AWG cables				
	- Solid or stranded (finely stranded)	AWG	16 10		
	- Stranded	AWG	1 x 8		
	Tools		DIN ISO 2380-1A0; 5 x 3		
	Degree of protection		IP20		
Busbar connections	Main conductors				
	 With cable lug acc. to DIN 46234 or max. 20 mm wide 				
	- Stranded	mm^2			2 x (10 70)
		2			0(10 50)
	 Finely stranded 	mm ²			2 x (10 50)

for standard applications

Soft starters	Туре		3RW40 5.	3RW40 7.
Conductor cross-section				
Screw terminals	Main conductors			
With box terminal			3RT19 55-4G (55 kW)	3RT19 66-4G
Front clamping point connected	 Finely stranded with end sleeve Finely stranded without end sleeve Stranded Ribbon cable conductors 	mm ² mm ² mm ²	16 70 16 70 16 70 Min. 3 x 9 x 0.8	70 240 70 240 95 300 Min. 6 x 9 x 0.8
NSB0047	(number x width x thickness) • AWG cables, solid or stranded	AWG	Max. 6 x 15.5 x 0.8 6 2/0	Max. 20 x 24 x 0.5 3/0 600 kcmil
Rear clamping point connected	Finely stranded with end sleeveFinely stranded without end sleeveStranded	mm ² mm ² mm ²	16 70 16 70 16 70	120 185 120 185 120 240
NSB004800	Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded	mm AWG	Min. 3 x 9 x 0.8 Max. 6 x 15.5 x 0.8 6 2/0	Min. 6 x 9 x 0.8 Max. 20 x 24 x 0.5 250 500 kcmil
Both clamping points connected	Finely stranded with end sleeveFinely stranded without end sleeveStranded	mm ² mm ² mm ²	Max. 1 x 50, 1 x 70 Max. 1 x 50, 1 x 70 Max. 2 x 70	Min. 2 x 50; max. 2 x 185 Min. 2 x 50; max. 2 x 185 Max. 2 x 70; max. 2 x 240
800481	 Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded 	mm AWG	Max. 2 x (6 x 15.5 x 0.8) Max. 2 x 1/0	Max. 2 x (20 x 24 x 0.5) Min. 2 x 2/0 Max. 2 x 500 kcmil
<u> </u>	Terminal screws Tightening torque	NM lb.in	M10 (hexagon socket, A/F4) 10 12 90 110	M12 (hexagon socket, A/F5) 20 22 180 195
Screw terminals	Main conductors			
With box terminal			3RT19 56-4G	
Front or rear clamping point connected	Finely stranded with end sleeveFinely stranded without end sleeveStranded	mm ² mm ² mm ²	16 120 16 120 16 120	
NSB00479	 Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded 	mm AWG	Min. 3 x 9 x 0.8 Max. 6 x 15.5 x 0.8 6 250 kcmil	
Both clamping points connected	Finely stranded with end sleeve Finely stranded without end sleeve Stranded	mm ² mm ² mm ²	Max. 1 x 95, 1 x 120 Max. 1 x 95, 1 x 120 Max. 2 x 120	
00481	 Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded 	mm AWG	Max. 2 x (10 x 15.5 x 0.8) Max. 2 x 3/0	
NSB.	, 	AVVG	IVIAA. 2 X 3/U	
Screw terminals	Main conductors			
	Without box terminal/busbar connection • Finely stranded with cable lug • Stranded with cable lug • AWG cables, solid or stranded	mm ² mm ² AWG	16 95 ¹⁾ 25 120 ¹⁾ 4 250 kcmil	50 240 ²⁾ 70 240 ²⁾ 2/0 500 kcmil
	Connecting bar (max. width) Terminal screws Tightening torque	mm NM lb.in	17 M8 x 25 (A/F13) 10 14 89 124	25 M10 x 30 (A/F17) 14 24 124 210

¹⁾ When connecting cable lugs to DIN 46235, use 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 mm² to ensure phase spacing.

When connecting cable lugs to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for cond. cross-sections of 240 mm² and more as well as DIN 46235 for cond. cross-sections of 185 mm² and more to keep the phase clearance.

			tor dona. Gross decising of fee film and more to keep the phase dictarioe.
Soft starters	Туре		3RW40
Conductor cross-	sections		
Auxiliary conductors	(1 or 2 conductors can be connected):		
	Screw terminals		
	SolidFinely stranded with end sleeve	mm ² mm ²	2 × (0.5 2.5) 2 × (0.5 1.5)
	 AWG cables Solid or stranded Finely stranded with end sleeve 	AWG AWG	2 x (20 14) 2 x (20 16)
	Terminal screwsTightening torque	NM lb.in	0.8 1.2 7 10.3
	Spring-type terminals		
	 Solid 3RW40 2 3RW40 4. 3RW40 5., 3RW40 7. 	mm² mm²	2 x (0.25 2.5) 2 x (0.25 1.5)
	Finely stranded with end sleeveAWG cables, solid or stranded	mm ² AWG	2 x (0.25 1.5) 2 x (24 14) for 3RW40 2 3RW40 4.; 2 x (24 16) for 3RW40 5. and 3RW40 7.

3RW Soft Starters

	Standard	Parameters				
Electromagnetic compatibility acc. to EN 60947-4-2						
EMC interference immunity						
Electrostatic discharge (ESD)	EN 61000-4-2	±4 kV contact discharge, ±8 kV air discharge				
Electromagnetic RF fields	EN 61000-4-3	Frequency range: 80 1000 MHz with 80 % at 1 kHz Degree of severity 3: 10 V/m				
Conducted RF interference	EN 61000-4-6	Frequency range: 150 kHz 80 MHz with 80 % at 1 kHz Interference 10 V				
RF voltages and RF currents on cables						
• Burst	EN 61000-4-4	±2 kV/5 kHz				
• Surge	EN 61000-4-5	±1 kV line to line ±2 kV line to earth				
EMC interference emission						
EMC interference field strength	EN 55011	Limit value of Class A at 30 1000 MHz, limit value of Class B with 3RW40 2. 24 V AC/DC				
Radio interference voltage	EN 55011	Limit value of Class A at 0.15 30 MHz, limit value of Class B with 3RW40 2. 24 V AC/DC				
Radio interference suppression filters						
Degree of noise suppression A (industrial applications)	Not required					
Degree of noise suppression B (applications for residential areas) Control voltage • 110 230 V AC/DC • 115/230 V AC • 24 V AC/DC		Not available ¹⁾				

¹⁾ Degree of noise suppression B cannot be obtained through the use of filters as the strength of the electromagnetic field is not attenuated by the filter.

Soft starter type	Rated current	Recommended filters ¹⁾			
	Soft starters	Voltage range 200 480 V			
		Filter type	Rated current filters	Terminals	
	А		A	mm^2	
3RW40 36 3RW40 37 3RW40 38	45 63 72	4EF1512-1AA10 4EF1512-2AA10 4EF1512-3AA10	50 66 90	16 25 25	
3RW40 46 3RW40 47	80 106	4EF1512-3AA10 4EF1512-4AA10	90 120	25 50	

¹⁾ The radio interference suppression filter is used to remove the conducted interference from the main circuit. The field-related emissions comply with degree of noise suppression B. Filter selection applies under standard conditions: 10 starts per hour, start time 4 s at 300 % I_e.

Type Number	Max. Fuse Class K5, RK5, RK1	Max. Fuse Class J	Short Voltage Circuit	Voltage	
Standard short circuit ratings 3RW40					
3RW40 24	50 A	60 A	5 kA	600 V	
3RW40 26	100 A	100 A	5 kA	600 V	
3RW40 27	125 A	125 A	5 kA	600 V	
3RW40 28	125 A	125 A	5 kA	600 V	
3RW40 36	175 A	175 A	10 kA	600 V	
3RW40 37	250 A	250 A	10 kA	600 V	
3RW40 38	250 A	250 A	10 kA	600 V	
3RW40 46	450 A ¹⁾	300 A	10 kA	600 V	
3RW40 47	450 A ¹⁾	350 A	10 kA	600 V	

¹⁾ Special purpose fuse Type 3N81333-2 manufactured by Siemens covered in File E167357.

High capacity	y short (circuit	ratings	3RW40
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riigii capacity short circuit ratings shw+o					
3RW40 24	50 A	50 A	42 kA	600 V	
3RW40 26	60 A	100 A	42 kA	600 V	
3RW40 27	60 A	125 A	42 kA	600 V	
3RW40 28	60 A	125 A	42 kA	600 V	
3RW40 36	100 A	175 A	30 kA	600 V	
3RW40 37	100 A	200 A	30 kA	600 V	
3RW40 38	100 A	200 A	30 kA	600 V	
3RW40 46	110 A	200 A	42 kA	600 V	
3RW40 47	110 A	200 A	42 kA	600 V	

For solid-state motor controller, Type 3RW402: Applicable in an enclosure with minimum overall dimensions of 370 by 190 by 190 mm. For solid-state motor controller, Type 3RW403: Applicable in an enclosure with minimum overall dimensions of 450 by 210 by 225 mm. For solid-state motor controller, Type 3RW404: Applicable in an enclosure with minimum overall dimensions of 450 by 220 by 235 mm.

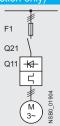
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for standard applications

Circuit Breaker SCCR

Soft starters							Circu	it Brakers	;										
ToC 1		Therma	al Magn	etic				Instantaneous Trip					Fuse	Fuse					
Q11 Type	Rated current	480 V Type	SCCR kA	Max. size A	600 V Type	SCCR kA	Max. size A	480 V Type	SCCR kA	Max. size A	600 V Type	SCCR kA	Max. size A	600 V Type	SCCR kA	Max. size A	600 V Type	SCCR kA	Max. size A
3RW40 24 3RW40 26 3RW40 27 3RW40 28	11 23 29 34																		
3RW40 36 3RW40 37 3RW40 38	42 58 62																		
3RW40 46 3RW40 47	73 98																		
3RW40 55 3RW40 56	117 145	FD63B JD63B		150 200	FD63B JD63B	50 50	150 250	FXD63A FXD63A	100 100	150 250	FXD63A FXD63A		150 250	RK5 RK5	100 100	200 250	J J	100 100	400 500
3RW40 73 3RW40 74 3RW40 75 3RW40 76	205 248 315 385	JD63B JD63B LD63B LD63B		300 400 500 600	JD63B JD63B LD63B LD63B	50 50	300 400 450 600	JXD63A JXD63A JXD63A LXD63H	100 100 100 100	300 400 400 600	JXD63A JXD63A JXD63A LXD63H	50 50	300 400 400 600	RK5 RK5 RK5 L	100 100 100 100	250 450 600 700			

Fused version (line protection only)



			ž			
	Soft starters		Line protection,	maximum		Line contactors
	ToC 1	Rated current		Rated current	Size	(optional)
	Q11		F1			Q21
	Туре	Α	Туре	Α		
•	Type of coord	dination "1" ¹⁾ :	$I_{\rm q}$ = 65 kA at 600	V +5 %		
	3RW40 24 3RW40 26 3RW40 27 3RW40 28	12.5 25 32 38	3NA3 820-6 3NA3 822-6 3NA3 824-6 3NA3 824-6	50 63 80 80	00 00 00 00	3RT10 24 3RT10 26 3RT10 34 3RT10 35
	3RW40 36 3RW40 37 3RW40 38	45 63 72	3NA3 130-6 3NA3 132-6 3NA3 132-6	100 125 125	1 1 1	3RT10 36 3RT10 44 3RT10 45
	3RW40 46 3RW40 47	80 106	3NA3 136-6 3NA3 136-6	160 160	1 1	3RT10 45 3RT10 46
	3RW40 55 3RW40 56	134 162	3NA3 244-6 3NA3 244-6	250 250	2	3RT10 55-6A.36 3RT10 56-6A.36
	3RW40 73 3RW40 74 3RW40 75 3RW40 76	230 280 356 432	2 x 3NA3 354-6 2 x 3NA3 354-6 2 x 3NA3 365-6 2 x 3NA3 365-6	2 x 355 2 x 355 2 x 500 2 x 500	3 3 3 3	3RT10 65-6A.36 3RT10 66-6A.36 3RT10 75-6A.36 3RT10 76-6A.36

¹⁾ The types of coordination are explained under "3RA1 Fuseless Load Feeders". The type of coordination "1" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

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3RW Soft Starters

3RW40

for standard applications

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)

F'1 S0010 088N 3~

For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to www.siemens.com/sitor —> "Products" —> "BETA Protecting"—> "SITOR"

		3~ 8			
Soft starters		All-range fuses			Line contactors
ToC 2	Rated current		Rated current	Size	(optional)
Q11 Type	А	F'1 Type	A		Q21
Type of coor	dination "2"	$^{(1)}$: I_{q} = 65 kA at 600 V	+5 %		
3RW40 24	12.5	3NE1 814-0	20	000	3RT10 24
3RW40 26	25	3NE1 803-0	35	000	3RT10 26
3RW40 27	32	3NE1 020-2	80	00	3RT10 34
3RW40 28	38	3NE1 020-2	80	00	3RT10 35
3RW40 36	45	3NE1 020-2	80	00	3RT10 36
3RW40 37	63	3NE1 820-0	80	000	3RT10 44
3RW40 38	72	3NE1 820-0	80	000	3RT10 45
3RW40 46	80	3NE1 021-0	100	00	3RT10 45
3RW40 47	106	3NE1 022-0	125	00	3RT10 46
3RW40 55	134	3NE1 227-2	250	1	3RT10 55-6A.36
3RW40 56	162	3NE1 227-2	250	1	3RT10 56-6A.36
3RW40 73	230	3NE1 331-2	350	2	3RT10 65-6A.36
3RW40 74	280	3NE1 333-2	450	2	3RT10 66-6A.36
3RW40 75	356	3NE1 334-2	500	2	3RT10 75-6A.36
3RW40 76	432	3NE1 435-2	560	3	3RT10 76-6A.36

¹⁾ The types of coordination are explained in more detail under "3RA1 Fuseless Load Feeders".

The type of coordination "2" refers only to soft starters in combination with the stipulated protective device (circuit breaker/fuse), not to any additional components in the feeder.

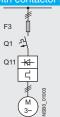
Type of coordination "1"

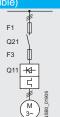
Type of coordination "2"

The types of coordination are explained in more detail under "3RA1 Fuseless Load Feeders".

These types of coordination are indicated in the Technical specifications by gray backgrounds.

Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)





For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to rwww.siemens.com/sitor —> "Products" —> "BETA Protecting" —> "SITOR"

		O z			O 2					
Soft starters		Semiconductor	fuses, minimum		Semiconductor	fuses, maximum	ı	Semiconductor	fuses, minimum	
ToC 2	Rated current		Rated current	Size		Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	А		F3 Type	А		F3 Type	A	
Type of coord	dination "2" ¹⁾ :	$I_{q} = 65 \text{ kA at } 60$	0 V +5 %							
3RW40 24 3RW40 26 3RW40 27 3RW40 28	12.5 25 32 38		 	 	3NE3 221 3NE3 224 3NE3 224	100 160 160	 1 1 1	3NE4 101 3NE4 102 3NE4 118 3NE4 118	32 40 63 63	0 0 0 0
3RW40 36 3RW40 37 3RW40 38	45 63 72	 3NE3 221	 100	 1	3NE3 224 3NE3 225 3NE3 227	160 200 250	1 1 1	3NE4 120 3NE4 121 	80 100 	0 0
3RW40 46 3RW40 47	80 106	3NE3 222 3NE3 224	125 160	1 1	3NE3 225 3NE3 231	200 350	1 1	 		
3RW40 55 3RW40 56	134 162	3NE3 227 3NE3 227	250 250	1	3NE3 335 3NE3 335	560 560	2	 	 	
3RW40 73 3RW40 74 3RW40 75 3RW40 76	230 280 356 432	3NE3 232-0B 3NE3 233 3NE3 335 3NE3 337-8	400 450 560 710	1 1 2 2	3NE3 333 3NE3 336 3NE3 336 3NE3 340-8	450 630 630 900	2 2 2 2	 	 	

Soft starters		Semicondu	ctor fuses max	х.	Semicondu	ctor fuses min.		Semicondu	ctor fuses max		Cylindrica	al fuses
ToC 2	Rated current		Rated current	Size		Rated current	Size		Rated current	Size		Rated
Q11 Type	А	F3 Type	A		F3 Type	А		F3 Type	A		F3 Type	current A
Type of cool	rdination "2" ¹⁾	I _q = 65 kA	at 600 V +5 %									
3RW40 24 3RW40 26 3RW40 27 3RW40 28	12.5 25 32 38	3NE4 117 3NE4 117 3NE4 118 3NE4 118	50 50 63 63	0 0 0 0	3NE8 015-1 3NE8 017-1 3NE8 018-1 3NE8 020-1	25 50 63 80	00 00 00 00	3NE8 017-1 3NE8 021-1 3NE8 022-1 3NE8 024-1	50 100 125 160	00 00 00 00	3NC2 240 3NC2 263 3NC2 280 3NC2 280	63 80
3RW40 36 3RW40 37 3RW40 38	45 63 72	3NE4 120 3NE4 121	80 100 	0 0 	3NE8 020-1 3NE8 021-1 3NE8 022-1	80 100 125	00 00 00	3NE8 024-1 3NE8 024-1 3NE8 024-1	160 160 160	00 00 00	3NC2 280 	80
3RW40 46 3RW40 47	80 106	 	 		3NE8 022-1 3NE8 024-1	125 160	00 00	3NE8 024-1 3NE8 024-1	160 160	00 00		
3RW40 55 3RW40 56	134 162	 	 			 			 			
3RW40 73 3RW40 74 3RW40 75 3RW40 76	230 280 356 432	 	 	 	 	 	 	 	 	 	 	

Soft starters		Line contactors	Motor starter prot	ectors/circuit b	reakers		Line protection, i	naximum	
ToC 2	Rated current	(optional)	400 V +10 %	Rated current	575 V +10 %	Rated current		Rated current	Size
Q11 Type	A	Q21	Q1 Type	А	Q1 Type	A	F1 Type	A	
Type of coord	dination "2" ¹⁾ :	I _q = 65 kA at 600	V +5 %						
3RW40 24 3RW40 26 3RW40 27 3RW40 28	12.5 25 32 38	3RT10 24 3RT10 26 3RT10 34 3RT10 35	3RV1 021-4KA10 3RV1 021-4DA10 3RV1 031-4EA10 3RV1 031-4FA10	55 55 55 55	 	 	3NA3 820-6 3NA3 822-6 3NA3 824-6 3NA3 824-6	50 63 80 80	00 00 00 00
3RW40 36 3RW40 37 3RW40 38	45 63 72	3RT10 36 3RT10 44 3RT10 45	3RV1 031-4GA10 3RV1 041-4JA10 3RV1 041-4KA10	20 20 20	 		3NA3 130-6 3NA3 132-6 3NA3 132-6	100 125 125	1 1 1
3RW40 46 3RW40 47	80 106	3RT10 45 3RT10 46	3RV1 041-4LA10 3RV1 041-4MA10	11 11			3NA3 136-6 3NA3 136-6	160 160	1 1
3RW40 55 3RW40 56	134 162	3RT10 55-6A.36 3RT10 56-6A.36	3VL3 720 3VL3 720	200 200	3VL3 720 3VL3 720	200 200	3NA3 244-6 3NA3 244-6	250 250	2
3RW40 73 3RW40 74 3RW40 75 3RW40 76	230 280 356 432	3RT10 65-6A.36 3RT10 66-6A.36 3RT10 75-6A.36 3RT10 76-6A.36	3VL4 731 3VL4 731 3VL4 740 3VL5 750	315 315 400 500	3VL5 731 3VL5 731 3VL5 740 3VL5 750	315 315 400 500	2 x 3NA3 354-6 2 x 3NA3 354-6 2 x 3NA3 365-6 2 x 3NA3 365-6	2 x 355 2 x 355 2 x 500 2 x 500	3 3 3 3

¹⁾ The types of coordination are explained under "3RA1 Fuseless Load Feeders". The type of coordination "2" refers only to soft starters in combination

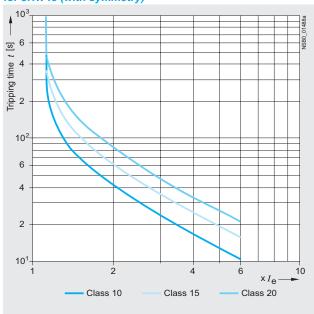
with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

3RW Soft Starters

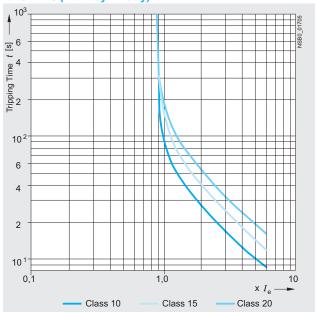
3RW40 for standard applications

Characteristic curves

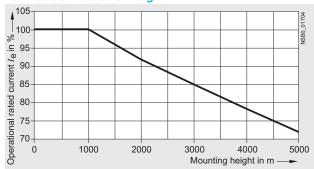
Motor protection tripping characteristics for 3RW40 (with symmetry)



Motor protection tripping characteristics for 3RW40 (with asymmetry)



Permissible installation height



At an installation height above 2000 m, the max. permissible operational voltage is reduced to 460 V.

3RW Soft Starters

for standard applications

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 350 % $I_{\rm n\ motor}$). The soft starter rating can be selected to be as high as the rating of the motor used.

Application		Conveyor belt	Roller conveyor	Small fan	Pump	Hydraulic pump
Starting parameters			_		_	_
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	70 10 5 × I _M	60 10 5 × I _M	40 10 4 × I _M	40 10 4 × <i>I</i> _M	40 10 4 × <i>I</i> _M
Ramp-down time	s	5	5	0	10	0

Application examples for heavy starting (Class 20)

Heavy starting Class 20 (up to 40 s with 350 % $I_{\text{n motor}}$). The soft starter has to be selected at least one performance class higher than the motor used.

Application		Stirrer	Compressor	Centrifuge	
Starting parameters					
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	40 20 4 × I _M	50 10 4 × <i>I</i> _M	40 20 4 × <i>I</i> _M	
Ramp-down time		0	0	0	

Note:

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning. The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

3RW Soft Starters

3RW40 for standard applications

Configuration

The 3RW solid-state soft starters are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

Where long starting times are involved, the integrated solid-state overload relay for heavy starting should not be disconnected. PTC sensors are recommended. This also applies for the smooth ramp-down because during the ramp-down time an additional current loading applies in contrast to free ramp-down.

In the case of high switching frequencies in S4 mode, Siemens recommends the use of PTC sensors. For corresponding device versions with integrated thermistor motor protection or separate thermistor evaluation devices see Catalog LV 1.

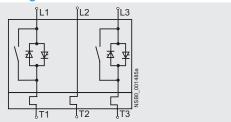
In the motor feeder between the SIRIUS 3RW soft starter and the motor, no capacitive elements are permitted (e. g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

Note

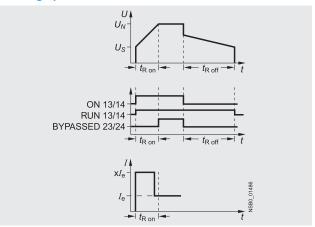
When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram



A bypass contact system and solid-state overload relay are already integrated in the 3RW40 soft starter and therefore do not have to be ordered separately.

Status graphs



Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:

<u>www.usa.siemens.com</u> > Software

More information can be found on the Internet at: www.usa.siemens.com.

3RW44

for high-feature applications

Overview

In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements. They cover a performance range up to 900 Hp (at 460 V) in the inline circuit and up to 1600 Hp (at 460 V) in the inside-delta circuit.

The SIRIUS 3RW44 soft starters are characterized by a compact design for space-saving and clearly arranged control cabinet layouts. For optimized motor starting and stopping the innovative SIRIUS 3RW44 soft starters are an attractive alternative with considerable savings potential compared to applications with a frequency converter. The new torque control and adjustable current limiting enable the High-Feature soft starters to be used in nearly every conceivable task. They reliably mitagate the sudden torque applications and current peaks during motor starting and stopping. This creates savings potential when calculating the size of the controlgear and when servicing the machinery installed. Be it for inline circuits or inside-delta circuits – the SIRIUS 3RW44 soft starter offers savings especially in terms of size and equipment costs.

The bypass contacts already integrated in the soft starter bypass the thyristors after a motor ramp-up is detected. This results in a further great reduction in the heat loss occuring during operation of the soft starter at rated value.

Combinations of various starting, operating and ramp-down possibilities ensure an optimum adaptation to the application-specific requirements. Operation and commissioning can be performed with the menu-controlled keypad and a menu-prompted, multi-line graphic display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a previously selected language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation.

Applicable standards

- IEC 60947-4-2
- UL/CSA

Soft Starter ES parameterization software

Soft Starter ES software is used for the parameterization, monitoring and service diagnostics of SIRIUS 3RW44 High Feature soft starters.

See Catalog LV 1, Chapter 12 "Planning and Configuration with SIRIUS".

Function

Equipped with modern, ergonomic user prompting the SIRIUS 3RW44 soft starters can be commissioned quickly and easily using a keypad and a menu-prompted, multi-line graphic display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a selectable language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation. During operation and when control voltage is applied, the display field continuously presents measured values and operating values as well as warnings and fault messages. An external display and operator module can be connected by means of a connection cable to the soft starter, thus enabling active indications and the like to be read directly from the control cabinet door.

The SIRIUS 3RW44 soft starters are equipped with optimum functionality. An integral bypass contact system reduces the power loss of the soft starter during operation.

This reliably prevents heating of the switchgear environment. The SIRIUS 3RW44 soft starters have internal intrinsic device protection. This prevents thermal overloading of the power section's thyristors, e. g. due to unacceptably high closing operations.

Wiring outlay for installing an additional motor overload relay is no longer needed as the SIRIUS 3RW44 soft starters perform this function too. In addition they offer adjustable trip classes and a thermistor motor protection function. As an option the thyristors can also be protected by SITOR semiconductor fuses from short-circuiting so that the soft starter is still functional after a short-circuit (type of coordination 2). And even inrush current peaks are reliably avoided thanks to adjustable current limiting.

As a further option the SIRIUS 3RW44 soft starters can be upgraded with a PROFIBUS DP module. Thanks to their communication capability and their programmable control inputs and relay outputs the SIRIUS 3RW44 soft starters can be very easily and quickly integrated in higher-level controllers.

In addition a creep speed function is available for positioning and setting jobs. With this function the motor can be controlled in both directions of rotation with reduced torque and an adjustable, low speed.

On the other hand the SIRIUS 3RW44 soft starters offer a new, combined DC braking function for the fast stopping of driving loads.

Highlights

- Soft starting with breakaway pulse, torque control or voltage ramp, adjustable torque or current limiting as well as any combination of these, depending on load type
- Integrated bypass contact system to minimize power loss
- Various setting options for the starting parameters such as starting torque, starting voltage, ramp-up and ramp-down time, and much more in three separate parameter sets
- Start-up detection
- Inside-delta circuit for savings in terms of size and equipment costs
- Various ramp-down modes selectable: free ramp-down, torque-controlled pump ramp-down, combined DC braking
- Solid-state motor overload and intrinsic device protection
- Thermistor motor protection
- Keypad with a menu-prompted, multi-line graphic display with background lighting
- Interface for communication with the PC for more accurate setting of the parameters as well as for control and monitoring
- Simple adaptation to the motor feeder
- Simple mounting and commissioning
- Display of operating states and fault messages
- Connection to PROFIBUS with optional PROFIBUS DP module
- External display and operator module
- Mains voltages from 200 to 690 V, 50 to 60 Hz
- Applicable up to 60 °C (derating from 40 °C)

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3RW Soft Starters

3RW44

for high-feature applications

			_				
Туре		3RW44BC.4	3RW44BC.5	3RW44BC.6			
Power electronics							
Rated operational voltage for inline circuit Tolerance	V AC %	200 460 -15/+10	400 600 -15/+10	400 690 -15/+10			
Maximum blocking voltage (thyristor)	V AC	1400	1800	1800			
Rated operational voltage for inside-delta circuit Tolerance	V AC %	200 460 -15/+10	400 600 -15/+10	400 600 -15/+10			
Rated frequency Tolerance	Hz %	50 60 ±10					
Uninterrupted duty at 40 °C (% of I _e)	%	115					
Minimum load (% of set motor current I_{M})	%	8					
Maximum cable length between soft starter and motor	m	500 ¹⁾					
Permissible installation height	m	5000 (derating from 1000, see characteristic curves); higher on request					
Permissible mounting position		90° 22,5°	22,5° 67800 08SN				
Installation type		Stand-alone installation	① 1	nm (≥ 0.2 in) mm (≥ 3 in) 0 mm (≥ 4 in)			
Permissible ambient temperature Operation Storage	°C	0 +60; (derating fro	om +40)				
Degree of protection		IP00					
1) At the project configuration stage, it is important to make allow	ance for the	higher values for th	e rated operational voltag	e or current must be calc			

1) At the project configuration stage, it is important to make allowance for the voltage drop on the motor cable up to the motor connection. If necessary,

higher values for the rated operational voltage or current must be calculated accordingly for the soft starter.

Туре		3RW44 22	3RW44 23	-	3RW44 25	3RW44 26	3RW44 27
Power electronics				40 °C/ 50	O°C/60°C		
Load rating with rated operational current $I_{\rm e}$ • Acc. to IEC and UL/CSA $^{1)}$, for individual mounting at 40/50/60 $^{\circ}$ C, AC-53a	Α	29/ 26 /23	36/ 33 /29	47/ 42 /37	57/ 51 /45	77/ 68 /59	93/ 82 /72
Smallest adjustable rated motor current I_{M} For the motor overload protection	А	5	7	9	11	15	18
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. During starting with 300 % I _M (40 °C)	W W	8 400	10 470	32 600	36 725	45 940	55 1160
Permissible rated motor current and starts per hour							
• Normal starting (Class 5) - Rated motor current $I_{\rm M}{}^{2)}$, starting time 5 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 41	36/ 33 /29 34	47/ 42 /37 41	57/ 51 /45 42	77/ 68 /59 43	93/ 82 /72 44
- Rated motor current $I_{\rm M}^{2)4}$, starting time 10 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 20	36/ 33 /29 15	47/ 42 /37 20	57/ 51 /45 20	77/ 68 /59 20	93/ 82 /72 20
• Normal starting (Class 10) - Rated motor current $I_{\rm M}^{2)}$, starting time 10 s - Starts per hour ³⁾	A 1/h	29/ 26 /23 20	36/ 33 /29 15	47/ 42 /37 20	57/ 51 /45 20	77/ 68 /59 20	93/ 82 /72 20
- Rated motor current $I_{\rm M}^{2)4}$, starting time 20 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 10	36/ 33 /29 6	47/ 42 /37 10	57/ 51 /45 10	77/ 68 /59 8	93/ 82 /72 8
• Normal starting (Class 15) - Rated motor current $I_{\rm M}^{2)}$, starting time 15 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 13	36/ 33 /29 9	47/ 42 /37 13	57/ 51 /45 13	77/ 68 /59 13	93/ 82 /72 13
- Rated motor current $I_{\rm M}^{\rm 2)4}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 6	36/ 33 /29 4	47/ 42 /37 6	57/ 51 /45 6	77/ 68 /59 6	93/ 82 /72 6
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{2)}$, starting time 20 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 10	36/ 33 /29	47/ 42 /37 10	57/ 51 /45 10	73/ 66 /59 10	88/ 80 /72 10
- Rated motor current $I_{\rm M}^{\rm 2)4}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 4	36/ 33 /29 2	47/ 42 /37 4	57/ 51 /45 5	73/ 66 /59 1.8	88/ 80 /72 0.8
• For very heavy starting (Class 30) - Rated motor current $I_{\rm M}^{2}$, starting time 30 s - Starts per hour 3	A 1/h	29/ 26 /23	36/ 33 /29 4	44/ 42 /37 6	57/ 51 /45	65/ 60 /54	77/ 70 /63
- Rated motor current $I_{\mathrm{M}}^{2)3}$, starting time 60 s - Starts per hour $^{3)}$	A 1/h	29/ 26 /23 1.8	36/ 33 /29 0.8	44/ 42 /37 3.3	57/ 51 /45 1.5	65/ 60 /54 2	77/ 70 /63 1

¹⁾ Measurement at 60 °C according to UL/CSA not required.

 $^{^{2)}}$ With 300 % $\emph{I}_{\text{M}}.$

³⁾ For intermittent duty S4 with ON period = 30 %, $T_{\rm u}$ = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{\}rm 4)}$ Maximum adjustable rated motor current $\it I_{\rm M}$, dependent on CLASS setting.

3RW Soft Starters

3RW44 for high-feature applications

Туре		3RW44 34	3RW44 35	3RW44 36
Power electronics			40 °C/ 50 °C /60 °C	0
Load rating with rated operational current I_e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	113/ 100 /88	134/ 117 /100	162/ 145 /125
Smallest adjustable rated motor current I_{M} For the motor overload protection	А	22	26	32
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. During starting with 300 % $I_{\rm M}$ (40 °C)	W	64	76	95
	W	1350	1700	2460
Permissible rated motor current and starts per hour				
 Normal starting (Class 5) Rated motor current I_M²), starting time 5 s Starts per hour³) 	A	113/ 100 /88	134/ 117 /100	162/ 145 /125
	1/h	41	39	41
- Rated motor current $I_{\rm M}^{2)4)}$, starting time 10 s - Starts per hour $^{3)}$	A	113/ 100 /88	134/ 117 /100	162/ 145 /125
	1/h	20	15	20
• Normal starting (Class 10) - Rated motor current $I_{\rm M}^{\ 2)}$, starting time 10 s - Starts per hour $^{3)}$	A	113/ 100 /88	134/ 117 /100	162/ 145 /125
	1/h	20	15	20
- Rated motor current $I_{ m M}^{~2)4)}$, starting time 20 s - Starts per hour $^{3)}$	A	113/ 100 /88	134/ 117 /100	162/ 145 /125
	1/h	9	6	7
• Normal starting (Class 15) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 15 s - Starts per hour 3)	A 1/h	113/ 100 /88 13	134/ 117 /100 9	162/ 145 /125 12
- Rated motor current $I_{ m M}^{~2)4)}$, starting time 30 s - Starts per hour $^{3)}$	A	113/ 100 /88	134/ 117 /100	162/ 145 /125
	1/h	6	6	1
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 20 s - Starts per hour 3)	A 1/h	106/ 97 /88	125/ 113 /100 9	147/ 134 /122 10
- Rated motor current $I_{ m M}^{2)4)}$, starting time 30 s - Starts per hour $^{3)}$	A	106/ 97 /88	125/ 113 /100	147/ 134 /122
	1/h	1.5	2	1
 For very heavy starting (Class 30) Rated motor current I_M²), starting time 30 s Starts per hour³) 	A	91/ 84 /76	110/ 100 /90	120/ 110 /100
	1/h	6	6	6
- Rated motor current $I_{\rm M}^{\rm 2)4)}$, starting time 60 s - Starts per hour $^{3)}$	A	91/ 84 /76	110/ 100 /90	120/ 110 /100
	1/h	2	2	2

¹⁾ Measurement at 60 °C according to UL/CSA not required.

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 $^{^{2)}}$ With 300 % $I_{\rm M}$

³⁾ For intermittent duty S4 with ON period = 30 %, $T_{\rm u}$ = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{4)}}$ Maximum adjustable rated motor current I_{M} , dependent on CLASS setting.

3RW Soft Starters

3RW44

for high-feature applications

Туре		3RW44 43	3RW44 44	3RW44 45	3RW44 46	3RW44 47
Power electronics				40 °C/ 50 ° C /60	°C	
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	203/ 180 /156	250/ 215 /185	313/ 280 /250	356/ 315 /280	432/ 385 /335
Smallest adjustable rated motor current I_{M} For the motor overload protection	А	40	50	62	71	86
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. During starting with 300 % I _M (40 °C)	W	89	110	145	174	232
	W	3350	4000	4470	5350	5860
Permissible rated motor current and starts per hour						
Normal starting (Class 5) Rated motor current $I_{\rm M}^{(2)}$, starting time 5 s Starts per hour ³⁾	A	203/ 180 /156	250/ 215 /185	313/ 280 /250	356/ 315 /280	432/ 385 /335
	1/h	41	41	41	41	39
- Rated motor current $I_{\rm M}^{\rm 2)4)}$, starting time 10 s - Starts per hour $^{\rm 3)}$	A	203/ 180 /156	250/ 215 /185	313/ 280 /250	356/ 315 /280	432/ 385 /335
	1/h	20	20	19	17	16
 Normal starting (Class 10) Rated motor current I_M², starting time 10 s Starts per hour³ 	A	203/ 180 /156	250/ 215 /185	313/ 280 /250	356/ 315 /280	432/ 385 /335
	1/h	20	20	19	17	16
- Rated motor current $I_{\mathrm{M}}^{2)4)}$, starting time 20 s - Starts per hour $^{3)}$	A	203/ 180 /156	250/ 215 /185	313/ 280 /250	356/ 315 /280	432/ 385 /335
	1/h	9	10	6	4	5
Normal starting (Class 15)						
- Rated motor current $I_{ m M}^{2}$, starting time 15 s - Starts per hour 3	A	203/ 180 /156	240/ 215 /185	313/ 280 /250	325/ 295 /265	402/ 385 /335
	1/h	13	13	10	13	11
- Rated motor current $I_{\rm M}^{2)4)}$, starting time 30 s - Starts per hour $^{3)}$	A	203/ 180 /156	240/ 215 /185	313/ 280 /250	325/ 295 /265	402/ 385 /335
	1/h	3	6	1	2	1
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 20 s - Starts per hour 3)	A 1/h	195/ 175 /155 10	215/ 195 /180 10	275/ 243 /221 10	285/ 263 /240 10	356/ 326 /295 10
- Rated motor current $I_{\mathrm{M}}^{2)4)}$, starting time 30 s - Rtarts per hour $^{3)}$	A	195/ 175 /155	215/ 195 /180	275/ 243 /221	285/ 263 /240	356/ 326 /295
	1/h	1	5	1	3	1
 For very heavy starting (Class 30) Rated motor current I_M², starting time 30 s Starts per hour³) 	A	162/ 148 /134	180/ 165 /150	220/ 201 /182	240/ 223 /202	285/ 260 /235
	1/h	6	6	6	6	6
- Rated motor current $I_{\rm M}^{-2/4)}$, starting time 60 s - Starts per hour $^{3)}$	A	162/ 148 /134	180/ 165 /150	220/ 201 /182	240/ 223 /202	285/ 260 /235
	1/h	3	3	3	2	1

¹⁾ Measurement at 60 °C according to UL/CSA not required.

 $^{^{2)}}$ With 300 % $I_{\mbox{\scriptsize M}}.$

³⁾ For intermittent duty S4 with ON period = 30 %, $T_{\rm u}$ = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{\}rm 4)}$ Maximum adjustable rated motor current $I_{\rm M}$, dependent on CLASS setting.

3RW Soft Starters

3RW44 for high-feature applications

Туре		3RW44 53	3RW44 54	3RW44 55	3RW44 56	3RW44 57	3RW44 58
Power electronics				40 °C/ 50	°C/60 °C		
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	Α	551/ 494 /438	615/ 551 /489	693/ 615 /551	780/ 693 /615	880/ 780 /693	970/ 850 /760
Smallest adjustable rated motor current I_{M} For the motor overload protection	Α	110	123	138	156	176	194
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. During starting with 300 % $I_{\rm M}$ (40 °C)	W W	159 7020	186 8100	220 9500	214 11100	250 13100	270 15000
Permissible rated motor current and starts per hour							
 Normal starting (Class 5) Rated motor current I_M², starting time 5 s Starts per hour³) 	A 1/h	551/ 494 /438 41	615/ 551 /489 41	693/ 615 /551 37	780/ 693 /615 33	880/ 780 /693 22	970/ 850 /760 17
- Rated motor current $I_{\rm M}^{\rm 2)4)}$, starting time 10 s - Starts per hour $^{3)}$	A 1/h	551/ 494 /438 20	615/ 551 /489 20	693/ 615 /551 16	780/ 693 /615 13	880/ 780 /693 8	970/ 850 /760 5
 Normal starting (Class 10) Rated motor current I_M², starting time 10 s Starts per hour³) 	A 1/h	551/ 494 /438 20	615/ 551 /489 20	693/ 615 /551	780/ 693 /615	880/ 780 /693	970/ 850 /760 5
- Rated motor current $I_{\rm M}^{-2/4)}$, starting time 20 s - Starts per hour $^{3)}$	A 1/h	551/ 494 /438 10	615/ 551 /489 9	693/ 615 /551 6	780/ 693 /615	880/ 780 /693 0.3	970/ 850 /760 0.3
• Normal starting (Class 15) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 15 s - Starts per hour $^{3)}$	A 1/h	551/ 494 /438	615/ 551 /489 13	666/ 615 /551	723/ 693 /615	780/ 710 /650	821/ 755 /693
- Rated motor current $I_{\rm M}^{-2/4)}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	551/ 494 /438 6	615/ 551 /489 4	666/ 615 /551 3	723/ 693 /615	780/ 710 /650 0.4	821/ 755 /693 0.5
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{\ 2}$, starting time 20 s - Starts per hour ³⁾	A 1/h	551/ 494 /438	591/ 551 /489	633/ 615 /551 7	670/ 634 /576 8	710/ 650 /590	740/ 685 /630 9
- Rated motor current $I_{\rm M}^{-2/4)}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	551/ 494 /438 4	591/ 551 /489	633/ 615 /551 1	670/ 634 /576 1	710/ 650 /590 0.4	740/ 685 /630 1
• For very heavy starting (Class 30) - Rated motor current $I_{\rm M}^{(2)}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	500/ 480 /438	525/ 489 /455	551/ 520 /480	575/ 540 /490	600/ 550 /500	630/ 580 /530
- Rated motor current $I_{\rm M}^{-2/4)}$, starting time 60 s - Starts per hour $^{3)}$	A 1/h	500/ 480 /438 2	525/ 489 /455	551/ 520 /480	575/ 540 /490 1	600/ 550 /500 1.5	630/ 580 /530 1

 $^{^{\}rm 1)}$ Measurement at 60 $^{\rm o}{\rm C}$ according to UL/CSA not required.

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²⁾ With 300 % I_M.

³⁾ For intermittent duty S4 with ON period = 30 %, T_U = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{4)}}$ Maximum adjustable rated motor current I_{M} , dependent on CLASS setting.

3RW Soft Starters

3RW44

for high-feature applications

Туре		3RW44 65	3RW44 66
Power electronics			40 °C/ 50 ° C /60 °C
Load rating with rated operational current I _e • Acc. to IEC and UL/CSA ¹⁾ , for individual mounting at 40/50/60 °C, AC-53a	А	1076/ 970 /880	1214/ 1076 /970
Smallest adjustable rated motor current $I_{ m M}$ For the motor overload protection	А	215	242
Power loss In operation after completed starting with uninterrupted rated operational current (40 °C) approx. During starting with 300 % I _M (40 °C)	W W	510 15000	630 17500
Permissible rated motor current and starts per hour			
• Normal starting (Class 5) - Rated motor current $I_{\rm M}{}^{2}$, starting time 5 s - Starts per hour 3)	A 1/h	1076/ 970 /880 30	1214/ 1076 /970 20
- Rated motor current $I_{\mathrm{M}}^{2)4}$, starting time 10 s - Starts per hour $^{3)}$	A 1/h	1076/ 970 /880 10	1214/ 1076 /970 6
• Normal starting (Class 10) - Rated motor current $I_{\rm M}^{2}$, starting time 10 s - Starts per hour ³⁾	A 1/h	1076/ 970 /880	1214/ 1076 /970 6
- Rated motor current $I_{\rm M}^{2)4}$, starting time 20 s - Starts per hour $^{3)}$	A 1/h	1076/ 970 /880	1214/ 1076 /970 0.5
• Normal starting (Class 15) - Rated motor current $I_{\rm M}^{2)}$, starting time 15 s - Starts per hour $^{3)}$	A 1/h	1020/ 950 /850 7	1090/ 1000 /920 5
- Rated motor current $I_{\rm M}^{2)4}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	1020/ 950 /850	1090/ 1000 /920 1
• Normal starting (Class 20) - Rated motor current $I_{\rm M}^{2)}$, starting time 20 s - Starts per hour $^{3)}$	A 1/h	970/ 880 /810 7	1030/ 940 /860 5
- Rated motor current $I_{\rm M}^{2)4}$, starting time 30 s - Starts per hour $^{3)}$	A 1/h	970/ 880 /810	1030/ 940 /860 1
• For very heavy starting (Class 30) - Rated motor current $I_{\rm M}^{2}$, starting time 30 s - Starts per hour ³⁾	A 1/h	880/ 810 /740	920/ 850 /780 6
- Rated motor current $I_{\rm M}^{2)4}$, starting time 60 s - Starts per hour $^{3)}$	A 1/h	880/ 810 /740	920/ 850 /780 1

 $^{^{\}rm 1)}$ Measurement at 60 °C according to UL/CSA not required.

 $^{^{2)}}$ With 300 % $I_{\rm M}.$

³⁾ For intermittent duty S4 with ON period = 30 %, T_u = 40 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

 $^{^{\}rm 4)}$ Maximum adjustable rated motor current $I_{\rm M}$, dependent on CLASS setting.

3RW44 for high-feature applications











3RW44 2	7-1BC4	4	3RW	44 36-6	BC44		3RW44	47-6BC	44		3	RW44 58-6BC44		3RW4	14 66-6B	C44	
Ambient t	empera	ture 40	°C			Ambient	tempera	ature 50	°C		DT	Order No.	List	PU	PS*	PG	Weight
Rated operational current $I_e^{1)}$		power operation			otors for	Rated operational current $I_{\rm e}$		power of some some some some some some some some					Price \$ per PU	(UNIT, SET, M)			per PU approx.
	230 V	400 V	500 V				200 V	230 V	460 V	575 V							
А	kW	kW	kW	kW	kW	А	hp	hp	hp	hp							kg
Inside-c	lelta c		, rated	opera	tional		200	460 V ²)								
50 62 81	15 18.5 22	22 30 45		 	 	45 55 73	10 15 20	15 20 25	30 40 50	 	* * *	3RW44 22-□BC□4 3RW44 23-□BC□4 3RW44 24-□BC□4		1 1 1	1 unit 1 unit 1 unit	131 131 131	6.500 6.500 6.500
99 133 161	30 37 45	55 75 90		 	 	88 118 142	25 30 40	30 40 50	60 75 100	 	* * *	3RW44 25-□BC□4 3RW44 26-□BC□4 3RW44 27-□BC□4		1 1 1	1 unit 1 unit 1 unit	131 131 131	6.500 6.500 6.500
Order No	. suppl	ement 1	for con	nection	types	1											
With spWith sc	ring-typ	e termir			,,							3					
196 232 281	55 75 90	110 132 160	 		 	173 203 251	50 60 75	60 75 100	125 150 200	 	B B B	3RW44 34-□BC□4 3RW44 35-□BC□4 3RW44 36-□BC□4		1 1 1	1 unit 1 unit 1 unit	131 131 131	7.900 7.900 7.900
352 433 542	110 132 160	200 250 315				312 372 485	100 125 150	125 150 200	250 300 400		B B B	3RW44 43-□BC□4 3RW44 44-□BC□4 3RW44 45-□BC□4		1 1 1	1 unit 1 unit 1 unit	131 131 131	11.500 11.500 11.500
617 748	200 250	355 400				546 667	150 200	200 250	450 600		B B	3RW44 46-□BC□4 3RW44 47-□BC□4		1	1 unit 1 unit	131 131	11.500 11.500
954 1065 1200	315 355 400	560 630 710	 	 	 	856 954 1065	300 350 350	350 400 450	750 850 950	 	CCC	3RW44 53-□BC□4 3RW44 54-□BC□4 3RW44 55-□BC□4		1 1 1	1 unit 1 unit 1 unit	131 131 131	50.000 50.000 50.000
1351 1524 1680	450 500 560	800 900 1000	 		 	1200 1351 1472	450 450 550	500 600 650	1050 1200 1300	 	CCC	3RW44 56-□BC□4 3RW44 57-□BC□4 3RW44 58-□BC□4		1 1 1	1 unit 1 unit 1 unit	131 131 131	50.000 50.000 50.000
1864 2103	630 710	1100 1200				1680 1864	650 700	750 850	1500 1700		С	3RW44 65-□BC□4 3RW44 66-□BC□4		1	1 unit 1 unit	131 131	78.000 78.000

Order No. supplement for connection types

- With spring-type terminals
- With screw terminals

Order No. supplement for the rated control supply voltage $U_s^{(3)}$

- 115 V AC
- 230 V AC

Soft starter selection depends on the rated motor current.

The 3RW44 solid-state soft starters are designed for normal starting (Class 10). (Inertia load of the overall operating mechanism J_{Load} <10 x J_{Motor} ; starting current 350 % x I_{e} for 20 s similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. See Technical specifications for information about rated currents for ambient temperatures > 40 °C and switching frequency.

 $^{^{1)}}$ In the selection table, the unit rated current $I_{\rm e}$ refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

²⁾ 3RW44 2. ... 3RW44 4. soft starters with screw terminals: delivery times ► (preferred type),

³⁾ Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

3RW Soft Starters

3RW44

for high-feature applications

Ambient	tempera	ature 40	°C			Ambient	tempe	rature 5	0 °C		DT	Order No.	List	PU	PS*	PG	Weight
Rated operational current $I_e^{1)}$			of indu onal vol		otors for	Rated operational current $I_{\rm e}$		rs for ra	of inducted oper				Price \$ per PU	(UNIT, SET, M)			per PU approx
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V							
A	kW	kW	kW	kW	kW	А	hp	hp	hp	hp							kg
	delta c		· .	oper	ational	voltage		600 V	(2)								
50 62 81		22 30 45	30 37 45	 		45 55 73	 	 	30 40 50	40 50 60	A A A	3RW44 22-□BC□5 3RW44 23-□BC□5 3RW44 24-□BC□5		1 1 1	1 unit 1 unit 1 unit	131 131 131	6.500 6.500 6.500
99 133 161	 	55 75 90	55 90 110	 		88 118 142	 	 	60 75 100	75 100 125	A A A	3RW44 25-□BC□5 3RW44 26-□BC□5 3RW44 27-□BC□5		1 1 1	1 unit 1 unit 1 unit	131 131 131	6.500 6.500 6.500
Order No With sp With sc	oring-typ	e termi		nectio	n types							3 1					
196 232 281	 	110 132 160	132 160 200		 	173 203 251	 		125 150 200	150 200 250	B B B	3RW44 34-□BC□5 3RW44 35-□BC□5 3RW44 36-□BC□5		1 1 1	1 unit 1 unit 1 unit	131 131 131	7.900 7.900 7.900
352 433 542	 	200 250 315	250 315 355	 		312 372 485	 	 	250 300 400	300 350 500	B B B	3RW44 43-□BC□5 3RW44 44-□BC□5 3RW44 45-□BC□5		1 1 1	1 unit 1 unit 1 unit	131 131 131	11.500 11.500 11.500
617 748		355 400	450 500			546 667			450 600	600 750	B B	3RW44 46-□BC□5 3RW44 47-□BC□5		1 1	1 unit 1 unit	131 131	11.500 11.500
954 1065 1200	 	560 630 710	630 710 800	 	 	856 954 1065	 	 	750 850 950	950 1050 1200	CCC	3RW44 53-□BC□5 3RW44 54-□BC□5 3RW44 55-□BC□5		1 1 1	1 unit 1 unit 1 unit	131 131 131	50.000 50.000 50.000
1351 1524 1680	 	800 900 1000	900 1000 1200	 	 	1200 1351 1472	 	 	1050 1200 1300	1350 1500 1650	CCC	3RW44 56-□BC□5 3RW44 57-□BC□5 3RW44 58-□BC□5		1 1 1	1 unit 1 unit 1 unit	131 131 131	50.000 50.000 50.000
1864 2103		1100 1200	1350 1500			1680 1864			1500 1700	1900 2100	C	3RW44 65-□BC□5 3RW44 66-□BC□5		1	1 unit 1 unit	131 131	78.000 78.000
With sp With so	oring-typ crew terr	e termi minals	nals			unnly ve	ltomo II	, 3)				2 6					
• 115 V A • 230 V A	4C	iement	ior the	rated (ontroi S	upply vol	iage <i>U</i>	s '				3 4					

- 230 V AC
- $^{\rm 1)}$ In the selection table, the unit rated current $I_{\rm e}$ refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.
- ²⁾ Soft starter with screw terminals: 3RW44 2. ... 3RW44 4. Delivery time A 3RW44 5. ... 3RW44 6. Delivery time B.
- 3) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

Soft starter selection depends on the rated motor current.

The 3RW44 solid-state soft starters are designed for normal starting (Class 10). (Inertia load of the overall operating mechanism J_{Load} <10 x J_{Motor} ; starting current 350 % x I_{e} for 20 s similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. See Technical specifications for information about rated currents for ambient temperatures > 40 °C and switching frequency.

for high-feature applications

Technical specifications

Туре			3RW44BC3.	3RW44BC4.
	Terminal			
Control electronics				
Rated values Rated control supply voltage • Tolerance Rated control supply current STANDBY	A1/A2/PE	V % mA	115 AC -15/+10 30	230 AC -15/+10 20
Rated control supply current ON • 3RW44 2. • 3RW44 3. • 3RW44 4.		mA mA mA	300 500 750	170 250 400
• 3RW44 5. • 3RW44 6.		mA mA	450 650	200 300
Maximum current (pickup bypass) • 3RW44 2. • 3RW44 3. • 3RW44 4.		mA mA mA	1000 2500 6000	500 1250 3000
• 3RW44 5. • 3RW44 6.		mA mA	4500 4500	2500 2500
Rated frequency Tolerance		Hz %	50 60 ±10	50 60 ±10

Туре	Terminal		3RW44	Factory default
Control electronics				
Control inputs				
Input 1 Input 2 Input 3 Input 4	IN1 IN2 IN3 IN4			Start motor right parameter set 1 No action No action Trip reset
Supply	L+/L-			p roost
Rated operational current Rated operational voltage	L+	mA	Approx. 10 per input to DIN 19240 Internal voltage: 24 V DC from inter- nal supply through terminal L+ to	
	L-		IN1 IN4. Maximum load at L+ approx. 55 mA External voltage: DC external voltage (acc. to DIN 19240) through terminals L- and IN1 IN4 (min. 12 V DC, max. 30 V DC)	
Thermistor motor protection input Input	T1/T2		PTC type A or Thermoclick	Deactivated
Relay outputs (floating auxiliary contacts) Output 1 Output 2 Output 3 Output 4	13/14 23/24 33/34 95/96/98			ON period No action No action Group fault
Switching capacity of the relay outputs (auxilia	ary contacts)			
230 V/AC-15 24 V/DC-13 Protection against overvoltages Short-circuit protection	, ,	A A	3 at 240 V 1 at 24 V Protection by means of varistor throug 4 A gL/gG operational class; 6 A quick (fuse is not included in sco	
Protection functions				
Motor protection functions Trips in the event of Trip class acc. to IEC 60947-4-1 Phase failure sensitivity		Class %	Thermal overloading of the motor 5/10/15/20/30 >40	10
Overload warning Reset and recovery Reset option after tripping Recovery time		min.	Yes Manual/Automatic Manual/Automatic 1 30	Manual Manual 1
Device protection functions Trips in the event of Reset option after tripping Recovery time		min.	Thermal overloading of the thyristors Manual/Automatic 0.5	Manual
Bypass protection functions Trips in the event of			Thermal overloading of the bypass contacts	
Reset option after tripping Recovery time		min.	Manual 1	

Siemens Industry, Inc. Industrial Controls Catalog 3

4

6

7

3RW Soft Starters

3RW44

for high-feature applications

Type		2DW///	
Type		3RW44	Factory default
Control times and parameters			
Control times Closing time (with connected control voltage) Closing time (automatic mode) Recovery time (closing command in active ramp-down)	ms ms ms	<50 <4000 <100	
Mains failure bridging time Control supply voltage	ms	100	
Mains failure response time Load circuit	ms	100	
Reclosing lockout after overload trip Motor protection trip Device protection trip	min.	1 30 30	1
Setting options for starting Voltage ramp for starting voltage Torque control for starting torque Torque control for limit torque Starting time	% % %	20 100 10 100 20 200 0 360 ³⁾	30 10 150 20
Maximum starting time Current limit value	s s %	1 1000 125 550 ¹⁾	Deactivated 450
Breakaway voltage Breakaway time Motor heat output	% S %	40 100 0 2 1 100	80 Deactivated 20
Creep mode Left/Right running Speed factor as function of rated speed ($n = n_{\text{rated}}/\text{factor}$) Creep torque ²⁾	%	3 21 20 100	7 50
Setting options for ramp-down Torque control for stopping torque Ramp-down time Dynamic braking torque DC braking torque	% s % %	10 100 0 360 ³⁾ 20 100 20 100	10 10 50 50
		Test mains phases Ready to start Start active Motor running Ramp-down active Emergency start active	
Warnings/error signals		Mains voltage missing Leading-edge phase error Phase failure • L1 • L2 • L3 Missing load phase • T1 • T2 • T3 Failure • Contact element 1 (thyristor) • Contact element 2 (thyristor) • Contact element 3 (thyristor) • Contact element 3 (thyristor) Flash memory faulty Supply voltage • Below 75 % • Below 85 % • Over 110 %	
		Current unbalance exceeded Thermal motor model overload Prewarning limit exceeded • Motor heating • Time-related trip reserve Bypass element defective Mains voltage too high Device not named Wrong naming version Current measuring range exceeded Bypass element protection disconnection of the province	otion
1) Max. current limit value for 3RW44 53 3RW44 57: 500 % and for		 Overheating Actual motor start times are load de 	ependent.

¹⁾ Max. current limit value for 3RW44 53 ... 3RW44 57: 500 % and for 3RW44 58 ... 3RW44 66: 450 %.

 $^{^{2)}\,}$ Reference variable depends on the motor used but is always smaller than the rated torque of the motor.

³⁾ Actual motor start times are load dependent.

3RW Soft Starters

3RW44 for high-feature applications

Туре	3RW44
Control times and parameters	Factory default
Warnings/error signals (continued)	
3	Temperature sensor Overload Open circuit Short-circuit
	Ground fault • Detected
	Connection abort in manual operating mode Max. number of starts exceeded $I_{\rm e}$ limit value overshoot/undershoot
	Heat sink sensor Open circuit Short-circuit
	Quick-stop active Switching block defective I_{θ}/class setting not permissible
	No external start-up parameters received PAA fault
Control inputs Input 1 Input 2 Input 3 Input 4	Motor right parameter set 1 No action No action Trip reset
Parameterizing options for control inputs 1 4	No action Local manual mode Emergency start Creep speed Quick-stop Trip reset
	Motor right parameter set 1 Motor left parameter set 11) Motor right parameter set 2 Motor left parameter set 21) Motor right parameter set 3 Motor left parameter set 3
Relay outputs Output 1 Output 2 Output 3 Output 4	ON period No action No action Group fault
Parameterizing options for relay outputs 1 3	No action PAA output 1 PAA output 2
	Input 1 Input 2 Input 3 Input 4
	Starting Operation/Bypass Ramp-down
	ON period Command motor on DC braking contactor
	Group warning Group fault Bus fault Device fault
	Power on Ready to start
Motor temperature sensor	Deactivated Thermoclick PTC type A

¹⁾ Parameter motor left possible only in conjunction with creep mode.

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3RW Soft Starters

3RW44

for high-feature applications

Гуре			3RW44 2.	3RW44 3.	3RW44 4.	3RW44 5. 3RW44 6.
Conductor cross-s	sections					JN∜V44 0.
Screw terminals	Main conductors					
With box terminal				3RT19 55-4G (55 kW)	3RT19 66-4G	
Front clamping point connected	 Finely stranded with end sleeve Finely stranded without end sleeve Solid 	mm ² mm ² mm ²	2.5 35 4 50 2.5 16	16 70 16 70	70 240 70 240	
62	• Stranded	mm ²	4 70	16 70	95 300	
NSB004	 Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded 	mm AWG	6 x 9 x 0.8 10 2/0	Min. 3 x 9 x 0.8 Max. 6 x 15.5 x 0.8 6 2/0	Min. 6 x 9 x 0.8 Max. 20 x 24 x 0.5 3/0 600 kcmil	
Rear clamping point connected	Finely stranded with end sleeve Finely stranded without end sleeve Solid Stranded	mm ² mm ² mm ² mm ²	2.5 50 10 50 2.5 16 10 70	16 70 16 70 16 70	120 185 120 185 120 240	
NSB00480	Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded	mm AWG	6 x 9 x 0.8 10 2/0	Min. 3 x 9 x 0.8 Max. 6 x 15.5 x 0.8 6 2/0	Min. 6 x 9 x 0.8	
Both clamping	Finely stranded with end sleeve	mm ²	2 x (2.5 35)	Max. 1 x 50, 1 x 70		
points connected	Finely stranded without end sleeve	mm ²	2 x (4 35)	Max. 1 x 50, 1 x 70		
NSB00481	SolidStranded	mm ² mm ²	2 x (2.5 16) 2 x (4 50)	 Max. 2 x 70	 Max. 2 x 70 Max. 2 x 240	Ξ.
	 Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded 	mm AWG	2 x (6 x 9 x 0.8) 2 x (10 1/0)	Max. 2 x (6 x 15.5 x 0.8) Max. 2 x 1/0	Max. 2 x (20 x 24 x 0.5) Min. 2 x 2/0	
	Terminal screws		M6 (hexagon socket, A/F4)	M10 (hexagon socket, A/F4)	Max. 2 x 500 kcmil M12 (hexagon socket, A/F5)	
	- Tightening torque	NM lb.in	4 6 36 53	10 12 90 110	20 22 180 195	
Screw terminals With box terminal	Main conductors			3RT19 56-4G		
	Finely stranded with end sleeveFinely stranded without end sleeveStranded	mm ² mm ² mm ²	 	16 120 16 120 16 120	 	
NSB00479 NSB00480	Ribbon cable conductors (number x width x thickness) AWG cables, solid or stranded	mm AWG		Min. 3 x 9 x 0.8 Max. 6 x 15.5 x 0.8 6 250 kcmil		
Both clamping points connected	• Finely stranded with end sleeve	mm ²		Max. 1 x 95, 1 x 120		
	Finely stranded without end sleeve	mm ²		Max. 1 x 95, 1 x 120		
00481	StrandedRibbon cable conductors	mm ²		Max. 2 x 120 Max. 2 x		
N SEC	• Albbor cable conductors (number x width x thickness)• AWG cables, solid or stranded	mm AWG		(10 x 15.5 x 0.8) Max. 2 x 3/0		
Screw terminals	Main conductors					
	Without box terminal/busbar connection Finely stranded with cable lug Stranded with cable lug AWG cables, solid or stranded Connecting bar (max. width)	mm ² mm ² AWG mm	 	16 95 ¹⁾ 25 120 ¹⁾ 4 250 kcmil	50 240 ²⁾ 70 240 ²⁾ 2/0 500 kcmil	50 240 ²⁾ 70 240 ²⁾ 2/0 500 kcmil 60
	Terminal screws Tightening torque	NM lb.in	 	M8 x 25 (A/F13) 10 14 89 124	M10 x 30 (A/F17) 14 24 124 210	M12 x 40 20 35 177 310

When connecting cable lugs to DIN 46235, use 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 mm² to ensure phase spacing.

When connecting cable lugs to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm² and more as well as DIN 46235 for conductor cross-sections of 185 mm² and more to keep the phase clearance.

3RW Soft Starters

3RW44 for high-feature applications

Soft starters	Туре		3RW44	
Conductor cross-s	ections			
Auxiliary conductors	(1 or 2 conductors can be connected):			
	Screw terminals			
	SolidFinely stranded with end sleeve	mm ² mm ²	2 x (0.5 2.5) 2 x (0.5 1.5)	
	 AWG cables Solid or stranded Finely stranded with end sleeve 	AWG AWG	2 x (20 14) 2 x (20 16)	
	Terminal screwsTightening torque	NM lb.in	0.8 1.2 7 10.3	
	Spring-type terminals			
	Solid Finely stranded with end sleeve AWG cables, solid or stranded		2 x (0.25 1.5 2 x (0.25 1.5 2 x (24 16)	
			Standard	Parameters
Electromagnetic co	ompatibility acc. to EN 60947-4-2			
EMC interference i	mmunity			
Electrostatic discharg	e (ESD)		EN 61000-4-2	±4 kV contact discharge, ±8 kV air discharge
Electromagnetic RF fi	elds		EN 61000-4-3	Frequency range: 80 1000 MHz with 80 % at 1 kHz Degree of severity 3, 10 V/m
Conducted RF interfer	rence		EN 61000-4-6	Frequency range: 150 kHz 80 MHz with 80 % at 1 kHz Interference 10 V
				interierence to v
RF voltages and RF co • Burst • Surge	urrents on cables		EN 61000-4-4 EN 61000-4-5	
Burst				±2 kV/5 kHz ±1 kV line to line
Burst Surge	emission			±2 kV/5 kHz ±1 kV line to line
• Burst • Surge	emission Il strength		EN 61000-4-5	±2 kV/5 kHz ±1 kV line to line ±2 kV line to ground
Burst Surge EMC interference e EMC interference field Radio interference vol	emission Il strength		EN 61000-4-5 EN 55011	±2 kV/5 kHz ±1 kV line to line ±2 kV line to ground Limit value of Class A at 30 1000 MHz

2

3

4

6

7

For Operation in the Control Cabinet 3RW Soft Starters

Circuit Breaker SCCR

Soft starters							Circui	t Brakers											
ToC 1		Therma	al Magn	etic				Instanta	Instantaneous Trip										
Q11	Rated	480 V	SCCR	Max. size	600 V	SCCR	Max. size	480 V	SCCR	Max. size	600 V	SCCR	Max. size	600 V	SCCR	Max. size	600 V	SCCR	Max. size
Type	current	Type	kA	Α	Type	kA	Α	Туре	kA	Α	Type	kA	Α	Type	kA	Α	Type	kA	Α
3RW44 22	11	ED63B, HEG3G	100	40				ED63A, HEM3M	100	40	ED63A, HEM3M	50	40	RK5	100	50	J	100	100
3RW44 23	23	ED63B, HEG3G		50				ED63A, HEM3M	100	50	ED63A, HEM3M	50	50	RK5	100	60	J	100	120
3RW44 24	29	ED63B, HEG3G		70				ED63A, HEM3M	100	100	ED63A, HEM3M	50	50	RK5	100	80	J	100	160
3RW44 25	29	ED63B, HEG3G	100	70				ED63A, HEM3M	100	50 100	ED63A, HEM3M	50 50	50	RK5	100	80		100	050
3RW44 26 3RW44 27	29 34	ED63B, HEG3G FD63B		100 150				ED63A, HEM3M ED63A,	100	100	ED63A, HEM3M ED63A,	50	100 125	RK5	100	125 150	J J	100	250 300
								НЕМЗМ			НЕМЗМ								
3RW44 34	42	FD63B	100	150	FD63B		150	ED63A, HEM3M	100	125	FXD63A		150	RK5	100	200	J	100	400
3RW44 35 3RW44 36	58 62	FD63B JD63B	100 100	150 200	FD63B JD63B	50	150 250	FXD63A FXD63A	100	150 250	FXD63A FXD63A	50	150 250	RK5 RK5	100 100	200 250	J	100 100	400 500
3RW44 43 3RW44 44 3RW44 45 3RW44 46 3RW44 47	73 98 98 98 98	JD63B JD63B JD63B LD63B LD63B	100 100 100 100 100	300 300 400 500 600	JD63B JD63B JD63B LD63B LD63B	50 50 50	250 300 400 450 600	FXD63A JXD63A JXD63A LXD63H LXD63H	100 100 100	250 300 400 400 600	JXD63A JXD63A JXD63A JXD63A LXD63H	50 50 50	300 300 400 400 600	RK5 RK5 RK5 RK5 L	100 100 100 100 100	300 350 450 600 700	J	100	600
3RW44 53	117	HMD6	65	800/ 800	HMD6	50	800/ 800							L	100	1000			
3RW44 54	145	HND6	100	900	HND6	50	1200/ 900							L	100	1000			
3RW44 55	145	HND6	100	900	HND6	50	1200/ 900							L	100	1000			
3RW44 56	145	HND6	100	1000	HND6	50	1200/							L	100	1000			
3RW44 57	145	HND6	100 65	1000	HND6 CND6	50	1200/ 1000							L	100	1000			
3RW44 58 3RW44 65	145 205	CND6	65 42	1200 1600	CND6	65 42	1200 1600												
3RW44 65 3RW44 66	248	CND6	42		CND6	42 42	1600												

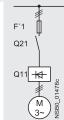
Specified Type

Others permitted

ED63A FXD63A JXD63A ED63B FD63B JD63B HND6 HED63Å, HHED63A or CED63A HFXD63A or CFD63A HJXD63A or CJD63A HED63B, HHED63B or CED63B HFD63B, HHFD63B or CFD63B HJ63B, HHJD63B or CJD63B HNXD6 or CND6

for high-feature applications

Inline circuit fused version with 3NE1 SITOR all-range fuse (semiconductor and line protection)



For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to www.siemens.com/sitor —> "Products" —> "BETA Protecting"—> "SITOR"

Soft starters	•	All-range fuses				Line contactors up to 400 V	Braking contact	
ToC 2	Rated current		Rated current	Voltage	Size	(optional)	(for example c	rcuit see page 7/69)
Q11 Type	А	F'1 Type	А	V		Q21 Type	Q91 Type	Q92 Type
Type of cool	rdination "2"	³⁾ : I _q = 65 kA						
3RW44 22	29	3NE1 020-2	80	690 +5 %	00	3RT10 34	3RT15 26	
3RW44 23	36	3NE1 020-2	80	690 +5 %	00	3RT10 35	3RT15 26	
3RW44 24	47	3NE1 021-2	100	690 +5 %	00	3RT10 36	3RT15 35	
3RW44 25	57	3NE1 022-2	125	690 +5 %	00	3RT10 44	3RT15 35	
3RW44 26	77	3NE1 022-2	125	690 +5 %	00	3RT10 45	3RT10 24	3RT10 35
3RW44 27	93	3NE1 024-2	160	690 +5 %	1	3RT10 46	3RT10 25	3RT10 36
3RW44 34	113	3NE1 225-2	200	690 +5 %	1	3RT10 54	3RT10 34	3RT10 44
3RW44 35	134	3NE1 227-2	250	690 +5 %	1	3RT10 55	3RT10 36	3RT10 45
3RW44 36	162	3NE1 227-2	250	690 +5 %	1	3RT10 56	3RT10 44	3RT10 45
3RW44 43	203	3NE1 230-2	315	600 +10 %	1	3RT10 64	3RT10 44	3RT10 54
3RW44 44	250	3NE1 331-2	350	460 +10 %	2	3RT10 65	3RT10 44	3RT10 55
3RW44 45	313	3NE1 333-2	450	690 +5 %	2	3RT10 75	3RT10 54	3RT10 56
3RW44 46	356	3NE1 334-2	500	690 +5 %	2	3RT10 75	3RT10 54	3RT10 56
3RW44 47	432	3NE1 435-2	560	690 +5 %	3	3RT10 76	3RT10 55	3RT10 64
3RW44 53	551	2 x 3NE1 334-2	500	690 +10 %	2	3TF68	3RT10 64	3RT10 66
3RW44 54	615	2 x 3NE1 334-2	500	690 +10 %	2	3TF68	3RT10 64	3RT10 75
3RW44 55	693	2 x 3NE1 334-2	500	690 +10 %	2	3TF69	3RT10 65	3RT10 75
3RW44 56	780	2 x 3NE1 435-2	560	690 +10 %	3	3TF69	3RT10 65	3RT10 75
3RW44 57	880	2 x 3NE1 435-2	560	690 +10 %	3		3RT10 75	3RT10 76
3RW44 58	970	2 x 3NE1 435-2	560	690 +10 %	3		3RT10 75	3RT10 76
3RW44 65 3RW44 66	1076 1214	3 x 3NE1 334-2 3 x 3NE1 435-2	500 560	690 +10 % 690 +10 %	2		3RT10 75 3RT10 76	3TF68 3TF68

If the ramp-down function "Combined braking" is selected, no braking contactor is required.

If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type).

For applications with large centrifugal masses ($J_{\rm Load} > J_{\rm Motor}$) we recommend the function "DC braking".

(3RW44 soft starter with rated control supply voltage 230 V AC), LZX:RT4A4S15

(3RW44 soft starter with rated control supply voltage 115 V AC).

Additional auxiliary relay K4: LZX:RT4A4T30

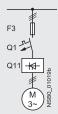
³⁾ The type of coordination "2" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder. The types of coordination are explained under "3RA1 Fuseless Load Feeders".

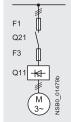
3RW Soft Starters

for high-feature applications

Inline circuit fused version with 3NE or 3NC SITOR semiconductor fuse

(semiconductor protection by fuse, line and overload protection by motor starter protector/circuit breaker)





For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to www.siemens.com/sitor —> "Products" —> "BETA Protecting" ->"SITOR"

Soft starters		Semiconductor fuses, minimum			Semiconductor	fuses, maximum	1	Semiconductor	fuses (cylinder))
ToC 2	Rated current	690 V +10 %	Rated current	Size	690 V +10 %	Rated current	Size		Rated current	Size
Q11 Type	А	F3 Type	А		F3 Type	А		F3 Type	А	
Type of coor	dination "2" $^{(3)}$:	I _q = 65 kA								
3RW44 22 3RW44 23 3RW44 24	29 36 47	3NE4 120 3NE4 121 3NE4 121	80 100 100	0 0 0	3NE4 121 3NE4 121 3NE4 122	100 100 125	0 0 0	3NC2 280 3NC2 200 3NC2 200	80 100 100	22 x 58 22 x 58 22 x 58
3RW44 25 3RW44 26 3RW44 27	57 77 93	3NE4 122 3NE4 124 3NE3 224	125 160 160	0 0 1	3NE4 124 3NE4 124 3NE3 332-0B	160 160 400	0 0 2			
3RW44 34 3RW44 35 3RW44 36	113 134 162	3NE3 225 3NE3 225 3NE3 227	200 200 250	1 1 1	3NE3 335 3NE3 335 3NE3 333	560 560 450	2 2 2			
3RW44 43 3RW44 44 3RW44 45	203 250 313	3NE3 230-0B 3NE3 230-0B 3NE3 233	315 315 450	1 1 1	3NE3 333 3NE3 333 3NE3 336	450 450 630	2 2 2			
3RW44 46 3RW44 47	356 432	3NE3 333 3NE3 335	450 560	2	3NE3 336 3NE3 338-8	630 800	2			
3RW44 53 3RW44 54 3RW44 55	551 615 693	2 x 3NE3 335 2 x 3NE3 335 2 x 3NE3 335	560 560 560	2 2 2	3 x 3NE3 334-0B 3 x 3NE3 334-0B 3 x 3NE3 334-0B	500	2 2 2			
3RW44 56 3RW44 57 3RW44 58	780 880 970	2 x 3NE3 336 2 x 3NE3 336 2 x 3NE3 336	630 630 630	2 2 2	2 x 3NE3 340-8 2 x 3NE3 340-8 2 x 3NE3 340-8	900 900 900	2 2 2			
3RW44 65 3RW44 66	1076 1214	2 x 3NE3 340-8 2 x 3NE3 340-8	900 900	2	3 x 3NE3 338-8 3 x 3NE3 338-8	800 800	2 2			

Soft starters			Braking contactor	rs ¹⁾²⁾	Motor starter pro	tectors/	Line protection,	maximum	
		up to 400 V			circuit breakers				
ToC 2	Rated current	(optional)	(for example circuit	t see page 7/63)	440 V +10 %	Rated current	690 V +5 %	Rated current	Size
Q11		Q21	Q91	Q92	Q1		F1		
Туре	A	Туре	Туре	Type	Type	Α	Туре	A	
Type of coor	dination "2" ³⁾ :	$I_{q} = 65 \text{ kA}$							
3RW44 22	29	3RT10 34	3RT15 26				3NA3 820-6	50	00
3RW44 23	36	3RT10 35	3RT15 26		3RV10 41-4JA10	63	3NA3 822-6	63	00
3RW44 24	47	3RT10 36	3RT15 35		3RV10 41-4KA10	75	3NA3 824-6	80	00
3RW44 25 3RW44 26	57 77	3RT10 44 3RT10 45	3RT15 35 3RT10 24	 3RT10 35	3RV10 41-4LA10 3RV10 41-4MA10	90 100	3NA3 830-6	100 125	00
3RW44 27	93	3RT10 45	3RT10 24 3RT10 25	3RT10 35 3RT10 36	3RV10 41-4MA10	100	3NA3 132-6 3NA3 136-6	160	1
3RW44 34	113	3RT10 54	3RT10 34	3RT10 44	3VL 17 16	160	3NA3 244-6	250	2
3RW44 35	134	3RT10 55	3RT10 36	3RT10 45	3VL17 16	160	3NA3 244-6	250	2
3RW44 36	162	3RT10 56	3RT10 44	3RT10 45	3VL37 25	250	3NA3 365-6	500	3
3RW44 43	203	3RT10 64	3RT10 44	3RT10 54	3VL47 31	315	2 x 3NA3 354-6	2 x 355	3
3RW44 44	250	3RT10 65	3RT10 44	3RT10 55	3VL47 31	315	2 x 3NA3 354-6	2 x 355	3
3RW44 45	313	3RT10 75	3RT10 54	3RT10 56	3VL47 40	400	2 x 3NA3 365-6	2 x 500	3
3RW44 46	356	3RT10 75	3RT10 54	3RT10 56	3VL47 40	400	2 x 3NA3 365-6	2 x 500	3
3RW44 47	432	3RT10 76	3RT10 55	3RT10 64	3VL57 50	500	2 x 3NA3 365-6	2 x 500	3
3RW44 53	551	3TF68	3RT10 64	3RT10 66	3VL67 80	800	2 x 3NA3 365-6	2 x 500	3
3RW44 54 3RW44 55	615 693	3TF68 3TF69	3RT10 64 3RT10 65	3RT10 75 3RT10 75	3VL67 80 3VL67 80	800 800	2 x 3NA3 365-6 2 x 3NA3 365-6	2 x 500 2 x 500	3
3RW44 56	780	3TF69	3RT10 65	3RT10 75	3VL77 10	1000	2 x 3NA3 365-6	2 x 500	
3RW44 57	780 880	31709	3RT10 75	3RT10 75 3RT10 76	3VL77 10 3VL77 10	1000	2 x 3NA3 365-6	2 x 500 2 x 500	3
3RW44 58	970		3RT10 75	3RT10 76	3VL77 12	1250	3 x 3NA3 365-6	3 x 500	3
3RW44 65	1076		3RT10 75	3TF68	3VL77 12	1250	3 x 3NA3 365-6	3 x 500	3
3RW44 66	1214		3RT10 76	3TF68	3VL77 12	1250	3 x 3NA3 365-6	3 x 500	3

¹⁾ If the ramp-down function "Combined braking" is selected, no braking contactor is required. If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type). For applications with large centrifugal masses (J_{Load} > J_{Motor}) we recommend the function "DC braking".

²⁾ Additional auxiliary relay K4:
LZX:RT4A4T30
(3RW44 soft starter with rated control supply voltage 230 V AC),
LZX:RT4A4S15

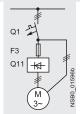
[Additional auxiliary relay K4:
LZX:RT4A4S15]

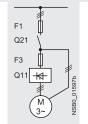
[Additional auxiliary relay K4:
LZX:RT4A4S15]

⁽³RW44 soft starter with rated control supply voltage 115 V AC). The type of coordination "2" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder. The types of

Inside-delta circuit fused version with 3NE or 3NC SITOR fuses

(semiconductor protection by fuse, lead and overload protection by motor starter protector/circuit breaker)





For matching fuse bases see Catalog LV 1 under "SENTRON Switching and Protection Devices for Power Distribution" —> "Switch Disconnectors", and Catalog ET B1 under "BETA Protecting" —> "SITOR Semiconductor Fuses" or go to www.siemens.com/sitor —> "Products" —> "BETA Protecting" —> "SITOR"

Soft starters		Semiconductor fuses, minimum			Semiconductor	fuses, maximum	1	Semiconductor	fuses (cylinder)
ToC 2	Rated current	690 V +10 %	Rated current	Size	690 V +10 %	Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	Α		F3 Type	A		F3 Type	А	
Type of coo	rdination "2	ш1)								
3RW44 22 3RW44 23 3RW44 24	50 62 81	3NE4 120 3NE4 121 3NE4 121	80 100 100	0 0 0	3NE4 121 3NE4 121 3NE4 122	100 100 125	0 0 0	3NC2 280 3NC2 200 3NC2 200	80 100 100	22 x 58 22 x 58 22 x 58
3RW44 25 3RW44 26 3RW44 27	99 133 161	3NE4 122 3NE4 124 3NE3 224	125 160 160	0 0 1	3NE4 124 3NE4 124 3NE3 332-0B	160 160 400	0 0 2			
3RW44 34 3RW44 35 3RW44 36	196 232 281	3NE3 225 3NE3 225 3NE3 227	200 200 250	1 1 1	3NE3 335 3NE3 335 3NE3 333	560 560 450	2 2 2			
3RW44 43 3RW44 44 3RW44 45	352 433 542	3NE3 230-0B 3NE3 230-0B 3NE3 233	315 315 450	1 1 1	3NE3 333 3NE3 333 3NE3 336	450 450 630	2 2 2			
3RW44 46 3RW44 47	617 748	3NE3 333 3NE3 335	450 560	2	3NE3 336 3NE3 338-8	630 800	2			
3RW44 53 3RW44 54 3RW44 55	954 1065 1200	2 x 3NE3 335 2 x 3NE3 335 2 x 3NE3 335	560 560 560	2 2 2	3 x 3NE3 334-0B 3 x 3NE3 334-0B 3 x 3NE3 334-0B	500	2 2 2			
3RW44 56 3RW44 57 3RW44 58	1351 1524 1680	2 x 3NE3 336 2 x 3NE3 336 2 x 3NE3 336	630 630 630	2 2 2	2 x 3NE3 340-8 3 x 3NE3 340-8 3 x 3NE3 340-8	900 900 900	2 2 2			
3RW44 65 3RW44 66	1864 2103	2 x 3NE3 340-8 2 x 3NE3 340-8	900 900	2	3 x 3NE3 338-8 3 x 3NE3 338-8	800 800	2			

Soft starters		Line contactors up to 400 V	Motor starter prote	ectors/	Line protection, m	aximum	
ToC 2	Rated current	(optional)	440 V +10 %	Rated current	690 V +5 %	Rated current	Size
Q11 Type	A	Q21 Type	Q1 Type	А	F1 Type	А	
Type of coo	rdination "2	u1)					
3RW44 22	50	3RT10 36-1AP04	3RV10 42-4KA10	75	3NA3 824-6	80	00
3RW44 23	62	3RT10 44-1AP04	3RV10 42-4LA10	90	3NA3 830-6	100	00
3RW44 24	81	3RT10 46-1AP04	3RV10 42-4MA10	100	3NA3 132-6	125	1
3RW44 25	99	3RT10 54-1AP36	3VL27 16	160	3NA3 136-6	160	1
3RW44 26	133	3RT10 55-6AP36	3VL27 16	160	3NA3 240-6	200	2
3RW44 27	161	3RT10 56-6AP36	3VL37 20	200	3NA3 244-6	250	2
3RW44 34	196	3RT10 64-6AP36	3VL37 25	250	3NA3 360-6	400	3
3RW44 35	232	3RT10 65-6AP36	3VL47 31	315	3NA3 360-6	400	3
3RW44 36	281	3RT10 66-6AP36	3VL47 40	400	2 x 3NA3 360-6	2 x 400	3
3RW44 43	352	3RT10 75-6AP36	3VL47 40	400	2 x 3NA3 365-6	2 x 500	3
3RW44 44	433	3RT10 76-6AP36	3VL57 50	500	2 x 3NA3 365-6	2 x 500	3
3RW44 45	542	3TF68 44-0CM7	3VL57 63	800	3 x 3NA3 365-6	3 x 500	3
3RW44 46	617	3TF68 44-0CM7	3VL67 80	800	3 x 3NA3 365-6	3 x 500	3
3RW44 47	748	3TF69	3VL67 80	800	3 x 3NA3 365-6	3 x 500	3
3RW44 53	954		3VL77 10	1000	3 x 3NA3 365-6	3 x 500	3
3RW44 54	1065		3VL77 12	1250	3 x 3NA3 365-6	3 x 500	3
3RW44 55	1200		3VL87 16	1600	3 x 3NA3 365-6	3 x 500	3
3RW44 56	1351		3VL87 16	1600	3 x 3NA3 372	3 x 630	3
3RW44 57	1524		3VL87 16	1600	3 x 3NA3 372	3 x 630	3
3RW44 58	1680		3WL12 20	2000	2 x 3NA3 480	2 x 1000	4
3RW44 65	1864		3WL12 25	2500	2 x 3NA3 482	2 x 1250	4
3RW44 66	2103		3WL12 25	2500	2 x 3NA3 482	2 x 1250	4

 $^{^{1)}\,}$ The type of coordination "2" refers only to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are explained under "3RA1 Fuseless Load Feeders".

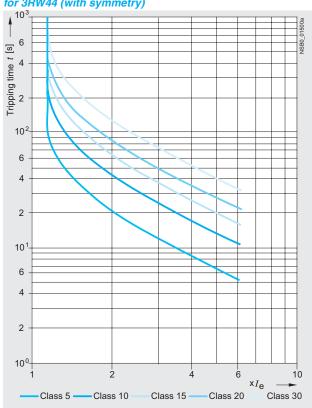
3RW Soft Starters

3RW44

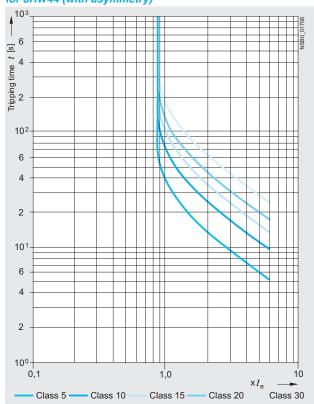
for high-feature applications

Characteristic curves

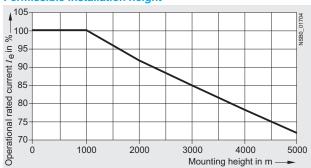
Motor protection tripping characteristics for 3RW44 (with symmetry)



Motor protection tripping characteristics for 3RW44 (with asymmetry)



Permissible installation height



At an installation height above 2000 m, the max. permissible operational voltage is reduced to 460 V.

for high-feature applications

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 350 % $I_{\rm n \ motor}$). The soft starter rating can be selected to be as high as the rating of the motor used

Application		Conveyor belt	Roller conveyor	Compressor	Small fan	Pump	Hydraulic pump
Starting parameters			_				_
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	70 10 Deactivated	60 10 Deactivated	50 10 4 × I _M	30 10 4 × I _M	30 10 Deactivated	30 10 Deactivated
Torque rampStarting torqueEnd torqueStarting time		60 150 10	50 150 10	40 150 10	20 150 10	10 150 10	10 150 10
Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Smooth ramp-down	Smooth ramp-down	Free ramp-down	Free ramp-down	Pump ramp-down	Free ramp-down

Application examples for heavy starting (Class 20)

Heavy starting Class 20 (up to 40 s with 350 % $I_{\rm n\ motor}$). The soft starter has to be selected one performance class higher than the motor used

Application		Stirrer	Centrifuge	Milling machine
Starting parameters				
Voltage ramp and current limiting Starting voltage Starting time Current limit value	% S	30 30 4×I _M	30 30 4×I _M	30 30 4×I _M
Torque rampStarting torqueEnd torqueStarting time		30 150 30	30 150 30	30 150 30
 Breakaway pulse 		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down or DC braking

Application examples for very heavy starting (Class 30)

Very heavy starting Class 30 (up to 60 s with 350 % $I_{\rm n\,motor}$). The soft starter has to be selected two performance classes higher than the motor used

Application		Large fan	Mill	Crusher	Circular saw/bandsaw
Starting parameters				_	_
 Voltage ramp and current limiting Starting voltage Starting time Current limit value 	% S	30 60 4 x I _M	50 60 4 × I _M	50 60 4 × I _M	30 60 4 × I _M
Torque rampStarting torqueEnd torqueStarting time		20 150 60	50 150 60	50 150 60	20 150 60
Breakaway pulse		Deactivated (0 ms)	80 %, 300 ms	80 %, 300 ms	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down	Free ramp-down

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

3RW Soft Starters

Circuit concept

The SIRIUS 3RW44 soft starters can be operated in two different types of circuit.

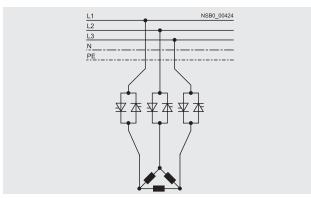
• Inline circuit

The controls for isolating and protecting the motor are simply connected in series with the soft starter. The motor is connected to the soft starter with three cables.

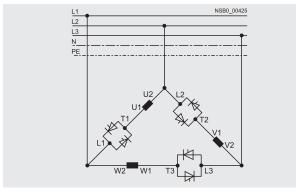
• Inside-delta circuit

The wiring is similar to that of wye-delta starters. The phases of the soft starter are connected in series with the individual motor windings. The soft starter then only has to carry the phase current, amounting to about 58 % of the rated motor current (conductor current).

Comparison of the types of circuit



Inline circuit: Rated current $I_{\rm e}$ corresponds to the rated motor current $I_{\rm n}$, 3 cables to the motor



Inside-delta circuit:

Rated current $I_{\rm e}$ corresponds to approx. 58 % of the rated motor current $I_{\rm n}$, 6 cables to the motor (as with wye-delta starters)

Which circuit?

Using the inline circuit involves the lowest wiring outlay. If the soft starter to motor connections are long, this circuit is preferable.

With the inside-delta circuit there is double the wiring complexity but a smaller size of device can be used at the same rating.

Thanks to the choice of operating mode between the inline circuit and inside-delta circuit, it is always possible to select the most favorable solution.

The braking function is possible only in the inline circuit.

Configuration

The 3RW44 solid-state soft starters are designed for normal starting. In case of heavy starting or increased starting frequency, a larger device must be selected.

For long starting times it is recommended to have a PTC sensor in the motor. This also applies for the ramp-down modes smooth ramp-down, pump ramp-down and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down.

In the motor feeder between the SIRIUS 3RW soft starter and the motor, no capacitive elements are permitted (e. g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately.

A bypass contact system and solid-state overload relay are already integrated in the 3RW44 soft starter and therefore do not have to be ordered separately.

The harmonic component load for starting currents must be taken into consideration for the selection of motor starter protectors (selection of release).

Note:

When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Device interface, PROFIBUS DP communication module, Soft Starter ES parameterizing and operating software

The 3RW44 electronic soft starters have a PC interface for communicating with the Soft Starter ES software or for connecting the external display and operator module. If the optional PROFIBUS communication module is used, the 3RW44 soft starter can be integrated in the PROFIBUS network and communicate using the GSD file or Soft Starter ES Premium software.

The Soft Starter ES parameterizing and operating software can be downloaded from

www.usa.siemens.com > Software with a 14-day trial license.

More information about Soft Starter ES can be found in Chapter 12 of Catalog LV 1.

for high-feature applications

Controls Express

Soft Starters at the speed you need

We have taken the most popular modifications in our Class 74 family of enclosed 3RW44 soft starters, included them in a standard part number, and have them in stock and ready to ship within 1-3 days. By ordering the select styles, customers can now receive these enclosed soft starters 85% faster than standard lead times.

Faster delivery is not the only benefit. By offering a limited range of select styles with modifications, selection is simple.

The Controls Express Soft Starter stock offering includes the following:

- 3RW44 for handling the widest range of applications
- Circuit breaker disconnect to provide short circuit protection
- NEMA 4 rated enclosure to provide flexible application including outdoor ratings and can be used in place of NEMA 1, 12 or 3R enclosures
- 480/240V 120V Control Power Transformer built-in (factory configured for 480V)
- Built-in pilot devices include a run pilot light, a start pushbutton, and a HOA selector switch for the most common user interaction

Controls Express lead times apply to orders of up to 2 units of the Class 74 starters in the table below.

Please contact customer service at 1-866-663-7324 for lead times of larger order volumes.

For more information on Controls Express and a complete list of available products, please visit our website at www.usa.siemens.com/controls-express.

	Max HP				Enclosure	
Rated						NEMA 4
Operating Current	200 Volts	230 Volts	460 Volts	575 Volts	Coil Voltage	Catalog Number
117	30	40	75	_	120V	74HT34EFAPS3FA
145	40	50	100	_	120V	74JT34EFAPS3FA
215	60	75	150	_	120V	74LT34EFAPS3FA
280	75	100	200	_	120V	74MT34EFAPS3FA
385	125	150	300	_	120V	74PT34EFAPS3FA

HP ratings are at standard Class 10 light duty rating (350% * FLA for less than 10s). Start times greater than 10s should be derated one ize up for a maximum 20s start time.

Manual for SIRIUS 3RW44

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices.

Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from: www.usa.siemens.com > Software

More information can be found on the Internet at: www.usa.siemens.com

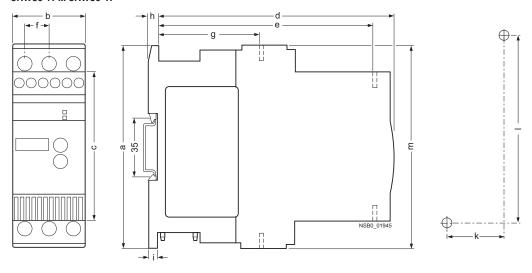
3RW Soft Starters

Project Planning aids

Dimensional drawings

3RW30 for standard applications

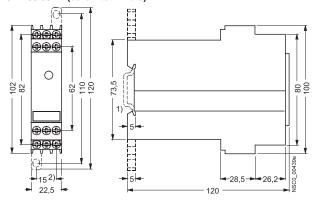
3RW30 1. ... 3RW30 4.



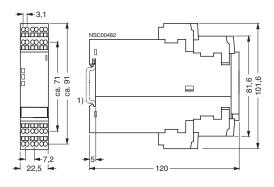
Type/Dimension (mm)	а	b	С	d	е	f	g	h	i	k	I	m
3RW30 11.	95	45	62	146	126	14.4	63	5	6.5	35	85	95
3RW30 12.	95	45	62	146	126	14.4	63	5	6.5	35	85	117.2
3RW30 21.	125	45	92	146	126	14.4	63	5	6.5	35	115	125
3RW30 22.	125	45	92	146	126	14.4	63	5	6.5	35	115	150
3RW30 3.	160	55	110	163	140	18	63	5	6.5	30	150	144
3RW30 4.	170	70	110	181	158	22.5	85	5	10	60	160	160

Clearances to grounded parts (mm)	Lateral	Тор	Bottom	Fixing screws	Tightening torques (Nm)
3RW30 1.	5	60	40	M4	1
3RW30 2.	5	60	40	M4	1
3RW30 3.	30	60	40	M4	1
3RW30 4.	30	60	40	M4	2

3RW30 03-1. (screw terminals)



3RW30 03-2. (spring-type terminals)

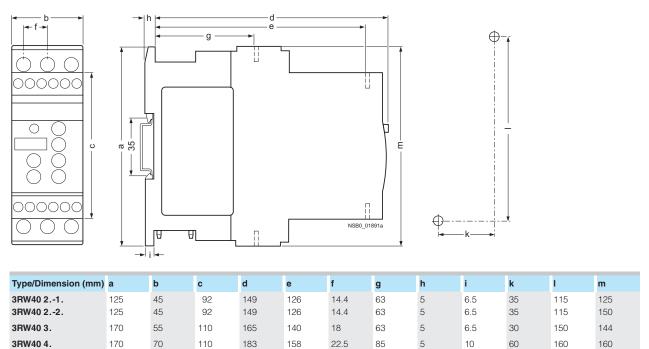


¹⁾ For mounting onto standard mounting rail TH 35 according to EN 60715.

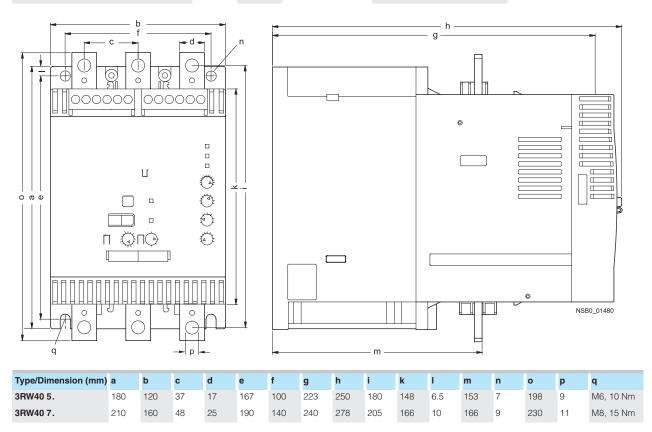
Dimension for screw fixing. Screw fixing with two 3RP1 903 push-in lugs per 3RW30 03 device.

Project Planning aids

3RW40 for standard applications



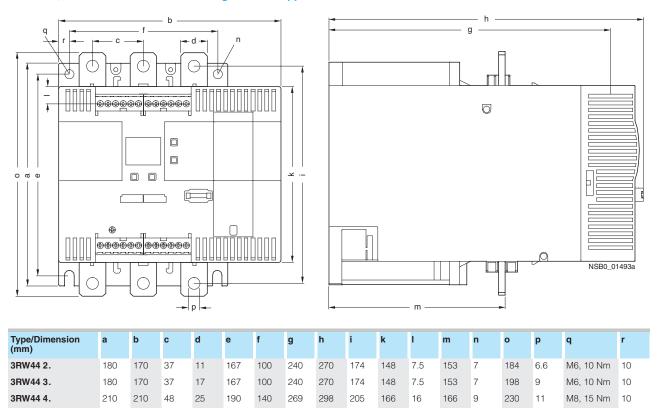
Clearances to grounded parts (mm)	Lateral	Тор	Bottom	Fixing screws	Tightening torques (Nm)
3RW40 2.	5	60	40	M4	1
3RW40 3.	30	60	40	M4	1
3RW40 4.	30	60	40	M4	2



3RW Soft Starters

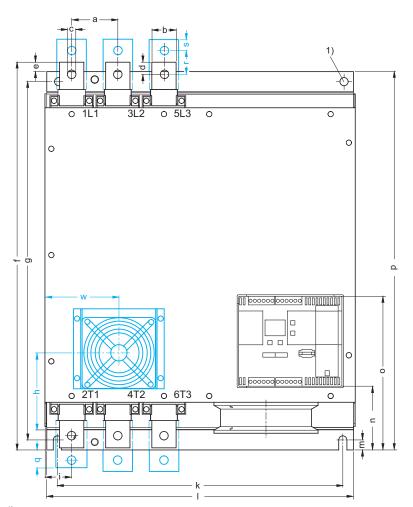
Project Planning aids

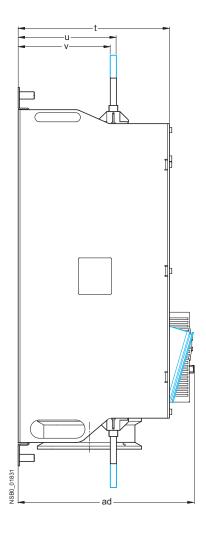
3RW44 2., 3RW44 3. and 3RW44 4. for High-Feature applications



Project Planning aids

3RW44 5. and 3RW44 6. for High-Feature applications

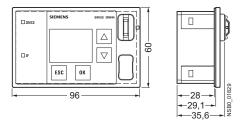




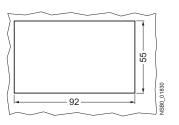
¹⁾ For M12 screw, tightening torque max. 35 Nm (310 lb.in).

Type/Dimension (mm)	а	b	С	d	е	f	g	h	i	k	I	m
3RW44 5.	76	40	14	20	15.5	638.5	590		44	470	510	16.5
3RW44 6.	85	50	14			667	660	160	37.5	535	576	16.5
	n	0	р	q	r	s	t	u	v	W	ad	
Type/Dimension (mm)	n	o 253	p	q	r	S	t	u 162	v	W	ad 290	

3RW49 00-0AC00 external display and operator module



Installation cutout for 3RW49 00-0AC00 external display and operator module



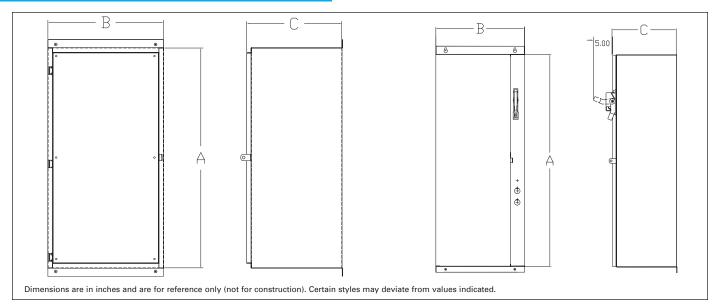
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6

Class 73, 74



Non-Combination Class 73

N1, N12, N4 Standard Enclosure

111/1112/111						
	Amps	Α	В	С		
3RW40new	11 - 73	25	18	13		
3RVV40NeW	98	36	23	10		
	117-145	36	18	15		
3RW40	205-315	36	22	20		
	385	54	36	20		
	26 - 68	26	12.5	15		
	82 - 117	36	18	15		
3RW44	145 - 215	36	22	20		
	280 - 385	54	36	20		
	494 - 780	90	40	20		

N4 Stainless Steel Standard Enclosure

	Amps	Α	В	С
3RW40new	11- 98	55	29	11
	117	36	18	15
3RW40	145 - 205A	36	22	20
	248 - 385	54	36	20
3RW44	26 - 51	26	12.5	15
	68 - 82	36	18	15
	100 - 117	36	22	20
	145 - 385	54	36	20

N1, N12, N4 Modified Enclosure

	Amps	Α	В	С
3RW40	117-385	56	36	20
OD\4/44	26-51	36	22	20
3RW44	68-385	54	36	20

N4 Stainless Steel Modified Enclosure

	Amps	Α	В	С	
3RW40	117-385	54	36	20	
3RW44	26-51	36	22	20	
3HVV44	68-385	54	36	20	

Combination Type Class 74

N1. N12. N4 Standard Enclosure

N1, N12, N4 Standard Enclosure						
	Amps	Α	В	С		
3RW40new	11 - 73	36	20	11		
3hW40HeW	98	46	20	10		
	117	50	25	20		
3RW40	145 - 205	66	25	20		
3NVV40	248 - 315	90	30	20		
	385	90	40	20		
	26 - 68	36	23	15		
	82 - 117	50	25	20		
	145 - 215	66	25	20		
3RW44	280	90	30	20		
3RVV44	315 - 384	90	40	20		
	494	90	40	20		
	551 - 1076	90	40①	20		
	970 - 1076	90	50	20		

N1, N12 Fusible

	Amps	Α	В	С
3RW44	494-780	90	50	20

N4 Stainless Steel Standard Enclosure

	Amps	Α	В	С
3RW40new	11- 98	55	29	11
	117 - 145	54	36	20
3RW40	205 - 300	90	40	20
	26 - 42	36	23	15
3RW44	51 - 100	50	25	20
	117 - 145	54	36	20
	180 - 385	90	40	20

N1, N12, N4 Modified Enclosure

	Amps	Α	В	С
	117 - 248	76	30	20
3RW40	315	90	30	20
	385	90	40	20
	26 - 215	76	30	20
3RW44	280	90	30	20
	315 - 385	90	40	20

N4 Stainless Steel Modified Enclosure

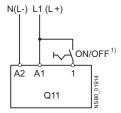
	Amps	Α	В	С
3RW40	117-145	76	30	20
3RW44	26-145	76	30	20

Project Planning aids

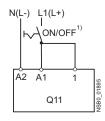
Schematics

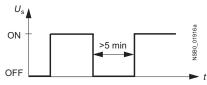
3RW30 . . connection examples for control circuit

Control using switches

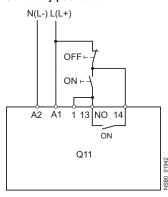


Automatic mode

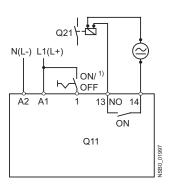




Control by pushbutton

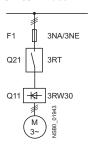


Control of a main contactor

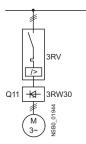


3RW30 connection examples for main circuit²⁾

3RW30 - 3-phase motor with 3NA/3NE fuse



3RV motor starter protector



Caution: Risk of restarting!When operating with a switch (ON/OFF) a new, automatic restart will take place automatically if the start command is still active at terminal 1.

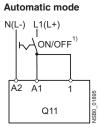
 $^{2)}\,$ As an alternative, the motor feeder can also be installed as a fuseless or as a fused version. For fuse and switching device coordination, see "Technical specifications".

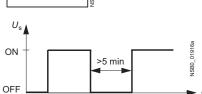
The wiring diagrams are provided only as examples.

3RW Soft Starters

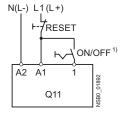
Project Planning aids

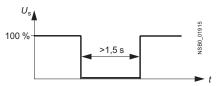
3RW40 2. ... 3RW40 4. connection examples for control circuit



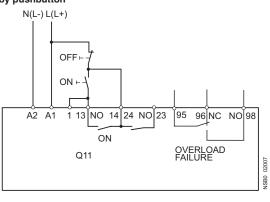


Control with remote reset

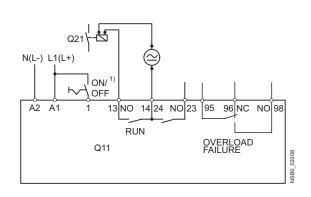




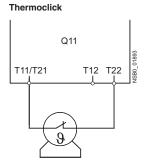
Control of 3RW40 2. ... 3RW40 4. by pushbutton

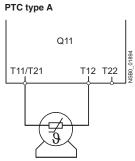


Control of a main contactor



Connection example of 3RW40 2. ... 3RW40 4. for PTC sensors (thermistor motor protection)



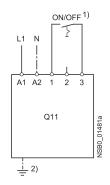


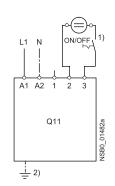
1) Caution: Risk of restarting! When operating with a switch (ON/OFF) a new, automatic restart will take place automatically if the start command is still active at terminal 1.

3RW40 5. and 3RW40 7. connection examples for control circuit

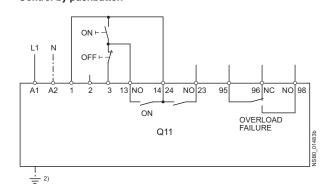
Control by switch using internal 24 V DC supply

external power supply

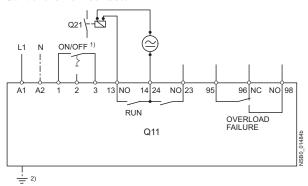




Control by pushbutton



Control of a main contactor



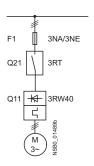
1) Caution: Risk of restarting! When operating with a switch (ON/OFF) a new, automatic restart will take place automatically if the start command is still active at terminal 3.

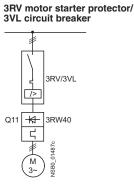
- ²⁾ Grounding necessary for fan connection to 3RW40 5...
- $^{\rm 3)}$ As an alternative, the motor feeder can also be installed as a fuseless or as a fused version. For fuse and switching device coordination, see

The wiring diagrams are provided only as examples.

3RW40 connection examples for main circuit³⁾

3RW40 - 3-phase motor with 3NA/3NE fuse





3RW Soft Starters

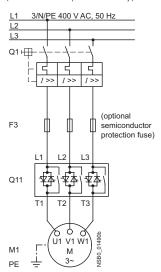
Project Planning aids

3RW44 connection examples for main and control circuits

Main circuit

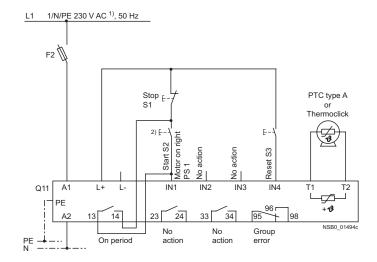
Possibility 1a:

Inline circuit with motor starter protector and SITOR fuse (semiconductor protection only)



Control circuit

Possibility 1: Control by pushbutton

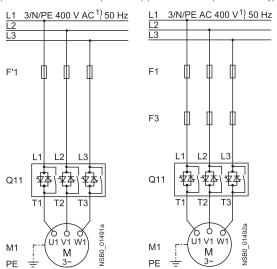


Main circuit

Possibility 1b: Inline circuit with all-range

Inline circuit with line and SITOR fuse (line and semiconductor protection) (semiconductor protection only)

Possibility 1c:



1) Permissible values for main and control voltage, see "Technical specifications'

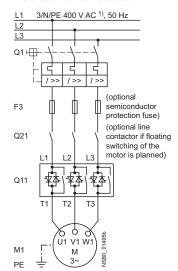
²⁾ Caution: Risk of restarting!

Because the output is parameterized to "Motor ON", the start command is automatically active after the reset command and a new, automatic restart will take place. This applies especially in case of motor protection tripping. For safety reasons we recommend connecting the group error output (terminals 95/96) in series with the output parameterized to "Motor ON"

Project Planning aids

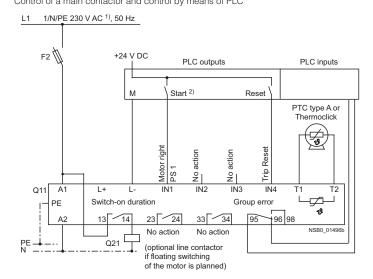
Main circuit

Possibility 2: Inline circuit with main contactor



Control circuit

Possibility 2: Control of a main contactor and control by means of PLC



1) Permissible values for main and control voltage, see "Technical

2) Caution: Risk of restarting!

The start command (e. g. from the PLC) must be reset prior to a reset command because a new, automatic restart will take place automatically if a start command is active after the reset command. This applies especially in case of motor protection tripping.

For safety reasons we recommend incorporating the group error output

(terminals 95 and 96) in the controller.

For Operation in the Control Cabinet

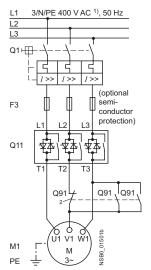
3RW Soft Starters

Project Planning aids

Main circuit

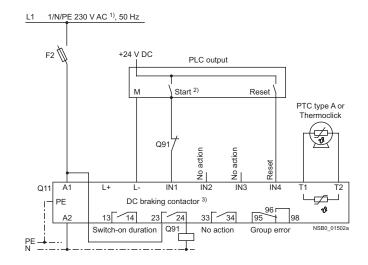
Possibility 3a:

Inline circuit with ramp-down function DC braking³⁾ (for device types 3RW44 22 to 3RW44 25)



Control circuit

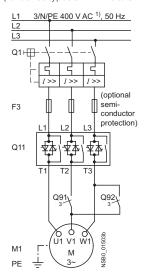
Possibility 3a: Control of the DC braking contactor³⁾



Main circuit

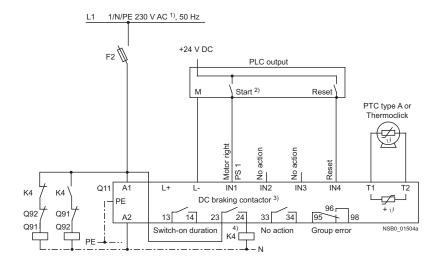
Possibility 3b:

Inline circuit with ramp-down function DC braking³⁾ (for device types 3RW44 26 to 3RW44 47)



Control circuit

Possibility 3b: Control of the DC braking contactor³⁾



Permissible values for main and control voltage, see "Technical specifications".

2) Caution: Risk of restarting!

The start command (e. g. from the PLC) must be reset prior to a reset command because a new, automatic restart will take place automatically if a start command is active after the reset command. This applies especially in case of motor protection tripping.

For safety reasons we recommend incorporating the group error output (terminals 95 and 96) in the controller.

- 3) If the ramp-down function "Combined braking" is selected, no braking contactor is required.
 - If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition. For type see "Fuse Assignment (Inline Circuit)" on pages 7/46 to 7/48.
 - For applications with large centrifugal masses ($J_{\rm Load} > J_{\rm Motor}$) we recommend the function "DC braking".
- The output 2 must be switched over to "DC braking contactor".
- 4) Auxiliary relay K4, e. g.: LZX:RT4A4T30 (230 V AC rated control supply voltage), LZX:RT4A4S15 (115 V AC rated control supply voltage).

For Operation in the Control Cabinet

3RW Soft Starters

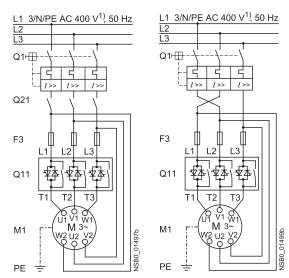
Project Planning aids

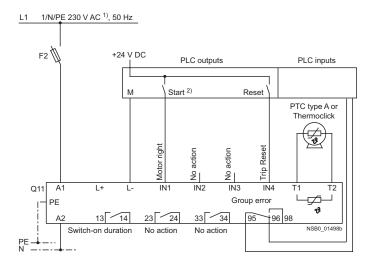
Main circuit

Possibility 4a: Inside-delta circuit Possibility 4b: Change of direction of rotation for inside-delta circuit

Control circuit

Possibility 4: Control by means of PLC





Permissible values for main and control voltage, see "Technical specifications".

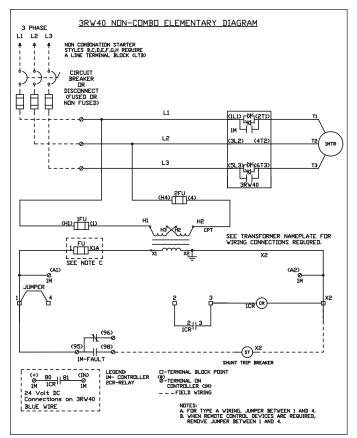
2) Caution: Risk of restarting!

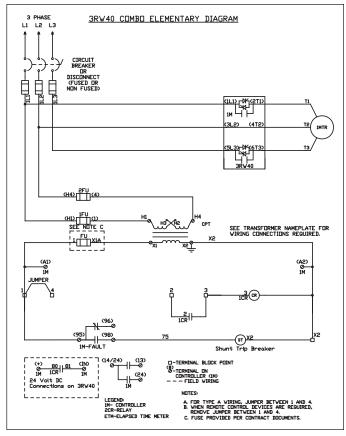
The start command (e. g. from the PLC) must be reset prior to a reset command because a new, automatic restart will take place automatically if a start command is active after the reset command. This applies especially in case of motor protection tripping.

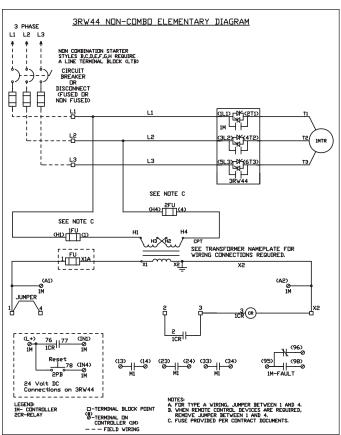
For safety reasons we recommend incorporating the group error output

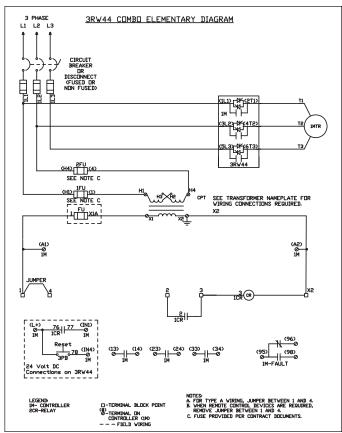
(terminals 95 and 96) in the controller

Class 73, 74











Contents	Pages
Introduction	8/2
Solid-state switching devices	
General data	8/3
Solid-state switching devices for resistive load	ds
Solid-state relays 3RF21 solid-state relays, single-phase, 22.5 mm. 3RF20 solid-state relays, single-phase, 45 mm 3RF22 solid-state relays, three-phase, 45 mm Solid-state contactors	8/9
General data	8/12
Solid-state switching devices for switching me	otors
Solid-state contactors General data	8/16
3RF29 Function modules	
Assignment of modules Converters Load monitoring Heating current monitoring Power controllers Power control regulators	8/23 8/24 8/25 8/26
Technical data	
Solid-state relays 3RF21 solid-state relays, single-phase, 22.5 mm. 3RF20 solid-state relays, single-phase, 45 mm 3RF22 solid-state relays, three-phase, 45 mm Solid-state contactors	8/32
3RF23 solid-state contactors, single-phase 3RF24 solid-state contactors, three-phase 3RF34 solid-state contactors, three-phase 3RF29 Function modules Converters, load monitors, power controller,	8/39
heating current monitors	8/46

 Power control regulators
 8/48

 Thermal data
 8/49

 Dimensions
 8/63

 Wiring diagrams
 8/72



2

3

4

5

O

7

Introduction

Overview















38	F2	1

3RF20

3RF

3RF24

3RF34 (Motor)

r) 3RF29

8/16

8/17

3RF34

		Order No.	Page
SIRIUS solid-state switching	g devices for switching resistive loads		
Solid-state relays			
22.5 mm solid-state relays, 45 mm solid-state relays	 Widths of 22.5 mm and 45 mm Compact and space-saving design 	3RF21, 3RF20	8/9 8/10
	"Zero-point switching" version	3RF22	8/43
	Mounting onto existing heat sinks		
Solid-state contactors			
Solid-state contactors	 Complete units comprising a solid-state relay and an optimized heat sink, "ready to use" 	3RF23 3RF24	8/24 8/46
	Compact and space-saving design	0111 2 1	0, 10
	 Versions for resistive loads "zero-point switching" and inductive loads "instantaneous switching" 		
	 Special versions "Low Noise" and "Short-Circuit Resistant" 		8/8, 8/12
Function modules	For extending the functionality of the 3RF21 solid-state relays and the 3RF23 solid-state contactors for many different applications:		
Converters	 For converting an analog input signal into an on/off ratio; can also be used on 3RF22 and 3RF24 3-phase switching devices 	3RF29 00-0EA18	8/13
Load monitoring	For load monitoring of one or more loads (partial loads)	3RF29 20-0FA08, 3RF29 .0-0GA	8/14
Heating current monitoring	 For load monitoring of one or more loads (partial loads); remote teach 	3RF290JA	8/14
Power control regulators	 For supplying the current by means of a solid-state switching device de- pending on a setpoint value. There is a choice of full-wave control and generalized phase control. 	3RF290KA.	8/14
Power controllers	 For supplying the current by means of a solid-state switching device depending on a setpoint value. Closed-loop control: Full-wave control or generalized phase control 	3RF29 .0-0HA	8/15
SIRIUS Innovations solid-st	ate switching devices for switching motors		
Solid-state contactors			

Nomenclature Guide

Solid-state contactors

Solid-state reversing contactors

	ataro Garao							
3RF2	0	20	-	1	Α	Α	0	2
SIRIUS SC	Туре	Rating		Terminal Type	Switching	Control Phases	Coil Type	Power Voltage
	0 = 45 mm Relay 1 = 22.5 mm Relay 2 = 3-phase 45 mm Relay 3 = Contactor 4 = 3-phase Contactor 9 = Function Module			1 = Screw 2 = Spring 3 = Ring Tounge	A = Zero Point B = Instantaneous C = Low Noise D = Short Circuit	A = 1-phase B = 2-phase C = 3-phase	0 = 24 VDC 2 = 110 - 230 VAC 4 = 4 - 30 VDC 5 = 230 VAC	2 = 24 - 230 VAC 4 = 230 - 460 VAC 5 = 48 - 600 VAC 6 = 400 - 600 VAC

• Complete "ready to use" units with an integrated insulated heatsink

Note: This is only a guide to decode the model number. All possible combinations of these are not produced. Character of "3" in position four indicates Sirius Innovations

• Compact and space-saving design

• Version for motors, "instantaneous switching"

General data

Overview















3RF34 (Motor)

SIRIUS 3RF2 solid-state switching devices

Solid-state switching devices for resistive loads

- Solid-state relavs
- Solid-state contactors
- · Function modules

Solid-state switching devices for switching motors

- Solid-state contactors
- · Solid state reversing contactors

The most reliable solution for any application

Compared to electro mechanical contactors, our SIRIUS 3RF2 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, insusceptible to faults. With its variable connection methods and a wide spread of control voltages, the SIRIUS 3RF2 family is universally applicable. Depending on the individual requirements of the application, our modular switchgear can also be guite easily expanded by the addition of standardized function modules.

Semiconductor relays

SIRIUS SC semiconductor relays are suitable for surface mounting on existing cooling surfaces. Installation is quick and easy, involving just two screws. Depending on the nature of the heat sink, the capacity reaches up to 88 Å on resistive loads. The 3RF21 semiconductor relays can be expanded with various function modules to adapt them to individual applications.

The semiconductor relays are available in 2 different widths:

- 3RF21 semiconductor relay with a width of 22.5 mm
- 3RF20 and 3RF22 semiconductor relay with a width of 45 mm

Both variants are only available in the "zero-point switching" version. This standard version is ideally suited for operation with resistive loads.

Selecting semiconductor relays

When selecting semiconductor relays, in addition to information about the power system, the load and the ambient conditions it is also necessary to know details of the planned design. The semiconductor relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink. The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a semiconductor relay with higher rated current than the load requires
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagram

Solid-state contactors for switching motors

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 5 HP and reversing up to 3 HP. The

devices are constructed with complete insulation and can be mounted directly to 3RV1 MSPs and SIRIUS overload relays. resulting in a very simple integration into motor feeders.

These three-phase solid-state contactors are equipped with a two-phase control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Important features:

- Insulated enclosure with integrated heat sink
- Degree of protection IP20
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- · Variety of connection methods
- · Plug-in control connection
- Display via LEDs

Selecting solid-state contactors

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions. As the solid-state contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for solid-state relays

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing the maximum permissible switching frequency based on the characteristic curves. To do this, the starting current, the starting time and the motor load in the operating phase must be known.
- If the permissible switching frequency is below the desired frequency, it is possible to achieve an increase by overdimensioning the motor.

Benefits

- Devices with integrated heat sink, "ready to use"
- Compact and space-saving design
- Reversing contactors with integrated interlocking

Application

Standards and approvals

- IEC 60947-4-3
- UL 508, CSA for North America¹⁾
- · CE marking for Europe
- · C-Tick approval for Australia
- 1) Please note: For reversing motor applications use overvoltage protection device Type 3TX7462-3L; max. cut-off-voltage 6000 V; min. energy handling capability 100 J.

General data

Туре	Solid-state relays			Solid-state	contactors	Function m	nodules				
	1-phase		3-phase	1-phase	3-phase	Converter	Load mon	nitoring	Heating	Power	Power
	22.5 mm	45 mm	45 mm				Basic	Extended	current monitoring	control- lers	regula- tors
Usage											
Simple use of existing solid-state relays		1									
Complete device "Ready to use"				1	/						
Space-saving	1		1	1	/	✓	1				
Can be extended with modular function modules	1		1	1	1						
Frequent switching and monitoring of loads and solid-state relays/solid-state contactors							✓	✓	✓	✓	✓
Monitoring of up to 6 partial loads							1		1		
Monitoring of more than 6 partial loads								1			
Control of the heating power through an analog input						✓				1	1
Power control											1
Startup											
Easy setting of setpoints with "Teach" button							✓	1		✓	1
"Remote Teach" input for setting setpoints									1		
Mounting											
Mounting onto mounting rails or mounting plates				✓	1						
Can be snapped directly onto a solid-state relay or contactor						1	✓	1	1	✓	1
For use with "Coolplate" heat sink	1	1	1								
Cable routing											
Connection of load circuit as for controls	1		1	✓	1		✓	1	✓	1	1
Connection of load circuit from above		/									

✓ Function is available

☐ Function is possible

 $\textbf{Note:} \ \text{Permissible for use at altitudes of more than 2500 m above sea level with the following derating for 3RF2 Devices:}$

Site altitude 2500 m above sea level:

- •Reduction of rated insulation voltage to 0,93 x U_i
- •Reduction of load current to 0,93 x $I_{\rm e}$

Site altitude 3000 m above sea level:

- •Reduction of rated insulation voltage to 0,88 x $U_{\rm i}$
- •Reduction of load current to 0,9 x I_e

Site altitude 4000 m above sea level:

- •Reduction of rated insulation voltage to 0,79 x $U_{\rm i}$
- •Reduction of load current to 0,8 x Ie

Site altitude 5000 m above sea level:

- •Reduction of rated insulation voltage to 0,75 x $U_{\rm i}$
- •Reduction of load current to 0,7 x $I_{\rm e}$

These ratings apply to a maximum ambient temperature of 40 $^{\circ}\text{C}$ (140 $^{\circ}\text{F}).$

General data

Benefits

- Considerable space savings thanks to a width of only 22.5 mm
- Variety of connection techniques: screw connection, springtype connection or ring terminal end, makes for easy terminations
- Flexible for a wide range of applications with function modules for retrofitting
- Possibility of fuseless short-circuit resistant design

Advantages:

- Saves time and costs with easy wiring, simple installation and fast commissioning
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: standardized function modules and heat sinks can be used in conjunction with 22.5 mm style semiconductor relays to satisfy unique application requirements
- Vibration-resistant and shock-resistant spring-loaded terminal connection system provides a superior connection even under tough conditions

Area of application

Applications

Solid-state relays

SIRIUS solid-state relays are suitable for surface mounting on existing cooling surfaces. Installation is quick and easy, involving just two screws. The special technology of the power semiconductor ensures there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the capacity reaches up to 88 A on resistive loads.

The solid-state relays are available in three different versions:

- 3RF21 single-phase solid-state relay with a width of 22.5 mm
- 3RF20 single-phase solid-state relay with a width of 45 mm
- 3RF22 three-phase solid-state relay with a width of 45 mm

The 3RF21 and 3RF22 solid-state relays can be expanded with various function modules to adapt them to individual applications.

Solid-state contactors

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current intensities of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on carrier plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building engineering. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in two different versions:

- 3RF23 single-phase solid-state contactors
- 3RF24 three-phase solid-state contactors

3RF22 three-phase solid-state relay with a width of 45 mm

With its compact design, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay is the ultimate in space-saving construction, at a width of 45 mm. Installation on cooling surfaces is quick and easy, involving just two screws. The logical connection arrangement, with the power infeed from above and connection of the load from below, ensures tidy installation in the control cabinet.

3RF24 three-phase solid-state contactors

The compact design enables small compact units with currents up to 50 A. All special features of the solid-state relays for saving time and space are effective here too.

Example plastic machine industry:

Thanks to their high switching endurance, SIRIUS SC semiconductor switching devices are ideally suited for use in the control of electroheat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency needs to be. The accurate regulation of electroheat is used for example in many processes in the plastic machine industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects.

The powerful SIRIUS SC semiconductor relays and contactors can be used to control several heating loads at the same time. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated which can be sent to the controller.

Protecting the semiconductor relays and semiconductor contactors with 5 SY supplemental protectors.

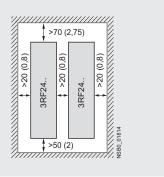
Short-circuit protection and line protection with 5 SY supplemental protectors is easy to achieve with SIRIUS SC semiconductor relays and semiconductor contactors in comparison with designing load feeders with fuses. A special version of the semiconductor contactors can be protected against damage in the case of a short-circuit with 5 SY supplementary protector with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switching device.

Desigr

There is no typical design of a load feeder with semiconductor relays or semiconductor contactors; instead, the great variety of connection systems and control voltages offers universal application opportunities. SIRIUS SC semiconductor relays and semiconductor contactors can be installed in fuseless or fused feeders, as required.

There are special versions with which it is even possible to achieve short-circuit strength in a fuseless design.

Mounting regulations



Distances for stand-alone installation

3

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6

7

General data

Functions

Connection

All SIRIUS SC semiconductor switching devices are characterized by the great variety of connection methods. You can choose between the following connection techniques:

SIGUT connection system (screw)

The SIGUT connection system is the standard among industrial switching devices. Open terminals and a plus-minus screw are just two features of this technology. Two conductors of up to 6 mm² ¹⁾ can be connected in just one terminal. As a result, loads of up to 50 A can be connected.

Spring-loaded connection system

This innovative technology holds the conductor without screw connection. This means that very high vibration resistance is achieved. Two conductors of up to 2.5 mm² ¹⁾ can be connected to each terminal. As a result, loads of up to 20 A can be dealt with

Ring terminal end connection

The ring terminal end connection is equipped with an M5 screw. Ring terminal ends of up to 25 mm² can be connected. In this way it is possible to connect conductors with up to 88 A safely. Additional finger safety can be provided with a special cover.

Switching types

In order to guarantee an optimized control method for different loads, the functionality of our semiconductor switching devices can be adapted accordingly.

The "zero-point switching" method is ideal for resistive loads, i.e. where the power semiconductor is activated at zero voltage.

For inductive loads, on the other hand, for example in the case of valves, it is better to go with "**instantaneous switching**". By distributing the ON point over the entire sine curve of the mains voltage, disturbances are reduced to a minimum.

A special "low noise" version is available due to a special control, this special version can be used in public networks up to 16A without any additional measures such as interference suppressor filters. As a result, it conforms to limit value curve class B according to EN 60947-4-3 in terms of emitted interference.

Function

Two-phase controlled version

In many three-phase applications there is no need of a threephase controller. Loads in a delta circuit or wye circuit, which have no connection to the neutral conductor, can be safely switched on and off using only two phases.

Nevertheless, the 3RF22 and 3RF24 three-phase solid-state switching devices provide the possibility of connecting all three phases to the switching device, with the middle phase looped directly through the device. Thanks to the lower power loss compared to a three-phase controlled device it is possible for the mounted accessories to be more compact.

Three-phase controlled version

This version is used in three-phase applications which have to switch all phases on and off for system reasons or in the case of loads in a wye circuit with connection to the neutral conductor.

Performance characteristics

The performance of the semiconductor switching devices are substantially determined by the type of power semiconductors used and the internal design. In the case of the SIRIUS SC semiconductor contactors and semiconductor relays, only thyristors are used instead of less powerful Triacs.

Two of the most important features of thyristors are the blocking voltage and the maximum load integral:

Blocking voltage

Thyristors with a high blocking voltage can also be operated without difficulty in power systems with high interference voltages. Separate protective measures, such as a protective circuit with a varistor, are not necessary in most cases.

With SIRIUS SC, for example, thyristors with 800 V blocking voltage are fitted for operation in power systems up to 230 V. Thyristors with up to 1600 V are used for power systems with higher voltages.

Maximum load integral

One of the purposes of specifying the maximum load integral (Pt) is to determine the rating of the short-circuit protection. Only a large power semiconductor with a correspondingly high Pt value can be given appropriate protection against destruction from a short-circuit by means of a protective device matched to the application. However, SIRIUS SC is also characterized by the optimum matching of the thyristors (Pt value) with the rated currents. The rated currents specified on the devices in conformance with EN 60947-4-3 were confirmed by extensive testing.

¹⁾ For mm² to AWG conversion see page 19/21 of Industrial Controls catalog.

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Selection and ordering data

	Designation	Labeling area (W x H)	Color	Order No.	Std. Pack Qty	Weight per pack approx.
		mm x mm			Qty	kg
Blank labels						
	Unit labeling plates for "SIRIUS" 1)	10 x 7	Pastel turquoise	3RT19 00-1SB10	816 units	0.110
		20 x 7	Pastel turquoise	3RT19 00-1SB20	340 units	0.220
	Labels for sticking for "SIRIUS"	19 x 6	Pastel turquoise	3RT19 00-1SB60	3060 unit	0.150
Unit labeling plates (1 frame = 20 units)		19 x 6	Zinc yellow	3RT19 00-1SD60	3060 units	0.150

Computer labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (http://www.murrplastik.de).

Integration

Notes on integration in the load feeders

The SIRIUS solid-state switching devices are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. Detailed information, for example in relation to solid-state contactors about the minimum spacing and to solid-state relays about the choice of heat sink, is given in the technical specifications (see Technical Information LV 1 T or our Mall) and the product data sheets.

Despite the rugged power semiconductors that are used, solidstate switching devices respond more sensitively to shortcircuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short-circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly. The technical specifications and the product data sheets contain details both about the solid-state fuse protection itself and about use of the devices with conventional protection equipment.

Semiconductor motor and reversing contactors can be easily combined with the 3RV motor starter protectors and 3RB2 overload relay from the SIRIUS modular system. Thus, fuseless and fuse motor feeders can be designed easily and in a space-saving manner.

The solid-state switching devices for resistive loads are suitable for interference-free operation in industrial networks without further measures. If they are used in public networks, it may be necessary for conducted interference to be reduced by means of filters. This does not include the special solid-state contactors of type 3RF23..-.CA.. "Low Noise". These comply with the class B limit values up to a rated current of 16 A. If other versions are used, and at currents of over 16 A, standard filters can be used in order to comply with the limit values. The decisive factors when it comes to selecting the filters are essentially the current loading and the other parameters (operational voltage, design type, etc.) in the load feeder.

Suitable filters can be ordered from EPCOS AG.

You can find more information on the Internet at:

http://www.epcos.com

Solid-State Relays

22.5 mm semiconductor relays single phase selection

Selection and ordering data







				2 🕞 T			PR.		1201		
				3RF21 20	-1AA02	3F	RF21 20-2AA02	3	RF21 20-3AA02		
Type current 1)	able curre	iii anu	for type	Screw co	nnection ²⁾		oring-loaded connec- on ³⁾	F	Ring cable connection	Std. Pack Qty	Weight per pack approx.
Α	kW	kW	kW	Order No		Or	der No.	C	Order No.		kg
Zero-	point	switcl	hing, rate	d operation	nal voltage <i>U</i>	J _e = 24	V to 230 V				
20	2.3	4.6	-	3RF21 20		3F	RF21 20-2AA□2	3	RF21 20-3AA□2	1 unit 1 unit	0.075 0.075
30 50	3.5 5.8	6.9 11.5	-	3RF21 30 3RF21 50		- 3F	RF21 50-2AA□2	3	RF21 50-3AA□2	1 unit	0.075
70 90	8.1 10.4	16.1 20.7	-	3RF21 70 3RF21 90		- 25	RF21 90-2AA□2	-	RF21 90-3AA□2	1 unit 1 unit	0.075 0.075
							V to 230 V, control I			1 UIIII	0.075
20	2.3	4.6	_ -	3RF21 20			RF21 20-2AA42	_		1 unit	0.075
30	3.5	6.9	-	3RF21 30		-		-		1 unit	0.075
Zero-	point	switc	hing, rate	d operation	nal voltage <i>U</i>	$l_{\rm e} = 48$	V to 460 V				
20 30	-	4.6 6.9	8 12	3RF21 20 3RF21 30		3F	RF21 20-2AA□4	3	RF21 20-3AA□4	1 unit 1 unit	0.075 0.075
50	-	11.5	20	3RF21 50	-1AA□4	3F	RF21 50-2AA□4 ⁴)	3	RF21 50-3AA□4	1 unit	0.075
70 90	-	16.1 20.7	28 36	3RF21 70 3RF21 90		- 3F	RF21 90-2AA□4	3	RF21 90-3AA□4	1 unit 1 unit	0.075 0.075
Zero-	point	switcl	hing, rate	d operation	nal voltage <i>L</i>	_e = 48	V to 600 V, control I	DC 4	30 V		
20	-	4.6	8	3RF21 20		3F	RF21 20-2AA45	-		1 unit	0.075
30 50	-	6.9 11.5	12 20	3RF21 30 3RF21 50		-		-		1 unit 1 unit	0.075 0.075
70	-	16.1	28	3RF21 70	-1AA45	-		-		1 unit	0.075
90		20.7	36	3RF21 90		- 10	V		RF21 90-3AA44	1 unit	0.075
	point	SWITC				/ _e = 48	V to 600 V, blocking	voit	age 1600 V		0.075
30 50	-	-	12 20	3RF21 30 3RF21 50		- 3F	RF21 50-2AA□6	3	RF21 50-3AA□6	1 unit 1 unit	0.075 0.075
70	-	-	28	3RF21 70	-1AA□6	-		-		1 unit	0.075
90 Zero-	- noint	ewite	36 hing rate	3RF21 90			RF21 90-2AA□6 V to 600 V, control 2		RF21 90-3AA□6	1 unit	0.075
70	-	-	28		-1AA05-0KN0	e – 70	v to ooo v, control	_	Do low power	1 unit	0.075
	point	switcl				$J_{\rm e} = 24$	V to 230 V, control	110 V	to 230 V		0.070
50	-	-	-	3RF21 50	-1BA22	-		-		1 unit	0.075
		ous sv 61131		rated ope	rational volta	ge <i>U</i> e	= 48 V to 460 V, cont	trol 2	4 V DC		
20	-	-	-	3RF21 20		-		-		1 unit	0.075
30 50	-	-	-	3RF21 30 3RF21 50		-		-		1 unit 1 unit	0.075 0.075
70	-	-	-	3RF21 70	-1BA04	-		-		1 unit	0.075
90	-	-	- 	3RF21 90		- 46	V to COO V control	24.24	DC -	1 unit	0.075
acc. t	o EN	6113 <u>1</u>	ning, rate -2, block	d operations	e 1600 V	e = 48	V to 600 V, control 2	24 V			
50	-	-	-	3RF21 50	-1BA06	-		-		1 unit	0.075
Low i	noise [:] o EN	³) - zer 61131	o-point s -2	witching,	rated operation	onal v	oltage <i>U</i> _e = 48 V to 4	60 V,	control 24 V DC		
70	-	-	-	3RF21 70	-1CA04	-		-		1 unit	0.075
		tensio	n for y voltage <i>l</i>								
			9 voltage (61131-2	-s	0		0		0		
AC 110					2		2		2		

- Other rated control supply voltages on request.

 1) The type current provides information about the performance of the semi-conductor relay. The actual permitted operational current *I*_e can be smaller depending on the connection method and cooling conditions.
- Please note that this version can only be used for a rated current of up to 50 A and a conductor cross section of 10 mm².
- 3) Please note that this version can only be used for a rated current of up to 20 A and a conductor cross section of 2.5 mm². See page 19/21 of Industrial controls catalog for mm² to AWG conversion chart.
- 4) 50 A version with 24 AC/DC control 3RF21 50-2AA14.

Note: See page 19/21 of Industrial Controls catalog for mm² to AWG conversion chart.

Solid-State Switching Devices Solid-State Relays

45 mm semiconductor relays single phase selection

Fused design with semiconductor protection (similar to type of coordination "2")¹⁾

The semiconductor protection for the SIRIUS SC control gear can be used with different protective devices. This allows protection by means of LV HRC fuses of operational class gL/gG or supplementary protectors. The table on page 7/21 lists the maximum permissible fuses for each SIRIUS SC controlgear.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems.

For protective devices with operational class gL/gG and for SITOR full range fuses 3NE1, the minimum cross-sections for the conductor to be connected must be taken into account.

Selection and ordering data



3RF20 20-1AA02

				3RF20 20-1AA02						
Type current 1)	able p	num ac power font and 0 230 V	or type	Screw connection ²⁾		Spring-loaded connection 3)		Ring cable connection	Std. Pack Qty	Weight per pack approx.
4	kW	kW	kW	Order No.		Order No.		Order No.		kg
Zero- _l	point	switch	ing, rated	operational voltage L	J _e =	24 V to 230 V				
20 30 50 70 88	2.3 3.5 5.8 8.1 10.4	16.1	- - - -	3RF20 20-1AA□2 3RF20 30-1AA□2 3RF20 50-1AA□2 3RF20 70-1AA□2 3RF20 90-1AA□2		:		• • •	1 unit 1 unit 1 unit 1 unit 1 unit	0.085 0.085 0.085 0.085 0.085
Zero- _l	point	switch	ning, rated	operational voltage L	J _e =	24 V to 230 V, control	DC 4	30 V		
20	-	-	-	-		3RF21 20-2AA42			1 unit	0.075
Zero- _l	point	switch	ing, rated	operational voltage L	/ _e =	48 V to 460 V				
20 30 50 70 88	- - - -	4.6 6.9 11.5 16.1 20.7	8 12 20 28 36	3RF20 20-1AA□4 3RF20 30-1AA□4 3RF20 50-1AA□4 3RF20 70-1AA□4 3RF20 90-1AA□4		: :		- - - -	1 unit 1 unit 1 unit 1 unit 1 unit	0.085 0.085 0.085 0.085 0.085
Zero- _l	point	switch	ning, rated	operational voltage L	J _e =	24 V to 230 V, control	DC 4	30 V		
20 80	-	-	-	3RF20 20-1AA42 3RF20 30-1AA42		3RF21 20-2AA42 -			1 unit 1 unit	0.085 0.085
Zero- _l	ooint	switch	ing, rated	operational voltage L	/ _e =	48 V to 600 V, control	DC 4	30 V		
20 50 70 90	- - -	4.6 11.5 16.1 20.7	8 20 28 36	3RF20 20-1AA45 3RF20 50-1AA45 3RF20 70-1AA45 3RF20 90-1AA45		: :		- - -	1 unit 1 unit 1 unit 1 unit	0.085 0.085 0.085 0.085
Zero- _l	point	switch	ing, rated	operational voltage L	J _e =	48 V to 600 V, blockin	g vol	tage 1600 V		
30 50 70 38	- - -	- - - -	12 20 28 36	3RF20 30-1AA□6 3RF20 50-1AA□6 3RF20 70-1AA□6 3RF20 90-1AA□6		• • •		- - -	1 unit 1 unit 1 unit 1 unit	0.085 0.085 0.085 0.085
Zero- _l	point	switch	ning, rated	operational voltage L	/ _e =	48 V to 460 V, control	DC 4	30 V switching		
0	-	-	-	3RF20 50-1BA44		-		•	1 unit	0.085
nstar	ntaneo	ous sv 61131-	vitching, r 2	ated operational volta	ge	<i>U</i> _e = 48 V to 460 V, con	ntrol 2	24 V DC		
10	-	-	-	3RF20 30-1BA04		-			1 unit	0.085
rated c	ontrol		voltage U _s							
DC 24 ' AC 110			1131-2	0 2		0 2		0 2		

Other rated control supply voltages on request.

- The type current provides information about the performance of the semiconductor relay. The actual permitted operational current I_e can be smaller depending on the connection method and cooling conditions.
- Please note that this version can only be used for a rated current of up to 50 A and a conductor cross section of 10mm².
- 3) Screw terminals and spring terminals (control current side).

Note: For mm² to AWG conversion chart see Industrial Controls catalog page 19/21.

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5

7

Solid-State Relays

3RF22 solid-state relays, 3-phase, 45 mm

Selection and ordering data

Selecting solid-state relays

When selecting solid-state relays, in addition to information about the power system, the load and the ambient conditions it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink. The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagrams.

recommended:				
	Type current ¹⁾	Rated control supply voltage	Screw terminal ²⁾	Weight per pack approx.
	A	V	Order No.	kg
Zero-point switching				9
Rated operational volta				
222	Two-phase controlled	4 001/100	0DF00 00 14 DF5	0.450
000	30 55	4 30 V DC	3RF22 30-1AB□5 3RF22 55-1AB□5	0.150 0.150
MONTH	Three-phase controlled	<u> </u>	3NF22 93-1AB	0.130
15.1	30	4 30 V DC	3RF22 30-1AC□5	0.150
	55		3RF22 55-1AC□5	0.150
e e e l				
3RF22 30-1AB45		110 V AC	3	
		4 30 V DC	4	
	Type current ¹⁾	Rated control supply volt-	Spring-loaded terminals ³⁾	Weight per pack
		age		approx.
	A	V	Order No.	ka
Zero-point switching	A	V		kg
Rated operational volta	ige <i>U</i> _e 48 V 600 V			
9994	Two-phase controlled			
RH HH HH	30 55	4 30 V DC	3RF22 30-2AB45 3RF22 55-2AB45	0.150 0.150
919	Three-phase controlled	<u> </u>	3HF22 55-2AB45	0.150
	30	4 30 V DC	3RF22 30-2AC45	0.150
ec °	55		3RF22 55-2AC45	0.150
SE SE SE				
3RF22 30-2AB45				
	Type current ¹⁾	Rated control supply voltage	Ring terminal end connection	Weight per pack approx.
			Order No.	
Zero-point switching	A	V		kg
Rated operational volta	ige <i>U</i> e 48 V 600 V			
ALL!	Two-phase controlled			
	30	4 30 V DC	3RF22 30-3AB45	0.150
00	55		3RF22 55-3AB45	0.150
SEMENTS THE PARTY OF THE PARTY	Three-phase controlled	d 4 30 V DC	3RF22 30-3AC45	0.150
66	30 55	4 3U V DU	3RF22 30-3AC45 3RF22 55-3AC45	0.150 0.150
PPP			J 22 00 0/10-10	0.100
3RF22 30-3AB45				

- The type current provides information about the performance of the solid-state relay.
- The actual permitted rated operational current $I_{\rm e}$ can be smaller depending on the connection method and cooling conditions.
- Please note that the version with an M4 screw terminal can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm².
- Please note that this version can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm².

General data

Overview

Solid-state contactors

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current strengths of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on support plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building management systems. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in 2 different versions:

- 3RF23 single-phase solid-state contactors,
- 3RF24 three -phase solid-state contactors

Single-phase versions

The 3RF23 solid-state contactors can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

Version for inductive loads, "instantaneous switching"

In this version the solid-state contactor is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures such as interference suppressor filters. As a result it conforms to limit value curve class B according to EN 60947-4-3 in terms of emitted interference.

Special "Short-circuit-proof" version

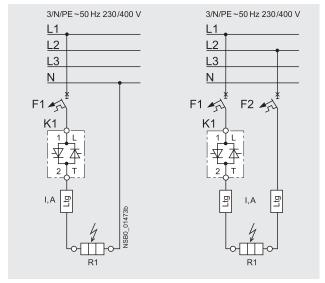
Skillful matching of the power semiconductor with the performance capacity of the solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B-type MCB or a conventional line protection fuse, the result is a short-circuit resistant feeder.

In order to achieve problem-free short-circuit protection by means of miniature circuit breakers, however, certain boundary conditions must be observed. As the magnitude and duration of the short-circuit current are determined not only by the short-circuit breaking response of the miniature circuit breaker but also the properties of the wiring system, such as the internal resistance of the input to the network and damping by controls and cables, particular attention must also be paid to these parameters. The necessary cable lengths are therefore shown for the main factor, the line resistance, in the table above right.

The following miniature circuit breakers with a type B tripping characteristic and 10 kA or 6 kA breaking capacity protect the 3RF23..-.DA.. solid-state contactors in the event of short-circuits on the load and the specified conductor cross-sections and lengths:

Rated current of the miniature circuit breaker	Example Type ¹⁾	Max. conductor cross-section	Minimum cable length from contactor to load
6 A	5SY4 106-6, 5SX2 106-6	1 mm ²	5 m
10 A	5SY4 110-6, 5SX2 110-6	1.5 mm ²	8 m
16 A	5SY4 116-6, 5SX2 116-6	1.5 mm ²	12 m
16 A	5SY4 116-6, 5SX2 116-6	2.5 mm ²	20 m
20 A	5SY4 120-6, 5SX2 120-6	2.5 mm ²	20 m
25 A	5SY4 125-6, 5SX2 125-6	2.5 mm ²	26 m

 The miniature circuit breakers can be used up to a maximum rated voltage of 480 V!



The setup and installation above can also be used for the solidstate relays with a I^2t value of at least 6600 A^2s .

Three-phase versions

The three-phase solid-state contactors for resistive loads up to 50 A are available with

- two-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- three-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched).

The converter function module can be snapped onto both versions for the simple power control of AC loads by means of analog signals.

Check the correct contactor size with the aid of the rated current diagram, taking account of the design conditions.

4

7

Solid-State Relays

SIRIUS SC semiconductor contactors single phase selection

Selection and ordering data

Selecting solid-state contactors

The semiconductor contactors are selected on the basis of details of the power system, the load and the ambient conditions. As the semiconductor contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for semiconductor relays.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a semiconductor contactor with the same or higher rated current than the load
- Check the correct contactor size with the aid of the rated current diagram, taking account of the design conditions













3RF23	10-1AA	.02 3RF	23 30-1AA02	2 3RF23 40-1AA02	3RF23 50-3AA02	3RF23 70-3AA02	3RF23 90-3/	AA02
Type current	able p I _{max} a	num ac power fo	or =	Screw connection	Spring-loaded connection	Ring cable connection	Std. Weight Pack per pack Qty approx.	<
/max.	kW	230 V	400 V kW	Order No.	Order No.	Order No.	kg	
Zero- 10.5 20 30 40 50 70 88	1.2 2.3 3.5 4.6 6 8 10	2.4 4.6 6.9 9.2 12 16 20	ing, rated o	pperational voltage U _e 3RF23 10-1AA□2 3RF23 20-1AA□2 3RF23 30-1AA□2 3RF23 40-1AA□2 3RF23 50-1AA□2 -	= 24 V to 230 V 3RF23 10-2AA□2 3RF23 20-2AA□2 - -	3RF23 10-3AA□2 3RF23 20-3AA□2 3RF23 30-3AA□2 3RF23 40-3AA□2 3RF23 50-3AA□2 3RF23 70-3AA□2 3RF23 90-3AA□2	1 unit 0.136 1 unit 0.204 1 unit 0.354 1 unit 0.496 1 unit 0.496 1 unit 0.944 1 unit 2.600	
Zero-	point s	witch	ing, rated o	operational voltage <i>U</i> e	= 24 V to 230 V, control 2	24 V DC acc. to EN 61131-	2 ³)	
50	-	-	-	3RF20 50-4AA02	- 04 1/4 - 000 1/4		1 unit 0.085	
	point s	witch	ing, rated o		= 24 V to 230 V, control :	24 V DC low power	1 upit 0.040	
20 Zero-	- noint-s	- witch	ing rated	3RF23 20-1AA02-0KN0 operational voltage $U_{\rm p}$	- 48 V to 460 V	-	1 unit 0.240	
10.5 20 30 40 50 70 88	- - - - - - -	2.4 4.6 6.9 9.2 12 16 20	4.2 8 12 16 20 28 35	3RF23 10-1AA□4 3RF23 20-1AA□4 3RF23 30-1AA□4 3RF23 40-1AA□4 3RF23 50-1AA□4 -	3RF23 10-2AA□4 3RF23 20-2AA□4 - -	3RF23 10-3AA□4 3RF23 20-3AA□4 3RF23 30-3AA□4 3RF23 40-3AA□4 3RF23 70-3AA□4 3RF23 70-3AA□4 3RF23 90-3AA□4	1 unit 0.136 1 unit 0.204 1 unit 0.354 1 unit 0.496 1 unit 0.496 1 unit 0.944 1 unit 2.600	
Zero-	point s	witch	ing, rated o	operational voltage <i>U</i> e	= 24 V to 230 V, control	24 V AC/DC		
10.5	-	-	-	3RF23 10-1AA12	-	-	1 unit 0.165	
	point s	witch	ing, rated o		= 48 V to 460 V, control	24 V DC low power	4 " 0.405	
50	- noint s	- witch	ing rated	3RF23 10-1AA04-0KN0	= 48 V to 460 V, control 2	24 V AC/DC	1 unit 0.165	
10.5 20 30 40 50	- - - -	- - - -	- - - -	3RF23 10-1AA14 3RF23 20-1AA14 3RF23 30-1AA14 3RF23 40-1AA14 3RF23 50-1AA14	:	1	1 unit 0.165 1 unit 0.240 1 unit 0.400 1 unit 0.550 1 unit 0.550	
	point s				= 48 V to 600 V, control	DC 4 30 V		
10.5 20 30 40 50 70	- - - - -	2.4 4.6 6.9 9.2 12 16 20	4.2 8 12 16 20 26 35	3RF23 10-1AA45 3RF23 20-1AA45 3RF23 30-1AA45 3RF23 40-1AA45 3RF23 50-1AA45		- - - 3RF23 40-3AA45 - 3RF23 70-3AA45 3RF23 90-3AA45	1 unit 0.135 1 unit 0.204 1 unit 0.354 1 unit 0.496 1 unit 0.496 1 unit 0.944 1 unit 2.600	
	point s	witch	ing, rated o		= 48 V to 460 V, control	4 V 30 V DC		
10.5 20 30 50	- - - - -	- - -	- - -	3RF23 10-1AA44 3RF23 20-1AA44 3RF23 30-1AA44 3RF23 50-1AA44	-	- 3RF23 20-3AA44 3RF23 30-3AA44 3RF23 50-3AA44	1 unit 0.165 1 unit 0.240 1 unit 0.400 1 unit 0.400	
10.5 20 30 40 50 70 88	- - - - -	- - - - -	4.2 8 12 16 20 28 35	operational voltage <i>U</i> _e 3RF23 10-1AA□6 3RF23 20-1AA□6 3RF23 30-1AA□6 3RF23 40-1AA□6 3RF23 50-1AA□6 -	= 48 V to 600 V, blocking 3RF23 10-2AA□6 3RF23 20-2AA□6 - - -	3 Voltage 1600 V 3RF23 10-3AA□6 3RF23 20-3AA□6 3RF23 30-3AA□6 3RF23 40-3AA□6 3RF23 50-3AA□6 3RF23 70-3AA□6 3RF23 90-3AA□6	1 unit 0.136 1 unit 0.204 1 unit 0.354 1 unit 0.496 1 unit 0.496 1 unit 0.944 1 unit 2.600	
rated of DC 24	No. extended control: V acc. to V 23	supply o EN 6	voltage U _s	0 2	0 2	0 2	about the performance	of the com

Other rated control supply voltages on request.

The type current provides information about the performance of the semi-conductor contactor. The actual permitted operational current l_a can be smaller depending on the connection method and start-up conditions. Derating acc. to curves from page 7/45, 7/46, 7/47.

Solid-State Switching Devices Solid-State Contactors

SIRIUS SC semiconductor contactors single phase selection

ype current)	able p I _{max} a	num accower fand U_e	or	Screw connection	Spring-loaded connection	Ring cable connection	Std. Pack Qty	Weight per pack approx.
\	kW	kW	400 V	Order No.	Order No.	Order No.		ka
				rated operational voltag		Order No.		kg
0.5	1.2	2.4	itering,		e <i>O</i> _e = 24 V to 230 V		4	0.100
0.5 0	2.3	4.6	-	3RF23 10-1BA□2 3RF23 20-1BA□2	-	-	1 unit 1 unit	0.136 0.204
0	3.5	6.9	-	3RF23 30-1BA□2	_	-	1 unit	0.354
0	4.6	9.2	-	3RF23 40-1BA□2	-	-	1 unit	0.496
0 0	6 8	12 16	-	3RF23 50-1BA□2 3RF23 70-1BA□2		- 3RF23 70-3BA□2	1 unit 1 unit	0.496 0.944
8	10	20	-	3RF23 90-1BA□2	-	3RF23 90-3BA□2	1 unit	2.600
ıstan	taneo	us sv	itching,	rated operational voltag	je <i>U</i> _e = 48 V to 460 V			
).5	-	2.4	4.2	3RF23 10-1BA□4	-	-	1 unit	0.136
0	-	4.6	8	3RF23 20-1BA□4	-	-	1 unit	0.204
0	-	6.9 9.2	12 16	3RF23 30-1BA□4 3RF23 40-1BA□4	-	-	1 unit 1 unit	0.354 0.496
0	-	12	20	3RF23 50-1BA□4	-	-	1 unit	0.496
0	-	16	28	3RF23 70-1BA□4	-	3RF23 70-3BA□4	1 unit	0.944
В	-	20	35	3RF23 90-1BA□4	-	3RF23 90-3BA□4	1 unit	2.600
	oint s	switch	ing, rate		_e = 48 V to 600 V, control 11	0 V to 230 V	a	0.400
)	-	-		3RF23 30-1AA25		- 4000 1/	1 unit	0.400
1 stan 0.5	taneo	us sv	4.2	rated operational voltag	je <i>U</i> _e = 48 V to 600 V, blocki	ng voltage 1600 v	4	0.100
).5)	_	-	4.2 8	3RF23 10-1BA□6 3RF23 20-1BA□6	_	-	1 unit 1 unit	0.136 0.204
)	-	-	12	3RF23 30-1BA□6	-	-	1 unit	0.354
)	-	-	16	3RF23 40-1BA□6	-	-	1 unit	0.496
0	-	-	20 28	3RF23 50-1BA□6 3RF23 70-1BA□6	-	- 3RF23 70-3BA□6	1 unit	0.496 0.944
3	-	-	20 35	3RF23 90-1BA□6	-	3RF23 70-3BA□6	1 unit 1 unit	2.600
ow n	oise,	zero-p	oint swi	tching, rated operationa	l voltage <i>U</i> _e = 24 V to 230 V			
0	2.3	4.6	-	3RF23 20-1CA□2	3RF23 20-2CA□2	-	1 unit	0.204
0	- oioo	-	-	3RF23 30-1CA□2	Lyoltogo II – 49 V to 460 V	-	1 unit	0.204
OW II	oise,	4.6	8	3RF23 20-1CA□4	al voltage <i>U</i> _e = 48 V to 460 V 3RF23 20-2CA□4	-	1 unit	0.204
	taneo			rated operational voltage	1 1 1		1 dilit	0.204
			V switc		,			
0	-	-	-	3RF23 20-1BA44	-	-	1 unit	0.240
0	-	-	-	3RF23 30-1BA44	-	-	1 unit	0.400
-	circui	t roci	tant with	3RF23 50-1BA44 n B-automatic device, zo	aro-point switching	-	1 unit	0.550
				$U_{\rm p} = 24 \text{ V to } 230 \text{ V}$	ero-point switching,			
0	2.3	4.6	-	3RF23 20-1DA□2	3RF23 20-2DA22	3RF23 20-3DA□2	1 unit	0.204
				n B-automatic device, zo	ero-point switching,			
	opera			U _e = 48 V to 460 V				
0	-	4.6	8	3RF23 20-1DA□4	3RF23 20-2DA24	3RF23 20-3DA□4	1 unit	0.204
		zero- _F to 30		crimg, rated operationa	Il voltage U_e = 48 V to 460 V	,		
0	-	-	28	3RF21 70-1CA04	-	-	1 unit	0.240
		ension		,				
	ontrol	supply	voltage U	's				
			1131-2	0	0	0		

Other rated control supply voltages on request.

 The type current provides information about the performance of the semiconductor contactor. The actual permitted operational current l_e can be smaller depending on the connection method and start-up conditions. Derating acc. to curves from page 7/45, 7/46, 7/47.

	Version	Order No.	Std. Pack Qty	Weight per pack approx.
	Accessories			kg
	10.1011	3RF29 00-3PA88	10 units	0.010
	Terminal cover for 3RF21 semiconductor relays and 3RF23 semiconductor contactors with ring terminal end (after simple adaptation, this terminal cover can also be used for screw connection).	3NF29 UU-3FA00	TO UTILIS	0.010
3RF29 00-3PA88				

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8/13

Solid-State Contactors

3RF24 solid-state contactors, 3-phase

Selection and ordering data

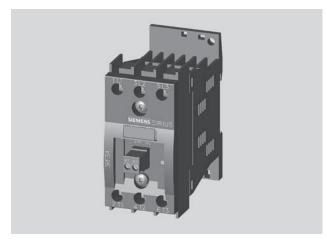
Selection and ord	lering data						
	Type current ¹⁾ I _{max}	Rated control supply voltage $U_{\rm S}$	DT	Screw terminals	(Std. Pack Qty	Weight per pack approx.
	А	V		Order No.	List Price \$ per PU		kg
Zero-point switch Rated operational	ing ∣voltage <i>U_e 4</i> 8 V 60	00 V					
[0 0]	Two-phase cont						
6 6 6	10.5 20 30 40 50	4 30 DC	A B B B	3RF24 10-1AB45 3RF24 20-1AB45 3RF24 30-1AB45 3RF24 40-1AB45 3RF24 50-1AB45		1 unit 1 unit 1 unit 1 unit 1 unit	0.320 0.400 0.540 0.800 1.100
C C C	10.5 20 30 40 50	110 AC	A B B B	3RF24 10-1AB35 3RF24 20-1AB35 3RF24 30-1AB35 3RF24 40-1AB35 3RF24 50-1AB35		1 unit 1 unit 1 unit 1 unit 1 unit	0.320 0.400 0.540 0.800 1.100
3RF24 20-1AB45	10.5 20 30 40 50	230 AC	B B B B	3RF24 10-1AB55 3RF24 20-1AB55 3RF24 30-1AB55 3RF24 40-1AB55 3RF24 50-1AB55		1 unit 1 unit 1 unit 1 unit 1 unit	0.320 0.400 0.540 0.800 1.100
0	Three-phase cor	ntrolled					
	10.5 20 30 40 50	4 30 DC	B B A B	3RF24 10-1AC45 3RF24 20-1AC45 3RF24 30-1AC45 3RF24 40-1AC45 3RF24 50-1AC45		1 unit 1 unit 1 unit 1 unit 1 unit	0.320 0.540 0.800 1.100 1.850
	10.5 20 30 40 50	110 AC	B B A B	3RF24 10-1AC35 3RF24 20-1AC35 3RF24 30-1AC35 3RF24 40-1AC35 3RF24 50-1AC35		1 unit 1 unit 1 unit 1 unit 1 unit	0.320 0.540 0.800 1.100 1.850
3RF24 10-1AC45	10.5 20 30 40 50	230 AC	B B B B	3RF24 10-1AC55 3RF24 20-1AC55 3RF24 30-1AC55 3RF24 40-1AC55 3RF24 50-1AC55		1 unit 1 unit 1 unit 1 unit 1 unit	0.320 0.540 0.800 1.100 1.850

¹⁾ The type current provides information about the performance capacity of the solid-state contactor. The actual permitted rated operational current $I_{\rm e}$ can be smaller depending on the connection method and start-up conditions. For derating, see Technical Information on page 7/55, Characteristic Curves.

Solid-State Contactors for Switching Motors

General data

Overview



Solid-state contactor for direct-on-line starting

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 7.5 kW and reversing up to 3.0 kW. The devices are constructed with complete insulation and can be mounted directly on SIRIUS motor starter protectors, overload relays and current monitoring relays, resulting in a very simple integration into motor feeders.

These three-phase solid-state contactors are equipped with a two-phase control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Important features:

- Insulated enclosure with integrated heat sink
- Degree of protection IP20
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs
- Wide voltage range for AC control supply voltage

Switching functions

The solid-state contactors for switching motors are ""instantaneous switching" because this method is particularly suited for inductive loads. By distributing the ON point over the entire sine curve of the mains voltage, disturbances are reduced to a minimum

Selecting solid-state contactors

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing the maximum permissible switching frequency based on the characteristic curves (see "Technical Information"). To do this, the starting current, the starting time and the motor loaded in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase only by overdimensioning the motor and the solid-state contactor!

Benefits

- Units with integrated heat sink, "ready to use"
- · Compact and space-saving design
- Reversing contactors with integrated interlocking

Application

Use in load feeders

There is no typical design of a load feeder with solid-state relays or solid-state contactors; instead, the great variety of connection methods and control voltages offers universal application opportunities. SIRIUS solid-state relays and solid-state contactors can be installed in fuseless or fused feeders, as required.

Standards and approvals

- IEC 60947-4-2
- UL 508, CSA for North America1)
- CE marking for Europe
- C-Tick approval for Australia
- · CCC approval for China

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Please note: Use overvoltage protection device; max. cut-off-voltage 6000 V; min. energy handling capability 100 J.

Solid-State Switching Devices Solid-State Contactors for Switching Motors

3RF34 solid-state contactors, 3-phase

Selection and ordering data

Motor contactors	· Instantaneous	switching ·	· Two-phase	controlled

Motor contactors	· iristantaneou	s switching · two	s Instantaneous switching · Iwo-phase controlled							
	Rated operational current $I_{\rm e}$	Rated power at $I_{\rm e}$ and $U_{\rm e}$	Rated control supply voltage $U_{\rm S}$	DT	Screw terminals Configurator	⊕	Std. Pack Qty			
	A	400 V kW	V		Order No.	Price per PU				
Rated operationa 48 480 V AC		· · ·	•			porro				
	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	24 DC acc. to IEC 61131-2	A B B	3RF34 05-1BB04 3RF34 10-1BB04 3RF34 12-1BB04 3RF34 16-1BB04		1 unit 1 unit 1 unit 1 unit			
	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	110 230 AC	B B B	3RF34 05-1BB24 3RF34 10-1BB24 3RF34 12-1BB24 3RF34 16-1BB24		1 unit 1 unit 1 unit 1 unit			
3RF34 05-1BB Rated operationa	l voltage <i>U</i> e									
48 600 V AC, bl	ocking voltage ⁵ 5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	24 DC acc. to IEC 61131-2	B B B	3RF34 05-1BB06 3RF34 10-1BB06 3RF34 12-1BB06 3RF34 16-1BB06		1 unit 1 unit 1 unit 1 unit			
	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	110 230 AC	B B B	3RF34 05-1BB26 3RF34 10-1BB26 3RF34 12-1BB26 3RF34 16-1BB26		1 unit 1 unit 1 unit 1 unit			
3RF34 10-1BB										
	Rated operational current I _e	Rated power at $I_{\rm e}$ and $U_{\rm e}$	Rated control supply voltage <i>U</i> _s	DT	Spring-type terminals Configurator	<u> </u>	Stď. , Pack Qty			
		400 V			Order No.	₹Ĉ} Price	a.y			
Rated operationa	A voltage <i>U</i> e	kW	V			per PU				
48 480 V AC	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	24 DC acc. to IEC 61131-2	B B B	3RF34 05-2BB04 3RF34 10-2BB04 3RF34 12-2BB04 3RF34 16-2BB04		1 unit 1 unit 1 unit 1 unit			
	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	110 230 AC	B B B	3RF34 05-2BB24 3RF34 10-2BB24 3RF34 12-2BB24 3RF34 16-2BB24		1 unit 1 unit 1 unit 1 unit			
3RF34 05-2BB Rated operationa	l voltage <i>U</i> _e									
48 600 V AC, bl	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	24 DC acc. to IEC 61131-2	B B B	3RF34 05-2BB06 3RF34 10-2BB06 3RF34 12-2BB06 3RF34 16-2BB06		1 unit 1 unit 1 unit 1 unit			
	5.2 9.2 12.5 16	2.2 4.0 5.5 7.5	110 230 AC	B B B	3RF34 05-2BB26 3RF34 10-2BB26 3RF34 12-2BB26 3RF34 16-2BB26		1 unit 1 unit 1 unit 1 unit			
3RF34 10-2BB										

Tor online configurator see www.siemens.com/sirius/configurators.

3RF34 solid-state reversing contactors, 3-phase

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Selection and ordering data

Reversing contactors \cdot Instantaneous switching \cdot Two-phase controlled

	Rated operational current $I_{\rm e}$	Rated power at $I_{\rm e}$ and $U_{\rm e}$	Rated control supply voltage $U_{\rm S}$	DT	Screw terminals Configurator	+	Std. Pack Qty
	A	400 V kW	V		Order No.	Price per PU	
Rated operational	voltage U _e 48	. 480 V AC					
3RF34 03-1BD	3.8 5.4 7.4	1.5 2.2 3.0	24 DC acc. to IEC 61131-2	B B B	3RF34 03-1BD04 3RF34 05-1BD04 3RF34 10-1BD04		1 unit 1 unit 1 unit
3RF34 10-1BD © For online configura	3.8 5.4 7.4 tor see www.sieme	1.5 2.2 3.0	110 230 AC	B B B	3RF34 03-1BD24 3RF34 05-1BD24 3RF34 10-1BD24		1 unit 1 unit 1 unit

Accessories

	Version	DT	Order No.	Price per PU	Std. Pack Qty
Link modules for	solid-state contactor to motor starter protector				
444	Link module between solid-state reversing contactor and motor starter protector with screw terminals		Screw terminals	⊕	
	For 3RV2 motor starter protectors size S00/S0	А	3RA29 21-1BA00		1 unit
3RA29 21-1BA00					
Link adapters for	solid-state contactor to overload relay				
3RF39 00-0QA88	Link adapters for direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays to the solid-state contactor with screw termi- nals				
3NF39 UU-UQA00	The adapter is snapped onto the enclosure of the 3RF34 contactor and receives the fixing hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting.	Α	3RF39 00-0QA88		1 unit
Blank labels					
	Unit labeling plates ¹⁾ for SIRIUS devices 20 mm × 7 mm, pastel turquoise	D	3RT19 00-1SB20		340 units
3SB19 00-1SB20					

PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH

Selection Tables

Overview

Function modules for SIRIUS 3RF2 solid-state switching devices

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor. The plug-in connection to control the solid-state switching devices can simply remain in use.

The following function modules are available:

- Converters
- Load monitoring
- Heating current monitoring
- Power controllers
- Power regulators

With the exception of the converter, the function modules can be used only with single-phase solid-state switching devices.

Recommended assignment of the function modules to the 3RF21 single-phase solid-state relays

der No.	Accessories							
	Converters Load monitoring			Heating current	Power controllers ¹⁾	Power regulators ¹		
		Basic	Extended	monitoring				
/pe current = :	20 A		-					
RF21 20-1A.02 RF21 20-1A.04	3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08	3RF29 20-0GA13 3RF29 20-0GA16	 3RF29 32-0JA16	3RF29 20-0KA13 3RF29 20-0KA16	3RF29 20-0HA13 3RF29 20-0HA16		
RF21 20-1A.22 RF21 20-1A.24	 		3RF29 20-0GA33 3RF29 20-0GA36	 				
RF21 20-1A.42 RF21 20-1A.45	3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08	3RF29 20-0GA13 3RF29 20-0GA16	 3RF29 32-0JA16	3RF29 20-0KA13 3RF29 20-0KA16	3RF29 20-0HA13 3RF29 20-0HA16		
F21 20-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16		
RF21 20-2A.02 RF21 20-2A.04	3RF29 00-0EA18 3RF29 00-0EA18		 	 				
RF21 20-2A.22 RF21 20-2A.24	 		 	 				
RF21 20-2A.42 RF21 20-2A.45	3RF29 00-0EA18 3RF29 00-0EA18		 	 				
RF21 20-3A.02 RF21 20-3A.04	3RF29 00-0EA18 3RF29 00-0EA18		3RF29 20-0GA13 3RF29 20-0GA16	 3RF29 32-0JA16	 3RF29 20-0KA16	3RF29 20-0HA13 3RF29 20-0HA16		
RF21 20-3A.22 RF21 20-3A.24	 		3RF29 20-0GA33 3RF29 20-0GA36	 	3RF29 20-0KA13 3RF29 20-0KA16	3RF29 20-0HA13 3RF29 20-0HA16		
/pe current =	30 A							
RF21 30-1A.02 RF21 30-1A.04 RF21 30-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16		
RF21 30-1A.22 RF21 30-1A.24 RF21 30-1A.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36		
RF21 30-1A.42 RF21 30-1A.45	3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16	 3RF29 32-0JA16	 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16		
F21 30-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16		
pe current =	50 A							
RF21 50-1A.02 RF21 50-1A.04 RF21 50-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16		
RF21 50-1A.22 RF21 50-1A.24 RF21 50-1A.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36		
RF21 50-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16		
RF21 50-1B.04 RF21 50-1B.06	3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA16 3RF29 50-0GA16	3RF29 32-0JA16 3RF29 32-0JA16	3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA16 3RF29 50-0HA16		
F21 50-1B.22			3RF29 50-0GA33			3RF29 50-0HA33		
RF21 50-2A.02 RF21 50-2A.04 RF21 50-2A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	 		 	 		
RF21 50-2A.14	3RF29 00-0EA18							
RF21 50-2A.22 RF21 50-2A.24 RF21 50-2A.26		 	 					
RF21 50-3A.02 RF21 50-3A.04 RF21 50-3A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16		
RF21 50-3A.22 RF21 50-3A.24 RF21 50-3A.26			3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36			3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36		

The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Selection Tables

Order No.	Accessories					
	Converters	Load monitoring		Heating current	Power controllers ¹⁾	Power regulators ¹⁾
		Basic	Extended	monitoring		
Type current =	70 A					
3RF21 70-1A.02 3RF21 70-1A.04 3RF21 70-1A.05 3RF21 70-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16 3RF29 50-0HA16
BRF21 70-1A.22 BRF21 70-1A.24 BRF21 70-1A.26			3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36			3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
BRF21 70-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1C.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current =	90 A					
3RF21 90-1A.02 3RF21 90-1A.04 3RF21 90-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
BRF21 90-1A.22 BRF21 90-1A.24 BRF21 90-1A.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
BRF21 90-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
RF21 90-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-2A.02 3RF21 90-2A.04 3RF21 90-2A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	 	 	 	
3RF21 90-2A.22 3RF21 90-2A.24 3RF21 90-2A.26		 	 	 	 	
BRF21 90-3A.02 BRF21 90-3A.04 BRF21 90-3A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	3RF29 90-0GA13 3RF29 90-0GA16 3RF29 90-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 90-0KA16 3RF29 90-0KA16	3RF29 90-0HA13 3RF29 90-0HA16 3RF29 90-0HA16
3RF21 90-3A.22 3RF21 90-3A.24 3RF21 90-3A.26	 	 	3RF29 90-0GA33 3RF29 90-0GA36 3RF29 90-0GA36	 	 	3RF29 90-0HA33 3RF29 90-0HA36 3RF29 90-0HA36
3RF21 90-3A.44	3RF29 00-0EA18		3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16

The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Recommended assignment of the function modules to the 3RF22 three-phase solid-state relays

Order No.	No. Accessories								
	Converters	Load monitoring		Heating current	Power controllers	Power regulators			
		Basic	Extended	monitoring					
Type current u	ıp to 55 A								
3RF221A	3RF29 00-0EA18								
3RF222A	3RF29 00-0EA18								
3RF223A	3RF29 00-0EA18								

Recommended assignment of the function modules to the 3RF23 single-phase solid-state contactors

Order No.	Accessories								
	Converters	Load monitoring		9	Power controllers ¹⁾	Power regulators ¹⁾			
		Basic	Extended	monitoring					
Type current I _e = 10.5 A									
3RF23 10-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13			
3RF23 10-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16			
3RF23 10-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16			
3RF23 10-1A.12	3RF29 00-0EA18		3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13			
3RF23 10-1A.14	3RF29 00-0EA18		3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16			
3RF23 10-1A.22			3RF29 20-0GA33			3RF29 20-0HA33			
3RF23 10-1A.24			3RF29 20-0GA36			3RF29 20-0HA36			
3RF23 10-1A.26			3RF29 20-0GA36			3RF29 20-0HA36			
3RF23 10-1A.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16			
3RF23 10-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16			

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Selection Tables

Order No.	Accessories					
	Converters	Load monitoring Basic	Extended	Heating current monitoring	Power controllers ¹⁾	Power regulators ¹⁾
Type current $I_{\rm e}$	= 10.5 A	Baoic	Exteriora			
3RF23 10-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1B.22 3RF23 10-1B.24 3RF23 10-1B.26	 	 	3RF29 20-0GA33 3RF29 20-0GA36 3RF29 20-0GA36	 	 	3RF29 20-0HA33 3RF29 20-0HA36 3RF29 20-0HA36
3RF23 10-2A.02	3RF29 00-0EA18					
3RF23 10-2A.04	3RF29 00-0EA18					
3RF23 10-2A.06	3RF29 00-0EA18					
3RF23 10-2A.22						
3RF23 10-2A.24						
3RF23 10-2A.26						
3RF23 10-3A.02	3RF29 00-0EA18		3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-3A.04	3RF29 00-0EA18		3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-3A.06	3RF29 00-0EA18		3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-3A.22			3RF29 20-0GA33			3RF29 20-0HA33
3RF23 10-3A.24			3RF29 20-0GA36			3RF29 20-0HA36
3RF23 10-3A.26			3RF29 20-0GA36			3RF29 20-0HA36
Type current $I_{\rm e}$, = 20 A					
3RF23 20-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13		3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.14	3RF29 00-0EA18		3RF29 20-0GA16		3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.22			3RF29 20-0GA33			3RF29 20-0HA33
3RF23 20-1A.24			3RF29 20-0GA36			3RF29 20-0HA36
3RF23 20-1A.26			3RF29 20-0GA36			3RF29 20-0HA36
3RF23 20-1A.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13		3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.22			3RF29 20-0GA33			3RF29 20-0HA33
3RF23 20-1B.24			3RF29 20-0GA36			3RF29 20-0HA36
3RF23 20-1B.26			3RF29 20-0GA36			3RF29 20-0HA36
3RF23 20-1B.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1C.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13		3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1C.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1C.22			3RF29 20-0GA33			3RF29 20-0HA33
3RF23 20-1C.24			3RF29 20-0GA36			3RF29 20-0HA36
3RF23 20-1C.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1D.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13		3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1D.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1D.22 3RF23 20-1D.24			3RF29 20-0GA33 3RF29 20-0GA36			3RF29 20-0HA33 3RF29 20-0HA36
3RF23 20-1D.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-2A.02	3RF29 00-0EA18					
3RF23 20-2A.04	3RF29 00-0EA18					
3RF23 20-2A.06	3RF29 00-0EA18					
3RF23 20-2A.22 3RF23 20-2A.24 3RF23 20-2A.26	 	 	 	 	 	
3RF23 20-2C.02 3RF23 20-2C.04	3RF29 00-0EA18 3RF29 00-0EA18	 		 		
3RF23 20-2C.22 3RF23 20-2C.24 3RF23 20-2D.22	 				 	
3RF23 20-2D.22 3RF23 20-2D.24 3RF23 20-3A.02	 3RF29 00-0EA18		 3RF29 20-0GA13		 3RF29 20-0KA13	 3RF29 20-0HA13
3RF23 20-3A.04	3RF29 00-0EA18		3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3A.06	3RF29 00-0EA18		3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3A.22 3RF23 20-3A.24 3RF23 20-3A.26	 	 	3RF29 20-0GA33 3RF29 20-0GA36 3RF29 20-0GA36	 		3RF29 20-0HA33 3RF29 20-0HA36 3RF29 20-0HA36
3RF23 20-3A.44	3RF29 00-0EA18		3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16

The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Selection Tables

Order No.	Accessories					
	Converters	Load monitoring		Heating current	Power controllers ¹⁾	Power regulators ¹⁾
		Basic	Extended	monitoring		
ype current I_{e}	= 20 A					
RF23 20-3D.02 RF23 20-3D.04	3RF29 00-0EA18 3RF29 00-0EA18		3RF29 20-0GA13 3RF29 20-0GA16	 3RF29 32-0JA16	3RF29 20-0KA13 3RF29 20-0KA16	3RF29 20-0HA13 3RF29 20-0HA16
RF23 20-3D.22 RF23 20-3D.24	 	 	3RF29 20-0GA33 3RF29 20-0GA36	 	 	3RF29 20-0HA33 3RF29 20-0HA36
ype current I_{e}	= 30 A					
RF23 30-1A.02 RF23 30-1A.04 RF23 30-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 30-1A.14	3RF29 00-0EA18		3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
RF23 30-1A.22 RF23 30-1A.24 RF23 30-1A.25 RF23 30-1A.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36 3RF29 50-0HA36
RF23 30-1A.44 RF23 30-1A.45	3RF29 00-0EA18 3RF29 00-0EA18		3RF29 50-0GA16 3RF29 50-0GA16	3RF29 32-0JA16 3RF29 32-0JA16	3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA16 3RF29 50-0HA16
RF23 30-1B.02 RF23 30-1B.04 RF23 30-1B.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	3RF29 20-0FA08 3RF29 20-0FA08 3RF29 20-0FA08	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 30-1B.22 RF23 30-1B.24 RF23 30-1B.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
RF23 30-1B.44	3RF29 00-0EA18		3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
RF23 30-1C.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13			3RF29 50-0HA13
RF23 30-1D.44	3RF29 00-0EA18		3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
RF23 30-3A.02 RF23 30-3A.04 RF23 30-3A.066	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 3RF29 32-0JA16 3RF29 32-0JA16	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 30-3A.22 RF23 30-3A.24 RF23 30-3A.26	 		3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
RF23 30-3A.44	3RF29 00-0EA18		3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
ype current I_{e}	= 40 A					
RF23 40-1A.02 RF23 40-1A.04 RF23 40-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	_ 	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 40-1A.14	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
RF23 40-1A.22 RF23 40-1A.24 RF23 40-1A.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
RF23 40-1A.45	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
RF23 40-1B.02 RF23 40-1B.04 RF23 40-1B.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18		3RF29 50-0GA13 3RF29 50-0GA13 3RF29 50-0GA13	 	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 40-1B.22 RF23 40-1B.24 RF23 40-1B.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
RF23 40-3A.02 RF23 40-3A.04 RF23 40-3A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 40-3A.22 RF23 40-3A.24 RF23 40-3A.26	 	 	3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
RF23 40-3A.45	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
ype current $I_{ m e}$	= 50 A					
RF23 50-1A.02 RF23 50-1A.04 RF23 50-1A.06	3RF29 00-0EA18 3RF29 00-0EA18 3RF29 00-0EA18	 	3RF29 50-0GA13 3RF29 50-0GA16 3RF29 50-0GA16	 	 3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA13 3RF29 50-0HA16 3RF29 50-0HA16
RF23 50-1A.14	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
RF23 50-1A.22 RF23 50-1A.24 RF23 50-1A.26	 		3RF29 50-0GA33 3RF29 50-0GA36 3RF29 50-0GA36	 	 	3RF29 50-0HA33 3RF29 50-0HA36 3RF29 50-0HA36
RF23 50-1A.45	3RF29 00-0EA18		3RF29 50-0GA36		3RF29 50-0KA16	3RF29 50-0HA16
20 00 17.70	5. II 20 00 0L/ (10		3111 20 00 00/110		3111 20 00 010 110	3111 20 00 01 17 (10

The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

5

Selection Tables

Order No.	Accessories					
	Converters	Load monitoring		Heating current	Power controllers ¹⁾	Power regulators ¹⁾
		Basic	Extended	monitoring		
Type current I	_e = 50 A					
3RF23 50-1B.02	3RF29 00-0EA18		3RF29 50-0GA13			3RF29 50-0HA13
3RF23 50-1B.04	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
BRF23 50-1B.06	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
BRF23 50-1B.22			3RF29 50-0GA33			3RF29 50-0HA33
3RF23 50-1B.24 3RF23 50-1B.26		 	3RF29 50-0GA36 3RF29 50-0GA36		 	3RF29 50-0HA36 3RF29 50-0HA36
BRF23 50-1B.44	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.02	3RF29 00-0EA18		3RF29 50-0GA13			3RF29 50-0HA13
3RF23 50-3A.04	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.06	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.22			3RF29 50-0GA33			3RF29 50-0HA33
3RF23 50-3A.24			3RF29 50-0GA36			3RF29 50-0HA36
3RF23 50-3A.26			3RF29 50-0GA36			3RF29 50-0HA36
RF23 50-3A.44	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
Type current I_{ϵ}	_					
3RF23 70-1B.02	3RF29 00-0EA18		3RF29 50-0GA13		 2DE20 E0 0KA40	3RF29 50-0HA13
3RF23 70-1B.04 3RF23 70-1B.06	3RF29 00-0EA18 3RF29 00-0EA18		3RF29 50-0GA16 3RF29 50-0GA16	 	3RF29 50-0KA16 3RF29 50-0KA16	3RF29 50-0HA16 3RF29 50-0HA16
3RF23 70-1B.22			3RF29 50-0GA33			3RF29 50-0HA33
3RF23 70-1B.24			3RF29 50-0GA36			3RF29 50-0HA36
BRF23 70-1B.26			3RF29 50-0GA36			3RF29 50-0HA36
3RF23 70-3A.02	3RF29 00-0EA18		3RF29 90-0GA13			3RF29 90-0HA13
3RF23 70-3A.04 3RF23 70-3A.06	3RF29 00-0EA18 3RF29 00-0EA18		3RF29 90-0GA16 3RF29 90-0GA16		3RF29 90-0KA16 3RF29 90-0KA16	3RF29 90-0HA16 3RF29 90-0HA16
3RF23 70-3A.22 3RF23 70-3A.24	 	 	3RF29 90-0GA33 3RF29 90-0GA36			3RF29 90-0HA33 3RF29 90-0HA36
3RF23 70-3A.26			3RF29 90-0GA36			3RF29 90-0HA36
BRF23 70-3A.45	3RF29 00-0EA18		3RF29 90-0GA16		3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.02	3RF29 00-0EA18		3RF29 90-0GA13			3RF29 90-0HA13
3RF23 70-3B.04	3RF29 00-0EA18		3RF29 90-0GA16		3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.06	3RF29 00-0EA18		3RF29 90-0GA16		3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.22 3RF23 70-3B.24		 	3RF29 90-0GA33 3RF29 90-0GA36			3RF29 90-0HA33 3RF29 90-0HA36
BRF23 70-3B.26			3RF29 90-0GA36			3RF29 90-0HA36
Type current I	= 90 A					
3RF23 90-1B.02	3RF29 00-0EA18		3RF29 50-0GA13			3RF29 50-0HA13
3RF23 90-1B.04	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
3RF23 90-1B.06	3RF29 00-0EA18		3RF29 50-0GA16		3RF29 50-0KA16	3RF29 50-0HA16
3RF23 90-1B.22			3RF29 50-0GA33			3RF29 50-0HA33
3RF23 90-1B.24 3RF23 90-1B.26		 	3RF29 50-0GA36 3RF29 50-0GA36			3RF29 50-0HA36 3RF29 50-0HA36
3RF23 90-3A.02	3RF29 00-0EA18		3RF29 90-0GA13			3RF29 90-0HA13
3RF23 90-3A.02	3RF29 00-0EA18		3RF29 90-0GA13		3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3A.06	3RF29 00-0EA18		3RF29 90-0GA16		3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3A.22			3RF29 90-0GA33			3RF29 90-0HA33
3RF23 90-3A.24			3RF29 90-0GA36			3RF29 90-0HA36
3RF23 90-3A.26		-	3RF29 90-0GA36		 ODE00 00 01/4 / 0	3RF29 90-0HA36
3RF23 90-3A.45	3RF29 00-0EA18		3RF29 90-0GA16		3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.02 3RF23 90-3B.04	3RF29 00-0EA18 3RF29 00-0EA18		3RF29 90-0GA13 3RF29 90-0GA16		 3RF29 90-0KA16	3RF29 90-0HA13 3RF29 90-0HA16
3RF23 90-3B.04 3RF23 90-3B.06	3RF29 00-0EA18		3RF29 90-0GA16 3RF29 90-0GA16		3RF29 90-0KA16	3RF29 90-0HA16 3RF29 90-0HA16
3RF23 90-3B.22			3RF29 90-0GA33			3RF29 90-0HA33
3RF23 90-3B.24			3RF29 90-0GA36			3RF29 90-0HA36
3RF23 90-3B.26			3RF29 90-0GA36			3RF29 90-0HA36

The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Recommended assignment of the function modules to the 3RF24 three-phase solid-state contactors

Order No.	Accessories								
	Converters	Load monitoring	Load monitoring		Power controllers	Power regulators			
		Basic	Extended	monitoring					
Type current up to	Type current up to 50 A								
3RF2414.	3RF29 00-0EA18								
3RF2424.									
3RF2434.	3RF29 00-0EA18								
3RF245.									

Function Modules

Converters

Overview

Converter for SIRIUS SC semiconductor switching devices

This module is used to convert analog drive signals, such as those output from many temperature controllers, for example, into a pulse-width-modulated digital signal. The connected semiconductor contactors and relays can therefore regulate the output of a load as a percentage.

Area of application

The device is used for conversion from an analog input signal to an on/off ratio. The function module can only be used in conjunction with a 3RF21 semiconductor relay or a 3RF23 semiconductor contactor.

Design

Mounting

Simply snapping onto the 3RF21 semiconductor relays or 3RF23 semiconductor contactors establishes the connections to the semiconductor switching devices. The connector on the semiconductor switching devices from the control circuit can be used on the converter without rewiring.

Functions

The analog value from a temperature controller is present at the 0–10 V terminals. This controls the on-to-off period, as a function of voltage. The period duration is predefined at one second. Conversion of the analog voltage is linear in the voltage range from 0.1 to 9.9 V. At voltages below 0.1 V the connected switching device is not activated, while at voltages above 9.9 V the connected switching device is always activated.

Technical specifications

Control input for converter und load monitoring

Туре		3RF29 00-0EA18	3RF290HA.	
Analog input Permissible range	V	0 10 -1 11	0 10 -1 11	
Input resistance	kΩ	100	8	
Period duration	S	1	1	

Selection and ordering data

Rated operational current I_{e} Rated operational voltage U_{e} Rated control supply voltage U_{s} AC/DC 24 V

Order No.

Green No.

Rated control supply voltage U_{s} Pack per pack approx.
kg

3RF29 00-0EA18

1 unit 0.025



3RF29 00-0EA18

Function Modules

Load monitoring

Overview

Load monitoring for SIRIUS SC semiconductor switching devices

With the addition of the load monitoring module many faults can be quickly detected by monitoring a load circuit connected to the semiconductor switching device. Examples include the failure of load elements (up to 6 in the basic version or up to 12 in the extended version), alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by one or more LEDs and reported to the controller via a PLC-compatible output.

The operating principle is based on monitoring of the current. This figure is continuously compared with the reference value stored once during commissioning by the simple press of a button. In order to detect the failure of one of several loads, the current decrease must be 1/6 (in the basic version) or 1/12 (in the extended version) of the reference value. In the event of a fault, a contact (NC) is actuated and one or more LEDs indicate the fault

Area of application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 semiconductor relay or a 3RF23 semiconductor contactor. The devices with spring-loaded connections in the load circuit are not suitable for use with load monitoring modules.

Design

Mounting

Simply snapping the load monitoring module onto the 3RF21 semiconductor relays or 3RF23 semiconductor contactors establishes the control connections to the semiconductor switching devices. Because of the special design, the straight-through transformer of the load monitoring module covers the lower main power connection. The cable to the load is simply pushed through and secured with the terminal screw.

Functions

The function module is activated when an "ON" signal is applied (IN terminal). The module constantly monitors the current level and compares this with the setpoint value.

Start-up

Pressing the "Teach" button switches the device on; the current through the semiconductor switching device is measured and is stored as the setpoint. During this process the two lower (red¹⁾) LEDs flash alternately; simultaneous maintained light from the 3 (red¹⁾) LEDs indicates the conclusion of the teaching process.

The "Teach" button can also be used to switch on the connected semiconductor switching device briefly for test purposes. In this case the "ON" LED is switched on.

Partial load faults, "basic" load monitoring

If a decrease of at least 1/6 of the stored setpoint value is detected, a fault is signaled. The fault is indicated via a "Fault" LED and by activation of the fault signaling output.

	ок	Fault				
LEDs		Partial load failure/ load short-circuit	Thyristor defect	Mains failure/ fuse rupture		
ON/OFF	~	V	-	V		
Current flowing	~	V	V	-		
Group fault	-	V	V	V		

✔ Function is available

Partial load faults, "extended" load monitoring

Depending on the setting of the "response time" potentiometer, a decrease of at least 1/12 of the stored setpoint value after a response time of between 100 ms and 3 s is signaled as a fault. The fault is indicated via a "Load" LED and by activation of the fault signaling output.

The potentiometer can also be used to determine the response behavior of the fault signaling output. When delay values are set in the left-hand half, the fault signal is stored. This can only be reset by switching on and off by means of the control supply voltage.

When settings are made on the right-hand side, the fault output is automatically reset after the deviation has been corrected.

Voltage compensation, "extended" load monitoring

In addition to the current, the load voltage is also monitored. This makes it possible to compensate for influences on the current strength resulting from voltage fluctuations.

Thyristor fault

If a current greater than the residual current of the switching device is measured in the deenergized state, the device triggers a thyristor fault after the set time delay. This means that the fault output is activated and the "Fault" ("Thyristor" 1) LED lights up.

Supply fault

If no current is measured in the energized state, the device triggers a supply fault after the set time delay. This means that the fault output is activated and the "Fault" ("Supply" 1) LED lights up.

1) "Extended" load monitoring

Selection and ordering data

Rated operational current I _e	Rated operational voltage $U_{\rm e}$	Rated control supply voltage <i>U</i> _s AC 110 V	Rated control supply voltage U _s AC/DC 24 V	Std. Pack Qty	Weight per pack approx.	Rated control supply voltage <i>U</i> _s DC 24 V	Std. Pack Qty	Weight per pack approx.
A	V	Order No.	Order No.		kg	Order No.		kg
Basic lo	ad monitoring							
6 20	-	- -	-			3RF29 06-0FA08 ¹⁾ 3RF29 20-0FA08	1 unit	0.050
Extende	d load monitoring							
20 20	110 230 400 600	3RF29 20-0GA33 3RF29 20-0GA36	3RF29 20-0GA13 3RF29 20-0GA16	1 unit 1 unit	0.120 0.120	-		
50 50	110 230 400 600	3RF29 50-0GA33 3RF29 50-0GA36	3RF29 50-0GA13 3RF29 50-0GA16	1 unit 1 unit	0.120 0.120	- -		
90 90	110 230 400 600	3RF29 90-0GA33 3RF29 90-0GA36	3RF29 90-0GA13 3RF29 90-0GA16	1 unit 1 unit	0.120 0.120	-		

¹⁾ To order with mounted 3RF29 00-0RA88 cover, add -0KH0 to part number.

⁻ Function not available

Heating current monitoring

Overview

Heating current monitoring for 3RF2 single-phase solidstate switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of up to 6 load elements, alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by LEDs and reported to the controller by way of a relay output (NC contact).

The principle of operation is based on permanent monitoring of the current strength. This figure is continuously compared with the reference value stored once during start-up. In order to detect the failure of one of several loads, the current difference must be 1/6 of the reference value. In the event of a fault, an output is actuated and the LEDs indicate the fault.

The heating current monitoring has a teach input and therefore differs from the load monitoring. This remote teaching function enables simple adjustment to changing loads without manual intervention.

Special versions: deviations from the standard version

3RF29 ..-0JA1.-1KK0

If the current is below 50 % of the lower teach current during the teach routine, the device will go into "Standby" mode; the LOAD LED will flicker. The device thus detects a non-connected load, e. g. channels not required for tool heaters, and does not signal a fault. This mode can be reset by re-teaching.

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-loaded connections in the load circuit are not suitable.

Selection and ordering data

	Rated operational current $I_{\rm e}$	Rated operational voltage $U_{\rm e}$	Order No.	Std. Pack Qty	Weight per pack approx.
	A	V			kg
Heating current mon	itoring ¹⁾				
6 A	Rated control supply vo	ltage 24 V AC/DC			
030	16 16 16	110 230 110 230 400 600	3RF29 16-0JA13 3RF29 16-0JA13-1KK0 3RF29 16-0JA16-1KK0	1 unit 1 unit 1 unit	0.175 0.175 0.175
Minus	32 32 32	110 230 400 600 400 600	3RF29 32-0JA13-1KK0 3RF29 32-0JA16 3RF29 32-0JA16-1KK0	1 unit 1 unit 1 unit	0.175 0.175 0.175

 Supplied without control connector. The control connector can be purchased from Phoenix Contact by quoting Order No. 1982 790 (2.5 HC/6-ST-5.08).

	Version	Order No.	Std. Pack Qty	Weight per pack approx.
			•	kg
Optional accessories				
	Sealable covers for function modules (not for converters)	3RF29 00-0RA88	10 units	0.001

3RF29 00-0RA88

^{*} You can order this quantity or a multiple thereof.

Power controllers

Overview

Power controllers for 3RF2 single-phase solid-state switching devices

The power controller is a function module for the autonomous power control of complex heating systems and inductive loads.

The following functions have been integrated:

- Power controller for adjusting the power of the connected load. Here, the setpoint value is set with a rotary knob on the module as a percentage with reference to the 100 % power stored as a setpoint value.
- Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps or infrared lamps which have an inrush transient current.
- Load circuit monitoring for detecting load failure, partial load faults, alloyed power semiconductors, lack of voltage or a break in the load circuit.

Special versions: deviations from the standard version

3RF29 04-0KA13-0KC0

During the teaching process the connected solid-state relay or contactor is not activated; i. e. no current flow takes place. No current reference value is stored. No part-load monitoring!

3RF29 ..-0KA1.-0KT0

No part-load monitoring!

Application

The power controller can be used for:

- Complex heating systems
- Inductive loads
- Loads with temperature-dependent resistor
- Loads with ageing after long-time service
- Simple indirect control of temperature

The power controller can be used on the instantaneously switching 3RF21 and 3RF23 solid-state switching devices (single-phase). If only the full-wave operating mode is used, the power controller can also be used on the "zero-point switching" solid-state relays and contactors.

Power control

The power controller adjusts the power in the connected load by means of a solid-state switching device depending on the setpoint selection. It does not compensate for changes in the mains voltage or load resistance. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer ($t_{\rm R}$), the control is carried out according to the principle of full-wave control or generalized phase control.

Full-wave control

In this operating mode the output is adjusted to the required setpoint value changing the on-to-off period. The period duration is predefined at one second.

Generalized phase control

In this operating mode the output is adjusted to the required set-point value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 $\mu H. \\$

Selection and ordering data

	•				
	Rated operational current $I_{\rm e}$	Rated operational voltage $U_{\rm e}$	Order No.	Std. Pack Qty	Weight per pack approx.
	A	V		Í	kg
Power controllers					
16 1	Rated control supply	voltage 24 V AC/DC			
	4	110 230	3RF29 04-0KA13-0KC0	1 unit	0.175
2.3.2	4		3RF29 04-0KA13-0KT0	1 unit	0.175
8 Q A	20		3RF29 20-0KA13	1 unit	0.175
00	50		3RF29 50-0KA13	1 unit	0.175
DEMENS PERSONNEL	90		3RF29 90-0KA13	1 unit	0.175
The state of the same	20	400 600	3RF29 20-0KA16	1 unit	0.175
Socceed!	50		3RF29 50-0KA16	1 unit	0.175
- College	50		3RF29 50-0KA16-0KT0	1 unit	0.175
	90		3RF29 90-0KA16	1 unit	0.175
	Version		Order No.	Std.	Weight
				Pack	per pack
				Qty	approx.
Optional accessorie	es .				kg
	Sealable covers for function module	s (not for converters)	3RF29 00-0RA88	10 units	0.001
3RF29 00-0RA88					

Power control regulators

Overview

Power controllers for SIRIUS SC semiconductor switching devices

This module provides similar functionality to a power control regulator

The following functions are integrated:

Power control regulator with proportional-action control for adjusting the power of the connected load. Here, the setpoint is set with a rotary knob on the module as a percentage with reference to the 100% power stored as a setpoint. In this way the power is kept constant even in the event of voltage fluctuations or a change in load resistance.

Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps which have an inrush transient current.

<u>Load circuit monitoring</u> for detecting load failure, alloyed power semiconductors, lack of voltage or a break in the load circuit.

Area of application

The power controller adjusts the current in the connected load by means of a semiconductor switching device depending on a setpoint. This compensates for changes in the mains voltage or in the load resistance. The setpoint can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer ($t_{\rm R}$), the adjustment is carried out according to the principle of full-wave control or generalized phase control.

Full-wave control

In this operating mode the output is adjusted to the required setpoint by changing the on-to-off period. The period duration is predefined at one second.

Generalized phase control

In this operating mode the output is adjusted to the required set-point by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial power systems, a choke rated at at least 200 μH must be included in the load circuit.

Design

Mounting

Easy snapping onto the 3RF21 semiconductor relays or 3RF23 semiconductor contactors establishes the connections to the semiconductor switching devices. Because of the special design, the straight-through transformer of the power controller module covers the lower main power connection. The cable to the load is simply pushed through and secured with the terminal screw.

Functions

Start-up

Pressing the "Teach" button switches the device on; the current through the semiconductor switching device and the mains voltage are detected and stored. The resultant output is taken as the 100% output for the setpoint selection. During this process the two lower red LEDs flash alternately. Simultaneous maintained light from the three red LEDs indicates the completion of the "Teach" process.

The "Teach" button can also be used to switch on the connected semiconductor switching device briefly for test purposes. In this case the "ON" LED is switched on.

Setpoint selection

The setting on the setpoint potentiometer (P) determines how the setpoint selection is to be made:

External setpoint selection

At 0 % the setpoint selection is set via an external $0-10\,V$ analog signal (terminals IN / $0-10\,V$). The device is switched on and off via the power supply (terminals A1 / A2).

Internal setpoint selection

Above 0 % the setpoint is set using the potentiometer. To allow this, the potential at terminal A1 must additionally be applied at the IN terminal. After removal of the "ON" signal, the switching module is switched off.

Inrush current limitation

The ramp time (t_R) for a voltage ramp on switching on is set with the potentiometer for the purpose of inrush current limitation. If a time longer than 0 s is set, the device operates according to the phase-angle principle. If 0 s is set, there is no voltage ramp and the device operates according to the principle of full-wave control.

Load fault

If upon switching on with voltage applied the current flowing is not greater than the residual current of the switching device, the device triggers a load fault. The fault relay is activated and the "Load" LED lights up.

Thyristor fault

If a current greater than the residual current of the switching device is measured in the deenergized state, the device triggers a thyristor fault. The fault relay is activated and the "Thyristor" LED lights up.

Supply fault

If no current is measured in the energized state, the device triggers a supply fault. The fault relay is activated and the "Supply" LED lights up.

Selection and ordering data

Rated operational current I_e	Rated operational voltage $U_{\rm e}$	Rated control supply voltage <i>U</i> _s AC 110 V	Rated control supply voltage <i>U</i> _s AC/DC 24 V	Std. Pack Qty	Weight per pack approx.
A	V	Order No.	Order No.		kg
Power controllers ¹)					
20	110 230	3RF29 20-0HA33	3RF29 20-0HA13	1 unit	0.120
20	400 600	3RF29 20-0HA36	3RF29 20-0HA16	1 unit	0.120
50	110 230	3RF29 50-0HA33	3RF29 50-0HA13	1 unit	0.120
50	400 600	3RF29 50-0HA36	3RF29 50-0HA16	1 unit	0.120
90	110 230	3RF29 90-0HA33	3RF29 90-0HA13	1 unit	0.120
90	400 600	3RF29 90-0HA36	3RF29 90-0HA16	1 unit	0.120

¹⁾ Optional sealable cover - 3RF29 00-0RA88 can be used.

Power control regulators

Overview

Power control regulators for SIRIUS solid-state switching devices

The power control regulator is a function module for the autonomous power control regulation of complex heating systems and inductive loads, for the operation of loads with temperature-dependent resistors or long-term aging, and for simple indirect temperature control.

The power control regulator can be used on the 3RF21 and 3RF23 instantaneous switching solid-state switching devices (single-phase). If only the full-wave control mode is used, the power control regulator can also be used on the zero-point-switching solid-state relays and contactors.

Application

The power control regulator sets the load current of the solidstate switching device depending on a setpoint value as a percentage. Changes in the mains voltage or in the load resistance are not compensated in this case. The modulation, the On/off ratio or the phase angle, remains unchanged in accordance with the setpoint. The autonomous power control regulation is performed between 0 and 100 % of the setpoint value

Full-wave control

If the left potentiometer $t_{\rm R}$ is set to 0 s (= far left), the power control regulator works according to the principle of full-wave control. The power set, be it internal or external, is converted into a pulse-width-modulated digital signal. The power control regulator controls the On and Off time of the solid-state switching device within a fixed period duration of 1 s so that the specified power is applied to the load. The "ON" LED flashes in the same rhythm as the solid-state switching device switches on and off.

Generalized phase control

If the left potentiometer $t_{\rm R}$ is set to higher than 0 s, the power control regulator works according to the principle of generalized phase control. With generalized phase control, a choke rated at at least 200 $\mu{\rm H}$ must be included in the load circuit in order to observe the limit values of the conducted interference voltage for industrial networks.

Design

Mounting

Easy snapping onto the 3RF21 solid-state relays or 3RF23 solid-state contactors establishes the connections to the solid-state switching devices. Because of the special design, the straight-through transformer of the function module covers the lower main power connection. The cable to the load is simply pushed through and secured with the terminal screw.

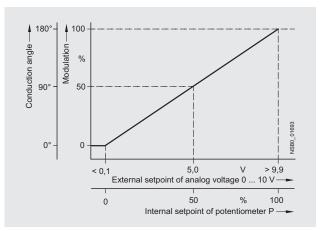
Function

Setpoint selection

The setpoint is selected either internally using the right-hand potentiometer P with 0 ... 100 % on the module or externally through the analog input 0 ... 10 V.

100 % corresponds in full-wave control to permanently On and in generalized phase control to a conduction angle of 180° and hence maximum power.

When the setpoint is selected internally the module is controlled through the IN terminal. The terminal 10 then has no function.



Input characteristic curve

When the setpoint is selected externally (potentiometer P set far left = 0 %) the module is controlled by applying the analog voltage 0 ... 10 V. 0 ... 10 V corresponds to 0 ... 100 % power. Conversion of the voltage is linear between 0.1 and 9.9 V. Below 0.1 V the switching device remains off; at voltages above 9.9 V the power is always set to 100 %.

Inrush current limitation

The ramp time (t_R) for a voltage ramp on switching on is set with the left potentiometer for the purpose of inrush current limitation. The set time refers to a power of 100 %. If, for example, a ramp time of 10 s is set and the selected power is 60 %, then a power of 60 % is reached after approx. 6 s.

Line and thyristor monitoring

The power control regulator recognizes supply failures and thyristor faults. The faults are indicated by the LEDs on the module and the fault output is activated.

3RF21 Solid-state relays technical data

Overview

22.5 mm semiconductor relays

With its compact design, which stays the same even at currents of up to 88 A, the 3RF21 semiconductor relay is the ultimate in space-saving construction, at a width of 22.5 mm. The logical connection arrangement, with the power infeed from above and connection of the load from below, ensures clean installation in the control cabinet.

Technical specifications

Туре		3RF211	3RF212	3RF213
General data				
Ambient temperature during operation, derating from 40 °C when stored	°C °C	-25 +60 -55 +80		
Site altitude	m	0 1000; derating from 1000		
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6	g	2		
Degree of protection		IP20		
Electromagnetic compatibility (EMC)				
Emitted interference Conducted interference voltage acc. to IEC 60947-4-3 Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class A for industrial applications Class A for industrial applications		
Noise immunity • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) • Induced RF fields acc. to IEC 61000-4-6 • Burst acc. to IEC 61000-4-4 • Surge acc. to IEC 61000-4-5	kV MHz kV kV	Contact discharge 4; air discharge 0.15 80; 140 dBµV; behavior crit 2/5.0 kHz; behavior criterion 1 Conductor - ground 2; conductor -	terion 1	
Connection technique		Screw-type connection	Spring-loaded connection	Ring cable connection
Main contact connection Conductor cross-section Solid Finely stranded with end sleeve Finely stranded without end sleeves Solid or stranded AWG conductors Insulation stripping length Terminal screw Tightening torque Cable lug DIN	mm² mm² mm² AWG mm Nm lb.in	2 x (1.5 2.5), 2 x (2.5 6) 2 x (1.5 2.5), 2 x (2.5 6), 1 x 10 2 x (14 10) 10 M 4 2 2.5 18 22	2 x (0,5 2.5) 2 x (0.5 1.5) 2 x (0.5 2.5) 2 x (18 14) 10	
		-	-	JIS C 2805 R 2-5, 5.5-5, 8-5, 14-5
Auxiliary/control contact connections Conductor cross-section Insulation stripping length Terminal screw • Tightening torque	mm ² AWG mm Nm lb.in	1x (0.5 2.5); 2x (0.5 1) 20 12 7 M 3 0.5 0.6 4.5 5.3	0.5 1.5 20 12 10 - -	1x (0.5 2.5); 2x (0.5 1) 20 12 7 M 3 0.5 0.6 4.5 5.3

Туре		3RF212	3RF214	3RF215	3RF216
Main circuit					
Rated operational voltage U _e • Tolerance • Rated frequency	V % Hz	24 230 -15 / +10 50/60	230 460	48 600	400 600
Rated insulation voltage U _i	V	600			
Blocking voltage	V	800	1200	1200	1600
Rate of voltage rise	V/µs	1000			

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Solid-State Relays 3RF21 Solid-state

technical data

Order No.	I _{max} 1) at R _{thha} /T _u =	= 40 °C	I _e acc. to IE at R _{thha} /T _u =	EC 60947-4-3 40 °C	I _e acc. to U at R _{thha} /T _u =		Power loss at I_{max}	Minimum load current	Leakage current
	Α	K/W	Α	K/W	Α	K/W	W	A	mA
Main circuit							_		
3RF21 20	20	2.0	20	1.7	20	1.3	28.6	0.1	10
3RF21 30-1	30	1.1	30	0.79	30	0.56	44.2	0.5	10
3RF21 50-1 3RF21 50-2 3RF21 50-3	50 50 50	0.68 0.68 0.68	50 20 50	0.48 2.6 0.48	50 20 50	0.33 2.9 0.33	66 66 66	0.5 0.5 0.5	10 10 10
3RF21 70-1	70	0.40	50	0.77	50	0.6	94	0.5	10
3RF21 90-1 3RF21 90-2 3RF21 90-3	88 88 88	0.33 0.33 0.33	50 20 88	0.94 2.8 0.22	50 20 83	0.85 3.5 0.19	118 118 118	0.5 0.5 0.5	10 10 10

 $^{^{1)}}$ $I_{\rm max}$ provides information about the performance of the solid-state relay. The actual permitted rated operational current $I_{\rm e}$ can be smaller depending on the connection method and cooling conditions.

Note: The required heat sinks for the corresponding load currents can be determined from the characteristic curves, page 4/10. The minimum thickness values for the mounting surface must be observed.

Order No.	Rated impulse withstand capacity $I_{\rm tsm}$	<i>I</i> ² <i>t</i> value
	A	A^2s
Main circuit		
3RF21 20	200	200
3RF21 30A.2 3RF21 30A.4 3RF21 30A.5 3RF21 30A.6	300 300 300 400	450 450 450 800
3RF21 50	600	1800
3RF21 70A.2 3RF21 70A.4 3RF21 70A.5 3RF21 70A.6	1200 1200 1200 1150	7200 7200 7200 6600
3RF21 90	1150	6600

Туре		3RF212	3RF214	3RF215	3RF216	
Main circuit						
Rated operational voltage U _e	V	24 230	48 460	48 600	48 600	
Operating range	V	20 253	40 506	40 660	40 660	
Rated frequency	Hz	50/60 ± 10 %				
Rated insulation voltage <i>U</i> _i \vee		600				
Blocking voltage V		800 1200 1600			1600	
Rage of voltage rise V/µs		1000				

Туре		3RF210.	3RF211.		3RF212.	3RF214.
Control circuit						
Method of operation		DC operation	AC/DC operation		AC operation	DC operation
Rated control supply voltage U _s	V	24 acc. to EN 61131-2	24 AC	24 DC	110 230	4 30
Rated frequency of the control supply voltage	Hz		50/60 ± 10 %		50/60 ± 10 %	
Control supply voltage, max.	V	30	26.5 AC	30 DC	253	30
Typical actuating current	mA	20 / Low Power: 6.5 ¹⁾	20	20	15	20
Response voltage	V	15	14 AC	15 DC	90	4
Drop-out voltage	V	5	5 AC	5 DC	40	1
Operating times						
ON-delay	ms	1 + max. one half-wave ²⁾	10 + max. or half-wave ²⁾	ne	40 + max. one half-wave ²⁾	1 + max. one half-wave ²⁾
OFF-delay	ms	1 + max. one half-wave	15 + max. or half-wave	ne	40 + max. one half-wave	1 + max. one half-wave

¹⁾ Applies to the version "Low Power" 3RF21 ..-. AA..-0KN0.

²⁾ Only for zero-point-switching devices.

Solid-State Switching Devices Solid-State Relays

3RF21 solid-state relays, technical data

Fused version with semiconductor protection (similar to type of coordination "2")¹⁾

The semiconductor protection for the SIRIUS controls can be used with different protective devices. This allows protection by means of LV HRC fuses of gG operational class or miniature circuit breakers. Siemens recommends the use of special SITOR semiconductor fuses. The table below lists the maximum permissible fuses for each SIRIUS control.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems.

For protective devices with gG operational class and for SITOR 3NE1 all-range fuses, the minimum cross-sections for the conductor to be connected must be taken into account.

Order No.	All-range fuses		Semiconductor fuses/partial-range fuses				
	LV HRC design	Cylindrical design	LV HRC design	Cylindrical design			
	gR/SITOR	gR/NEOZED ²⁾	aR/SITOR	aR/SITOR	aR/SITOR	aR/SITOR	
	3NE1	SILIZED 5SE1	3NE8	10 mm x 38 mm 3NC1 0	14 mm x 51 mm 3NC1 4	22 mm x 58 mm 3NC2 2	
3RF21 202 3RF21 204 3RF21 205 ³⁾	3NE1 814-0 3NE1 813-0 ⁴⁾ 3NE1 813-0 ⁴⁾	5SE1 325 5SE1 320 5SE1 320	3NE8 015-1 3NE8 015-1 3NE8 015-1	3NC1 020 3NC1 016 ⁴⁾ 3NC1 016 ⁴⁾	3NC1 420 3NC1 420 3NC1 420	3NC2 220 3NC2 220 3NC2 220	
3RF21 302 3RF21 304 3RF21 305 ³⁾ 3RF21 306	3NE1 815-0 ⁴⁾ 3NE1 815-0 ⁴⁾ 3NE1 815-0 ⁴⁾ 3NE1 815-0 ⁴⁾	5SE1 335 5SE1 325 ⁴⁾ 5SE1 325 ⁴⁾	3NE8 003-1 3NE8 003-1 3NE8 003-1 3NE8 003-1	3NC1 032 3NC1 025 ⁴⁾ 3NC1 025 ⁴⁾ 3NC1 032	3NC1 432 3NC1 430 3NC1 430 3NC1 432	3NC2 232 3NC2 232 3NC2 232 3NC2 232	
3RF21 502 3RF21 504 3RF21 505 ³⁾ 3RF21 506	3NE1 817-0 3NE1 802-0 ⁴⁾ 3NE1 802-0 ⁴⁾ 3NE1 803-0 ⁴⁾	5SE1 350 5SE1 335 ⁴⁾ 5SE1 335 ⁴⁾	3NE8 017-1 3NE8 017-1 3NE8 017-1 3NE8 017-1	 	3NC1 450 3NC1 450 3NC1 450 3NC1 450	3NC2 250 3NC2 250 3NC2 250 3NC2 250	
3RF21 702 ⁵⁾ 3RF21 704 ⁵⁾ 3RF21 705 ³⁾⁵⁾ 3RF21 706 ⁵⁾	3NE1 820-0 3NE1 020-2 3NE1 020-2 3NE1 020-2	5SE1 363 ⁴⁾ 5SE1 363 ⁴⁾ 	3NE8 020-1 3NE8 020-1 3NE8 020-1 3NE8 020-1	 	 	3NC2 280 3NC2 280 3NC2 280 3NC2 280	
3RF21 902 ⁵⁾ 3RF21 904 ⁵⁾ 3RF21 905 ³⁾ 3RF21 906 ⁵⁾	3NE1 021-2 3NE1 021-2 3NE1 021-2 3NE1 817-0 ⁴⁾	 	3NE8 021-1 3NE8 021-1 3NE8 021-1 3NE8 021-1	 	 	3NC2 200 3NC2 280 ⁴⁾ 3NC2 280 ⁴⁾ 3NC2 280 ⁴⁾	

Order No.	Cable and line prote	line protection fuses						
	LV HRC design ⁴⁾	Cylindrical design ⁴⁾			DIAZED ⁴⁾			
	gG	gG	gG	gG	quick			
	3NA2	10 mm x 38 mm 3NW6 0	14 mm x 51 mm 3NW6 1	22 mm x 58 mm 3NW6 2	5SB			
3RF21 202 3RF21 204 3RF21 205 ³⁾	3NA2 803 3NA2 801 3NA2 801	3NW6 000-1 	3NW6 101-1 3NW6 101-1 3NW6 101-1	 	5SB1 41 5SB1 41 5SB1 41			
3RF21 302 3RF21 304 3RF21 305 ³⁾ 3RF21 306	3NA2 803 3NA2 803 3NA2 803 3NA2 803-6	 	3NW6 103-1 3NW6 101-1 3NW6 101-1	 	5SB1 71 5SB1 71 5SB1 71 			
3RF21 502 3RF21 504 3RF21 505 ³⁾ 3RF21 506	3NA2 810 3NA2 807 3NA2 807 3NA2 807-6	 	3NW6 107-1 	3NW6 207-1 3NW6 205-1 3NW6 205-1	5SB3 11 5SB3 11 5SB3 11			
3RF21 702 ⁵⁾ 3RF21 704 ⁵⁾ 3RF21 705 ³⁾⁵⁾ 3RF21 706 ⁵⁾	3NA2 817 3NA2 812 3NA2 812 3NA2 812-6	 	 	3NW6 217-1 3NW6 212-1 3NW6 212-1	5SB3 31 5SB3 31 			
3RF21 902 ⁵⁾ 3RF21 904 ⁵⁾ 3RF21 905 ³⁾⁵⁾ 3RF21 906 ⁵⁾	3NA2 817 3NA2 812 3NA2 812 3NA2 812-6	 	 	3NW6 217-1 3NW6 212-1 3NW6 212-1	- - -			

Suitable fuse holders, fuse bases and controls can be found in Catalog LV 1, Chapter 19.

- Type of coordination "2" according to EN 60947-4-1: In the event of a short-circuit, the controls in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.
- $^{2)}$ For use only with operational voltage $U_{\rm e}$ up to 400 V.
- $^{3)}$ For use only with operational voltage $\ensuremath{U_{\mathrm{e}}}$ up to 506 V.
- 4) These fuses have a smaller rated current than the solid-state relays.
- 5) These versions can also be protected against short-circuits with miniature circuit breakers as described in the notes on "SIRIUS Solid-State Contactors → Special Version Short-Circuit Resistant".

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Solid-State Relays

3RF20 Solid-state relays technical data

Overview

45 mm semiconductor relays

The semiconductor relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to retrofit existing semiconductor relays. The connection of the control cable also saves space in much the same way as the 22.5 mm design, as it is simply plugged on.

Technical specifications

Туре		3RF20
General data		
Ambient temperature during operation, derating at 40 °C when stored	°C °C	-25 +60 -55 +80
Site altitude	m	0 1000; derating from 1000
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11
Vibration resistance acc. to IEC 60068-2-6	g	2
Degree of protection		IP20
Electromagnetic compatibility (EMC) Emitted interference • Conducted interference voltage IEC acc. to 60947-4-3 • Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class A for industrial applications Class A for industrial applications
Noise immunity • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) • Induced RF fields acc. to IEC 61000-4-6 • Burst acc. to IEC 61000-4-4 • Surge acc. to IEC 61000-4-5	kV MHz kV kV	Contact discharge 4; air discharge 8; behavior criterion 2 0.15 80; 140 dBµV; behavior criterion 1 2/5.0 kHz; behavior criterion 1 Conductor - ground 2; conductor - conductor 1; behavior criterion 2
Connection, main contacts, screw connection Conductor cross-section Solid Finely stranded with end sleeve Solid or stranded AWG conductors Insulation stripping length Terminal screw • Tightening torque	mm ² mm ² AWG mm	2 × (1.5 2.5); 2 × (2.5 6) 2 × (1.5 2.5); 2 × (2.5 6); 1 × 10 2 × (14 10) 10 M 4 2 2.5 18 22
Connection, auxiliary/control contacts, screw connection Conductor cross-section Insulation stripping length Terminal screw • Tightening torque	mm ² mm Nm lb.in	1x (0.5 2.5); 2x (0.5 1.0); AWG 20 12 7 M 3 0.5 0.6 4.5 5.3

Туре		3RF20 .0-1AA.2	3RF20 .0-1AA.4	3RF205	3RF20 .0-1AA.6
Main circuit					
Rated operational voltage U _e • Tolerance • Rated frequency	V % Hz	24 230 -15/+10 50/60	230 460	48 600	400 600
Rated insulation voltage U _i	V	600			
Blocking voltage	V	800	1200	1200	1600
Rage of voltage rise	V/µs	1000			

Order No.	$I_{\text{max}}^{(1)}$ at R _{thha} / $T_{\text{u}} = 40 ^{\circ}\text{C}$		C	$I_{\rm e}$ to IEC 60947-4-3 at R _{thha} / $T_{\rm u}$ = 40 °C		$I_{\rm e}$ to UL/CSA at R _{thha} / $T_{\rm u}$ = 50 °C		Minimum load current	Leakage current
	Α	K/W	Α	K/W	Α	K/W	W	Α	mA
Main circuit									
3RF20 20-1AA	20	2.0	20	2.0	20	1.7	28.6	0.5	10
3RF20 30-1AA	30	1.1	30	1.1	30	0.88	44.2	0.5	10
3RF20 50-1AA	50	0.68	50	0.68	50	0.53	66	0.5	10
3RF20 70-1AA	70	0.4	50	0.95	50	0.8	94	0.5	10
3RF20 90-1AA	88	0.33	50	1.25	50	1.02	118	0.5	10

¹⁾ $l_{
m max}$ provides information about the performance of the semiconductor relay. The actual permitted operational current $l_{
m e}$ can be smaller depending on the connection method and cooling conditions.

Order No.	Rated impulse withstand capacity $I_{\rm tsm}$	$\hat{F}t$ value	
	А	A^2s	
Main circuit			
3RF20 20-1AA	200	200	
3RF20 30-1AA.2 3RF20 30-1AA.4 3RF20 30-1AA.6	300 300 400	450 450 800	
3RF20 50-1AA	600	1800	
3RF20 70-1AA.2 3RF20 70-1AA.4 3RF20 70-1AA.6	1200 1200 1150	7200 7200 6600	
3RF20 90-1AA	1150	6600	

Туре		3RF20 .0-1AA0.	3RF20 .0-1AA4.	3RF20 .0-1AA2.
Control circuit				
Method of operation		DC operation	DC operation	AC operation
Rated control supply voltage U _s	V	24 acc. to EN 61131-2	4 30V DC	110 230
Max. rated control voltage	V	30	30	253
Rated control current at U _s	mA	15	15	6
Rated frequency of the control supply voltage	Hz	-	-	50/60
Response voltage current	V mA	15 >2	4 >2	90 2
Drop-out voltage	V	5	1	40
Operating times closing time opening time	ms ms	1 + max. one half wave 1 + max. one half wave	1 + max. one half wave 1 + max. one half wave	40 + max. one half wave 40 + max. one half wave

Fused design with semiconductor protection

Order No.	All-range fuse LV design gR/SITOR 3NE1	Semiconductor protection fuse Cylindrical design 10 × 38 mm		Cable and line LV design gL/gG/3NA	e protection fusions of the protection fusion Cylindrical de 10 × 38 mm gL/gG 3NW		22 × 58 mm gL/gG 3NW	DIAZED quick 5SB	
3RF20 20-1AA.2 3RF20 20-1AA.4	3NE1 814-0 3NE1 813-0	3NC1 020 3NC1 016	3NC1 420 3NC1 420	3NC2 220 3NC2 220	3NA2 803 3NA2 801	3NW6 001-1	3NW6 101-1 3NW6 101-1	-	5SB1 71 5SB1 41
3RF20 30-1AA.2 3RF20 30-1AA.4 3RF20 30-1AA.6	3NE1 815-0 3NE1 815-0 3NE1 815-0	3NC1 032 3NC1 025 3NC1 032	3NC1 432 3NC1 432 3NC1 432	3NC2 232 3NC2 232 3NC2 232	3NA2 803 3NA2 803 3NA2 803-6	-	3NW6 103-1 3NW6 101-1	-	5SB3 11 5SB1 71
3RF20 50-1AA.2 3RF20 50-1AA.4 3RF20 50-1AA.6	3NE1 817-0 3NE1 802-0 3NE1 803-0	- - -	3NC1 450 3NC1 450 3NC1 450	3NC2 250 3NC2 250 3NC2 250	3NA2 810 3NA2 807 3NA2 807-6	-	3NW6 107-1 -	3NW6 207-1 3NW6 205-1	5SB3 21 5SB3 11
3RF20 70-1AA.2 ²⁾ 3RF20 70-1AA.4 ²⁾ 3RF20 70-1AA.6 ²⁾	3NE1 820-0 3NE1 020-2 3NE1 020-2	- - -	-	3NC2 280 3NC2 280 3NC2 280	3NA2 817 3NA2 812 3NA2 812-6	-	-	3NW6 217-1 3NW6 212-1	5SB3 31 5SB3 21 -
3RF20 90-1AA.2 ²⁾ 3RF20 90-1AA.4 ²⁾ 3RF20 90-1AA.6 ²⁾	3NE1 021-2 3NE1 021-2 3NE1 020-2	- - -	-	3NC2 200 3NC2 280 3NC2 280	3NA2 817 3NA2 812 3NA2 812-6	-	-	3NW6 217-1 3NW6 212-1	5SB3 31 5SB3 21

¹⁾ Type of coordination "2" acc. to EN 60947-4-1:
In the event of a short-circuit, the control gear in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.

²⁾ These versions can also be protected against short-circuit with miniature circuit-breakers as described on page 7/11.

Solid-State Relays

3RF22 Solid-state relays technical data

Overview

45 mm solid-state relays

The 3RF22 solid-state relays with a width of 45 mm provide space advantages over solutions with single-phase versions. The logical connection arrangement, with the power infeed from above and connection of the load from below, ensures tidy installation in the control cabinet.

Important features:

- LED indicators
- Variety of connection techniques
- Plug-in control connection
- Degree of protection IP20
- Zero-point switching,
- Two or three-phase controlled

Technical specifications

Туре		3RF221	3RF222	3RF223			
General data							
Ambient temperature							
 During operation, derating from 40 °C 	°C	-25 +60					
During storage	°C	-55 +80					
Site altitude	m	0 1000; > 1000 ask Technical A	Assistance				
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11					
Vibration resistance acc. to IEC 60068-2-6	g	2					
Degree of protection		IP20	IP20				
Insulation strength at 50/60 Hz (main/control circuit to ground)	V rms	4000					
Electromagnetic compatibility (EMC)							
Emitted interference Conducted interference voltage acc. to IEC 60947-4-3 Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class A for industrial applications					
Interference immunity Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) Induced RF fields acc. to IEC 61000-4-6	kV MHz	Contact discharge 4; air discharge 8; behavior criterion 2 0.15 80; 140 dBµV; behavior criterion 1					
- Burst acc. to IEC 61000-4-4 - Surge acc. to IEC 61000-4-5	kV kV	2/5.0 kHz; behavior criterion 1 Conductor – ground 2; conductor – conductor 1; behavior criterion 2					
Connection technique		Screw terminal	Spring-loaded connection	Ring terminal end connection			
Main contact connection							
Conductor cross-section Solid Finely stranded with end sleeve Finely stranded without end sleeve Solid or stranded, AWG conductors	mm ² mm ² mm ²	2 x (1.5 2.5), 2 x (2.5 6) 2 x (1 2.5), 2 x (2.5 6), 1 x 10 2 x (AWG 14 10)	2 × (0.5 2.5) 2 × (0.5 1.5) 2 × (0.5 2.5) 2 × (AWG 18 14)	 			
Stripped length	mm	10	10				
 Terminal screw Tightening torque, Ø 5 6 mm, PZ 2 	Nm lb.in	M4 2 2.5 18 22		M5 2.5 2 18 22			
Cable lug acc. to DIN 46234 acc. to JIS C 2805				5-2.5 5-25 R 2-5 14-5			
Connection, auxiliary/control contacts							
 Conductor cross-section, with or without end sleeve 	mm AWG	1 x (0.5 2.5), 2 x (0.5 1.0) 20 12	0.5 2.5 20 12	1 x (0.5 2.5), 2 x (0.5 1.0) 20 12			
Stripped length	mm	7	10	7			
 Terminal screw Tightening torque, Ø 3.5 , PZ 1 	Nm lb.in	M3 0.5 0.6 4.5 5.3		M3 0.5 0.6 4.5 5.3			

These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case the may be required to introduce additional damping measures.

Solid-State Switching Devices Solid-State Relays 3RF22 Solid-state relays

technical data

Type		3RF22AB.5	3RF22AC.5
Main circuit			
Controlled phases		Two-phase	Three-phase
Rated operational voltage U _e	V	48 600	48 600
Operating range	V	40 660	40 660
Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U _i	V	600	600
Rated impulse withstand voltage U _{imp}	kV	6	6
Blocking voltage	V	1200	1200
Rage of voltage rise	V/µs	1.000	1.000

Order No.	$I_{\rm max}^{-1)}$ at $R_{\rm thha}/T_{\rm u}$	= 40 °C	$I_{\rm e}$ acc. to IE at $R_{\rm thha}/T_{\rm u}$ =	C 60947-4-3 : 40 °C	I _e acc. to UI at R _{thha} /T _u =		Power loss at I_{max}	Minimum load current	Max. leakage current
	Α	K/W	Α	K/W	Α	K/W	W	Α	mA
Main circuit									
3RF22 30 AB	30	0.57	30	0.57	30	0.44	81	0.5	10
3RF22 55-1AB 3RF22 55-2AB 3RF22 55-3AB	55	0.18	50 20 50	0.27 1.83 0.27	50 20 50	0.19 1.58 0.19	151	0.5	10
3RF22 30 AC	30	0.33	30	0.33	30	0.25	122	0.5	10
3RF22 55-1AC 3RF22 55-2AC 3RF22 55-3AC	55	0.09	50 20 88	0.15 1.19 0.15	50 20 83	0.1 1.02 0.1	226	0.5	10

¹⁾ $I_{
m max}$ provides information about the performance of the solid-state relay. The actual permitted rated operational current $I_{
m e}$ can be smaller depending on the connection method and cooling conditions.

Order No.	Rated impulse withstand capacity $I_{\rm tsm}$	I^2 t value A^2 s
Main circuit		
3RF22 305	300	450
3RF22 555	600	1800

Type		3RF22AB4. / 3RF22AC4.
Control circuit		
Method of operation		DC operation
Rated control supply voltage U _s	V	430
Response voltage	V	15
For tripping current	mA	2
Drop-out voltage	V	1
Operating times		
ON-delay	ms	1 + max. one half-wave
OFF delay	ms	1 + max. one half-wave

Solid-State Switching Devices Solid-State Contactors

3RF23 Solid-state contactors technical data

Technical sp	pecifications
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General data Ambient temperature during operation, derating at 40 °C when stored °C Site altitude m Shock resistance acc. to IEC 60068-2-27 g/ms Vibration resistance acc. to IEC 60068-2-6 g Degree of protection Electromagnetic compatibility (EMC) Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage	-25 +60 -55 +80 0 1000; deratii 15/11 2 IP20 Class A for indus	ng from 1000	Class A for	
during operation, derating at 40 °C when stored °C when stored °C Site altitude m Shock resistance acc. to IEC 60068-2-27 g/ms Vibration resistance acc. to IEC 60068-2-6 g Degree of protection Electromagnetic compatibility (EMC) Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage	-55 +80 0 1000; deratii 15/11 2 IP20		Class A for	
Shock resistance acc. to IEC 60068-2-27 Vibration resistance acc. to IEC 60068-2-6 Degree of protection Electromagnetic compatibility (EMC) Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage	15/11 2 IP20		Class A for	
Vibration resistance acc. to IEC 60068-2-6 Degree of protection Electromagnetic compatibility (EMC) Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage	2 IP20	strial applications	Class A for	1
Degree of protection Electromagnetic compatibility (EMC) Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage	IP20	strial applications	Class A for	
Electromagnetic compatibility (EMC) Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage Noise immunity		strial applications	Class A for	
Emitted interference acc. to IEC 60947-4-3 • Conducted interference voltage • Emitted high-frequency interference voltage Noise immunity	Class A for indus	strial applications	Class A for	
			industrial applications; Class B for residential/business/commercial areas up to 16 A, AC51 Low Noise	
Electrostatic discharge acc. to IEC 61000-4-2	Contact discharge 4; air discharge 8; behavior criterion 2 0.15 80; 140 dB μ V; behavior criterion 1 2/5.0 kHz; behavior criterion 1 Conductor - ground 2; conductor - conductor 1; behavior criterion 2			

Order No.		3RF231	3RF232	3RF233
General data				
Connection technique		Screw connection	Spring-loaded connection	Ring cable connection
Main contact connection Conductor cross-section Solid Finely stranded with end sleeve Finely stranded without end sleeves Solid or stranded AWG conductors Insulation stripping length Terminal screw • Tightening torque • Tightening torque Cable lug • DIN	mm² mm² mm² AWG mm	2 x (1.5 2.5), 2 x (2.5 6) 2 x (1.5 2.5), 2 x (2.5 6), 1 x 10 2 x (14 10) 10 M 4 2 2.5 18 22	2 x (0.5 2.5) 2 x (0.5 1.5) 2 x (0.5 2.5) 2 x (18 14) 10	
Auxiliary/control contact connections Conductor cross-section Insulation stripping length Terminal screw • Tightening torque	mm ² AWG mm Nm lb.in	1x (0.5 2.5); 2x (0.5 1.0) 20 12 7 M 3 0.5 0.6 4.5 5.3	0.5 1.5 20 12 10 - -	1x (0.5 2.5); 2x (0.5 1.0) 20 12 7 M 3 0.5 0.6 4.5 5.3

Туре		3RF232	3RF234	3RF215	3RF236
Main circuit					
Rated operational voltage U _e • Tolerance • Rated frequency	V % Hz	24 230 -15/+10 50/60 Hz	230 460	48 600	400 600
Rated insulation voltage U _i	V	600			
Blocking voltage	V	800	1200	1200	1600
Rate of voltage rise	V/µs	1000			

Туре		3RF230.	3RF232.
Control circuit			
Method of operation		DC operation	AC operation
Rated control supply voltage U _s	V	24 to EN 61131-2	110 230
Max. rated control voltage	V	30	253
Rated control current at $U_{\rm s}$	mΑ	15	6
Rated frequency of the control supply voltage	Hz		50/60
Response voltage for tripping current	V mA	15 2	90 2
Drop-out voltage	V	5	40
	ms ms	1 + max. one half-wave 1 + max. one half-wave	40 + max. one half-wave 40 + max. one half-wave

Solid-State Contactors

3RF23 Solid-state contactors technical data

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Technical specifications

Order No.	Type current AC	C-51 ¹⁾		Power loss at	Minimum load	Leakage	Rated impulse	₽t value
	I _{max}	acc. to IEC 60947-4-3	UL/CSA	I _{max}	current	current	withstand capacity I _{tsm}	
	at 40 °C	at 40 °C	at 50 °C				· v toill	
	Α	А	A	W	Α	mA	Α	A ² s
Main circuit								
3RF23 1A2 3RF23 1A4 3RF23 1A.45 3RF23 1A6	10.5	7.5	9.6	11	0.5	10	200 200 400	200 200 800
3RF23 2A2 3RF23 2C2 3RF23 2D2	20	13.2	17.6	20	0.5	10 25 10	600 600 1150	1800 1800 6600
3RF23 2A4 3RF23 2C4 3RF23 2D4 3RF23 2A.45						10 25 10	600 600 1150	1800 1800 6600
3RF23 2A6						10	600	1800
3RF23 3A2 3RF23 3A4 3RF23 3A.45 3RF23 3A6	30	22	27	33	0.5	10	600	1800
3RF23 4A2 3RF23 4A4 3RF23 4A.45 3RF23 4A6	40	33	36	44	0.5	10	1200 1200 1150	7200 7200 6600
3RF23 5A2 3RF23 5A4 3RF23 5A.45 3RF23 5A6	50	36	45	54	0.5	10	1150	6600
3RF23 7A2 3RF23 7A4 3RF23 7A.45 3RF23 7A6	70	70	62	83	0.5	10	1150	6600
3RF23 9A2 3RF23 9A4 3RF23 9A.45 3RF23 9A6	88	88	80	117	0.5	10	1150	6600

Order No.	Type current	t AC-51 ¹⁾				Power loss	Minimum	Leakage	Rated impulse	<i>l</i> ² t value
	I _{max} at 40 °C	acc. to IEC 60947- 4-3 at 40 °C	UL/CSA at 50 °C	AC-15	Parameters	at I _{max}	load current	current	withstand capacity $I_{\rm tsm}$	
	Α	А	А	А		W	А	mA	Α	A ² s
Main circuit										
3RF23 1B2 3RF23 1B4 3RF23 1B6	10.5	7.5	9.6	6	1200 1/h 50 % ED	11	0.5	10	200 200 400	200 200 800
3RF23 2B2 3RF23 2B4 3RF23 2B6	20	13.2	17.6	12	1200 1/h 50 % ED	20	0.5	10	600	1800
3RF23 3B2 3RF23 3B4 3RF23 3B6	30	22	27	15	1200 1/h 50 % ED	33	0.5	10	600	1800
3RF23 4B2 3RF23 4B4 3RF23 4B6	40	33	36	20	1200 1/h 50 % ED	44	0.5	10	1200 1200 1150	7200 7200 6600
3RF23 5B2 3RF23 5B4 3RF23 5B6	50	36	45	25	1200 1/h 50 % ED	54	0.5	10	1150	6600
3RF23 7B2 3RF23 7B4 3RF23 7B6	70	70	62	27.5	1200 1/h 50 % ED	83	0.5	10	1150	6600
3RF23 9B2 3RF23 9B4 3RF23 9B6	88	88	80	30	1200 1/h 50 % ED	117	0.5	10	1150	6600

The type current provides information about the performance of the semiconductor contactor. The actual permitted operational current l_e can be smaller depending on the connection method and start-up conditions. Derating acc. to curves from page 7/34, 7/35, 7/36.

Solid-State Contactors

3RF23 Solid-state contactors technical data

Fused design with semiconductor protection (similar to type of coordination "2")¹⁾

The semiconductor protection for the SIRIUS SC controlgear can be used with different protective devices. This allows protection by means of LV HRC fuses of operational class gL/gG or supplementary protectors. Siemens recommends the use of special SITOR semiconductor fuses. The table below lists the maximum permissible fuses for each SIRIUS SC control gear.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems

For protective devices with operational class gL/gG and for SITOR full range fuses 3NE1, the minimum cross-sections for the conductor to be connected must be taken into account.

Order No. All-range fuse LV HRC design		Semiconducto Cylindrical de	or protection fus	se	Cable and line protection fuse LV HRC Cylindrical design				DIAZED quick 5SB
	gR/SITOR 3NE1	10 x 38 mm aR/SITOR 3NC1 0	14 x 51 mm aR/SITOR 3NC1 4	22 x 58 mm aR/SITOR 3NC2 2	design gL/gG 3NA	10 x 38 mm gL/gG 3NW	14 x 51 mm gL/gG 3NW	22 x 58 mm gL/gG 3NW	35B
3RF23 12 3RF23 14 3RF23 16	3NE1 813-0 3NE1 813-0 3NE1 813-0	3NC1 010 3NC1 010 3NC1 010	3NC1 410 3NC1 410 3NC1 410	3NC2 220 3NC2 220 3NC2 220	3NA2 803 3NA2 801 3NA2 803-6	3NW6 001-1 3NW6 001-1	3NW6 101-1 3NW6 101-1	-	5SB1 41 5SB1 41
3RF23 22 3RF23 24 3RF23 26	3NE1 814-0 3NE1 814-0 3NE1 814-0	3NC1 020 3NC1 020 3NC1 020	3NC1 420 3NC1 420 3NC1 420	3NC2 220 3NC2 220 3NC2 220	3NA2 807 3NA2 807 3NA2 807-6	3NW6 007-1 3NW6 005-1	3NW6 107-1 3NW6 105-1	3NW6 207-1 3NW6 205-1	5SB1 71 5SB1 71
3RF23 32 3RF23 34 3RF23 36	3NE1 803-0 3NE1 803-0 3NE1 803-0	3NC1 032 3NC1 032 3NC1 032	3NC1 432 3NC1 432 3NC1 432	3NC2 232 3NC2 232 3NC2 232	3NA2 810 3NA2 807 3NA2 807-6	-	3NW6 107-1 3NW6 105-1	3NW6 207-1 3NW6 205-1	5SB3 11 5SB3 11
3RF23 42 3RF23 44 3RF23 46	3NE1 802-0 3NE1 802-0 3NE1 802-0	-	3NC1 440 3NC1 440 3NC1 440	3NC2 240 3NC2 240 3NC2 240	3NA2 817 3NA2 812 3NA2 812-6	-	3NW6 117-1 3NW6 112-1	3NW6 217-1 3NW6 212-1	5SB3 21 5SB3 21
3RF23 52 3RF23 54 3RF23 56	3NE1 817-0 3NE1 817-0 3NE1 817-0	-	3NC1 450 3NC1 450 3NC1 450	3NC2 250 3NC2 250 3NC2 250	3NA2 817 3NA2 812 3NA2 812-6	-	3NW6 117-1 -	3NW6 217-1 3NW6 210-1	5SB3 21 5SB3 21
3RF23 72 3RF23 74 3RF23 76	3NE1 820-0 3NE1 020-2 3NE1 020-2	- - -	-	3NC2 280 3NC2 280 3NC2 280	3NA2 817 3NA2 812 3NA2 812-6	-	-	3NW6 217-1 3NW6 210-1 -	5SB3 31 5SB3 21
3RF23 92 3RF23 94 3RF23 96	3NE1 021-2 3NE1 021-2 3NE1 020-2	-	-	3NC2 200 3NC2 280 3NC2 280	3NA2 817 3NA2 812 3NA2 812-6	-	-	3NW6 217-1 3NW6 210-1	5SB3 31 5SB3 21

Type of coordination "2" acc. to EN 60947-4-1:
 In the event of a short-circuit, the controlgear in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.

Overview

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current intensities of up to 50 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design. With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on carrier plates with fixing screws. This insulation enables them to be used in

circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building engineering. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

Technical specifications

recinical specifications							
Order No.		3RF241	3RF242	3RF243			
General data							
Ambient temperature							
 During operation, derating from 40 °C 	°C	-25 +60					
During storage	°C	-55 +80					
Site altitude	m	0 1000; derating from 1000					
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11					
Vibration resistance acc. to IEC 60068-2-6	g	2					
Degree of protection		IP20					
Insulation strength at 50/60 Hz (main/control circuit to ground)	V rms	4000					
Electromagnetic compatibility (EMC)							
Emitted interference acc. to IEC 60947-4-3 Conducted interference voltage Emitted, high-frequency interference voltage		Class A for industrial applications ¹⁾ Class A for industrial applications					
Interference immunity Electrostatic discharge acc. to IEC 61000-4-2	kV	Contact discharge 4; air discharge 8; behavior criterion 2					
(corresponds to degree of severity 3) - Induced RF fields acc. to IEC 61000-4-6	MHz	0.15 80; 140 dBμV; behavior criterion 1					
- Burst acc. to IEC 61000-4-4 - Surge acc. to IEC 61000-4-5	kV kV	2/5.0 kHz; behavior criterion 1 Conductor – ground 2; conductor –	conductor 1; behavior criterio	n 2			
Connection technique		Screw terminal	Spring-loaded connection	Ring terminal end connection			
Main contact connection							
Conductor cross-section Solid Finely stranded with end sleeve Finely stranded without end sleeve Solid or stranded, AWG conductors	mm ² mm ² mm ²	2 x (1.5 2.5), 2 x (2.5 6) 2 x (1 2.5), 2 x (2.5 6), 1 x 10 	2x (0.5 2.5) 2x (0.5 1.5) 2x (0.5 2.5) 2 x (AWG 18 14)	 			
Stripped length	mm	10	10				
Terminal screw Tightening torque	NM lb.in	M4 2 2.5 18 22		M5 2 2.5 18 22			
• Cable lug - acc. to DIN 46234 - acc. to JIS C 2805				5-2.5 5-25 R 2-5 ,,, 14-5			
Connection, auxiliary/control contacts							
Conductor cross-section	mm AWG	1 x (0.5 2.5), 2 x (0.5 1.0) AWG 20 12	0.5 2.5 AWG 20 12	1 x (0.5 2.5), 2 x (0.5 1.0) AWG 20 12			
Stripped length	mm	7	10	7			
Terminal screw Tightening torque, Ø 3.5 , PZ 1	NM lb.in	M3 0.5 0.6 4.5 5.3		M3 0.5 0.6 4.5 5.3			

These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case the may be required to introduce additional damping measures.

Solid-State Contactors

3RF24 Solid-state contactors technical data

Type		3RF24AB.5	3RF24AC.5
Main circuit			
Controlled phases		Two-phase	Three-phase
Rated operational voltage U _e	V	48 600	48 600
Operating range	V	40 660	40 660
Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage Ui	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1200	1200
Rage of voltage rise	V/µs	1000	1000

Order No.	Type current	Rated operation	al current I _e	Power loss at	Minimum load	Max. leakage	Rated impulse withstand	I^2t value
	I _{AC-51} at 40 °C	acc. to IEC 60947-4-3 for 40°C	acc. to UL/CSA for 50 °C	I _{AC-51}	current	current	current I _{tsm}	
	А	Α	Α	W	Α	mA	Α	A ² s
Main circuit								
3RF24 10AB.5 3RF24 20AB.5 3RF24 30AB.5 3RF24 40AB.5 3RF24 50AB.5	10.5 20 30 40 50	7.5 15 22 32 38	9.5 18 26 35 45	21 39 61 81 105	0.1 0.5 0.5 0.5 0.5	10 10 10 10 10	200 500 1200 1150 1150	200 1800 7200 6600 6600
3RF24 10AC.5 3RF24 20AC.5 3RF24 30AC.5 3RF24 40AC.5 3RF24 50AC.5	10.5 20 30 40 50	7 15 22 29 38	9 18 26 35 45	32 67 93 121 160	0.1 0.5 0.5 0.5 0.5	10 10 10 10 10	300 600 1200 1150 1150	450 1800 7200 6600 6600

The type current provides information about the performance of the solidstate contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the characteristic curves on page 4/18.

Туре		3RF244.	3RF245.
Control circuit			
Method of operation		DC operation	AC operation
Rated control supply voltage U _s	V	4 30	190 230
Rated frequency of the control supply voltage	Hz		50/60 ± 10%
Actuating voltage, max. • For actuating current	V mA	30 15	253 6
Response voltage • For tripping current	V mA	4 > 3	180 > 2
Drop-out voltage	V	< 1	< 40
Operating times ON-delay OFF delay	ms ms	1 + max. one half-wave 1 + max. one half-wave	40 + max. one half-wave 40 + max. one half-wave

AWG 20 ... 12

1

3RF34 Solid-state contactors technical data

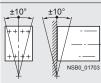
Technical	6		oit	Fi o	ati		nc
recillical	5	րե	CII	ILC	au	U	115

Туре		3RF34 05-1BB 3RF34 03-1BD, 3RF34 05-1BD	3RF34 10-1BB, 3RF34 12-1BB, 3RF34 16-1BB 3RF34 10-1BD	3RF34 05-2BB	3RF34 10-2BB, 3RF34 12-2BB, 3RF34 16-2BB
Dimensions (W x H x D)	mm	45 x 95 x 96.5	90 x 95 x 96.5	45 x 95 x 96.5	90 x 95 x 96.5
General technical specifications					
Ambient temperature					
 During operation, derating from 40 °C 	°C	-25 +60			
During storage	°C	-55 +80			
Installation altitude	m	0 1000; derating from	om 1000 on request		
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11			
Vibration resistance acc. to IEC 60068-2-6	g	2			
Degree of protection		IP20			
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000			
Electromagnetic compatibility (EMC)					
 Emitted interference according to IEC 60947-4-2 					
 Conducted interference voltage 		Class A for industrial			
 Emitted, high-frequency interference voltage 		Class A for industrial	applications		
Interference immunity					
Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge: 4; Behavior criterion 2	; Air discharge: 8;		
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 80; 140 dBµV; behavior c	riterion 1		
- Burst acc. to IEC 61000-4-4	kV	2; at 5 kHz; behavior	criterion 2		
- Surge according to IEC 61000-4-5 ²⁾	kV	Conductor - Ground:	2; Conductor - Conduc	ctor: 1; Behavior criterio	n 2
Connection type		Screw terminals	s	Spring-type ter	minals
Operating devices		Standard screwdriver	size 2 and Pozidriv 2	3.0 x 0.5 and 3.5 x 0.5	5
Conductor cross-sections, main contacts					
• Solid	mm ²	2 x (1.5 2.5) ³⁾ , 2 x (2 x (0.5 2.5)	
 Finely stranded with end sleeve 	mm ²	2 x (1 2.5) ³⁾ ; 2 x (2.	.5 6) ³⁾ ; 1 x 10	2 x (0.5 1.5)	
 Finely stranded without end sleeve 	mm ²			2 x (0.5 2.5)	
AWG cables, solid or stranded		2 x (AWG 14 10)		2 x (AWG 18 14)	

• AWG cables, solid or stranded Permissible mounting positions

• With/without end sleeve

Conductor cross-sections, auxiliary/control contacts



AWG 20 ... 12

1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)

- 1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case these may be required to introduce additional interference suppression measures.
- 2) The following applies for reversing contactors: To maintain the values, a 3TX7 462-3L surge suppressor (see "3TB Contactors", Chapter 3) should be used between the phases L1 and L3 as close as possible to the reversing contactor.
- 3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Solid-State Contactors

3RF34 Solid-state contactors technical data

Overview

These two-phase controlled, instantaneous switching solid-state contactors in the insulting enclosure are offered in 45 mm width to $5.2~\mathrm{A}$ – and in 90 mm width to 16 A. This means that it is possible to operate motors up to 7.5 kW.

Technical specifications

Туре		3RF34 05BB	3RF34 10BB	3RF34 12BB	3RF34 16BB
Fuseless design with 3RV2 motor starter protector, CLASS 10					
Rated operational current I _{AC-53} ¹⁾ according to IEC 60947-4-2					
• At 40 °C	Α	5.2 (4.5)	9.2	12.5	16
UL/CSA, at 50 °C	Α	4.6 (4.0)	8.4	11.5	14
• At 60 °C	Α	4.2 (3.5)	7.6	10.5	12.5
Power loss at I _{AC-53}					
• At 40 °C	W	10 (8)	16	22	28
Short-circuit protection with type of coordination "1" at an operational voltage of $U_{\rm e}$ to 440 V					
 Motor starter protector, type 		3RV20 11-1GA10	3RV20 11-1JA10	3RV20 11-1KA10	3RV20 11-4AA10
• Current I _a	kΑ	50	5	5	3

¹⁾ The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous butt-mounting.

Туре		3RF34 05-	.BB.4 3RF34 05-	.BB.6 3RF34 10-	.BB 3RF34 12-	BB.4 3RF34 12-	.BB.6 3RF34 16BB.
Fused design with directly connected 3RB3 over	rload relay	,					
Rated operational current I _{AC-53} according to IEC 60947-4-2							
• At 40 °C	Α	4		7.8	9.5		11
UL/CSA, at 50 °C	Α	3.6		7	8.5		10
• At 60 °C	Α	3.2		6.2	7.6		9
Power loss at I _{AC-53}							
• At 40 °C	W	7		13	16		18
Minimum load current	А	0.5					
Max. off-state current	mA	10					
Rated peak withstand current I _{tsm}	А	200	600	600	1200	1150	1150
I ² t value	A ² s	200	1800	1800	7200	6600	6600

Туре		3RF34BB.4	3RF34BB.6
Main circuit			
Controlled phases		2-phase	2-phase
Rated operational voltage U _e	V AC	48 480	48 600
Operating range	V AC	40 506	40 660
Rated frequency	Hz	50/602110 %	50/60⊠10 %
Rated insulation voltage U _i	V	600	600
Rated impulse withstand voltage U _{imp}	kV	6	6
Blocking voltage	V	1200	1600
Rage of voltage rise	V/µs	1000	1000

Solid-State Switching Devices Solid-State Contactors

3RF34 Solid-state contactors technical data

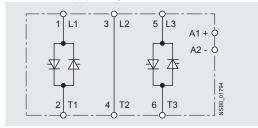
Туре		3RF34BB0.	3RF34BB2.
Control circuits			
Method of operation		DC operation	AC operation
Rated control supply voltage U _s	V	24 acc. to IEC 61131-2	110 230
Rated frequency of the control supply voltage	Hz		50/60 ± 10 %
Control supply voltage, max.	V	30	253
Typical actuating current	mA	20	15
Response voltage	V	15	90
Drop-out voltage	V	5	< 40
Operating times	•		

Circuit diagrams

ON-delay

• OFF-delay

DC control supply voltage



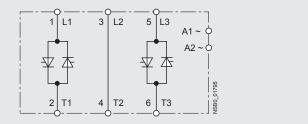
ms

ms

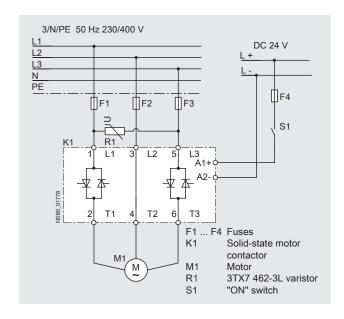
1 + max. one half-wave



5



30 + max. one half-wave



Solid-State Contactors

3RF34 Solid-state reversing contactors technical data

Overview

The integration of four conducting paths to a reverse switch, combined in one enclosure makes this device a particularly compact solution. Compared to conventional systems, for which two contactors are required, it is possible to save up to 50 %

width with the three-phase reversing contactors. Devices with 45 mm width cover motors up to 2.2 kW - and those with 90 mm width up to 3 kW.

Technical specifications

Type		3RF34 03BD.4	3RF34 05BD.4	3RF34 10BD.4
Fuseless design with 3RV2 motor starter protector, CLASS 10				
Rated operational current I _{AC-53} ¹⁾ according to IEC 60947-4-2				
• At 40 °C	Α	3.8 (3.4)	5.4 (4.8)	7.4
UL/CSA, at 50 °C	Α	3.5 (3.1)	5 (4.3)	6.8
• At 60 °C	Α	3.2 (2.8)	4.6 (3.8)	6.2
Power loss at I _{AC-53}				
• At 40 °C	W	7 (6)	9 (8)	13
Short-circuit protection with type of coordination "1" at an operational voltage of $U_{\rm e}$ to 440 V				
Motor starter protector, type		3RV20 11-1FA10	3RV20 11-1GA10	3RV20 11-1JA10
• Current Iq	kA	50	50	10

¹⁾ The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous butt-mounting.

Туре		3RF34 03BD.4	3RF34 05BD.4	3RF34 10BD.4
Fused design with directly connected 3RB3 overload	relay			
Rated operational current I _{AC-53} according to IEC 60947-4-2				
• At 40 °C	Α	3.8	5.4	7.4
 UL/CSA, at 50 °C 	Α	3.5	5	6.8
• At 60 °C	Α	3.2	4.6	6.2
Power loss at I _{AC-53}				
• At 40 °C	W	6	8	16
Minimum load current	Α	0.5		
Max. off-state current	mA	10		
Rated peak withstand current I _{tsm}	Α	200	600	
<i>I</i> ² <i>t</i> value	A ² s	200	1800	

Туре		3RF34BD.4
Main circuit		
Controlled phases		2-phase
Rated operational voltage $U_e^{1)}$	V AC	48 480
Operating range	V AC	40 506
Rated frequency	Hz	50/602010 %
Rated insulation voltage U _i	V	600
Rated impulse withstand voltage $U_{\rm imp}$	kV	6
Blocking voltage	V	1 200
Rage of voltage rise	V/µs	1 000

¹⁾ To reduce the risk of a phase short circuit due to overvoltage, we recommend using a varistor type 3TX7 462-3L between the phases L1 and L3 and as close as possible to the switchgear.

We recommend a design with semiconductor protection as short-circuit protection.

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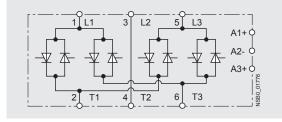
3RF34 Solid-state reversing contactors technical data

Туре		3RF34BD0.	3RF34BD2.
Control circuits			
Method of operation		DC operation	AC operation
Rated control supply voltage <i>U</i> s	V	24 acc. to IEC 61131-2	110 230
Rated frequency of the control supply voltage	Hz		50/60 ± 10 %
Control supply voltage, maximum	V	30	253
Typical actuating current	mA	15	10
Response voltage	V	15	90
Drop-out voltage	V	5	< 40
Operating times ¹⁾			
ON-delay	ms	5	20
OFF-delay	ms	5 + max. one half-wave	10 + max. one half-wave
Interlocking time	ms	60 100	50 100

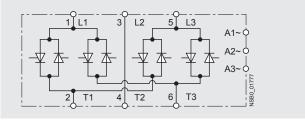
¹⁾ Caution! Risk of phase short circuit in automatic mode. The control inputs must not be actuated until after a delay time of 40 ms after the main voltage is applied

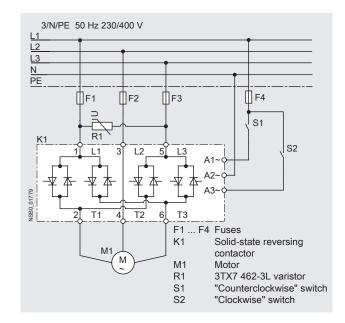
Circuit diagrams

DC control supply voltage



AC control supply voltage





8/45

Function Modules

General and technical data

Overview

Function modules for SIRIUS SC semiconductor switching devices

A great variety of applications demand an expanded range of functionality. These applications can easily be met with Sirius SC function modules. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the semiconductor relay or contactor.

The plug-in connection to control the semiconductor switching devices can simply remain in use.

The following function modules are available:

- Converter
- Load monitors (basic and enhanced)
- Power controller

Technical specifications

Туре		3RF29E	3RF29F	3RF29G	3RF29H			
General data								
Ambient temperature during operation, derating at 40 °C when stored	°C °C	-25 +60 -55 +80						
Site altitude	m	0 1000; derating from	m 1000					
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11						
Vibration resistance acc. to IEC 60068-2-6	g	2						
Degree of protection		IP20						
Electromagnetic compatibility (EMC) Emitted interference • Conducted interference voltage acc. to IEC 60947-4-3 • Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class A for industrial a	' '					
Noise immunity • Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) • Induced RF fields acc. to IEC 61000-4-6 • Burst acc. to IEC 61000-4-4 • Surge acc. to IEC 61000-4-5	kV MHz kV	Contact discharge 4; air discharge 8; behavior criterion 2 0.15 80; 140 dB _µ V; behavior criterion 1 2 kV/5.0 kHz; behavior criterion 1 Conductor - ground 2; conductor - conductor 1; behavior criterion 2						
Connection, auxiliary/control contacts, screw connection Conductor cross-section Insulation stripping length Terminal screw Tightening torque	mm ² mm	1x (0.5 2.5); 2x (0.5 7 M3 0.5 0.6	1) AWG 20 12					
Converter diameter of hole	mm	-	7	17				
1) Note limitations for power controller function module on page 2/31.								

Туре		3RF29E8	3RF29F8	3RF29G3	3RF29G6	3RF29H3	3RF29H6
Main circuit							
Rated operational voltage U _e • Tolerance • Rated frequency	V % Hz	_1) - -		110 230 -15 / +10 50/60	400 600	110 230	400 600
Rated insulation voltage Ui	V	-		600			
Voltage detection Measuring range	V	-		93.5 253	340 660	93.5 253	340 660
Mains voltage fluctuation compensation	%	-		20			

¹⁾ Versions do not depend on main circuit.

Туре		3RF290).		3RF29 .	1.		3RF	293.	
Control circuit										
Method of operation		DC operation	n		AC/DC	operation		AC	operation	
Rated control supply voltage <i>U</i> _s Rated operating current	V mA	24 15		24 15		110 15				
Max. rated control voltage Rated control current at maximum voltage	V mA	30 15			30 15			121 15		
Rated frequency of the control supply voltage	Hz	-			50/60		50/6	50/60		
Response voltage for tripping current	V mA	15 2			15 2			90 2		
Drop-out voltage	V	5			5			-		
Туре		3RF29 2 .F	3RF29 2 .G	3RF .H	29 2	3RF29 5 .G	3RF29 5	j	3RF29 9 .G	3RF29 9 .H
Current detection										
Rated operational current I _e	А	20				50			90	
Measuring range	А	4 22				4 55			4 99	
Number of partial loads		6	12	-		12	-		12	-

General and technical data

Overview

Function modules for SIRIUS SC solid-state switching devices

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor. The plug-in connection to control the solid-state switching devices can simply remain in use.

The following function modules are available:

- Converter
- Load monitoring
- Heating current monitoring
- Power control regulators
- Power controller

Technical specifications

Туре		3RF29K
General data		
Ambient temperature		
 During operation, derating from 40 °C 	°C	-25 +60
During storage	°C	-55 +80
Site altitude	m	0 1000; derating from 1000
Shock resistance acc. to IEC 60068-2-27	g/ms	15/11
Vibration resistance acc. to IEC 60068-2-27	g	2
Degree of protection		IP20
Insulation resistance between load and control circuit	ΜΩ	1.5
Electromagnetic compatibility (EMC)		
Emitted interference Conducted interference voltage acc. to IEC 60947-4-3 Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class A for industrial applications ¹⁾ Class A for industrial applications
Interference immunity Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3) Induced RF fields acc. to IEC 61000-4-6 Burst acc. to IEC 61000-4-4 Surge acc. to IEC 61000-4-5	kV MHz kV	Contact discharge 4; air discharge 8; behavior criterion 2 0.15 80; 140 dBµV; behavior criterion 1 2 kV/5.0 kHz; behavior criterion 1 Conductor – ground 2; conductor – conductor 1; behavior criterion 2
Connection, auxiliary/control contacts, screw terminal		
Conductor cross-section	mm ²	1 x (0.5 2.5), 2 x (0.5 1.0), 1 x (AWG 20 12)
Stripped length	mm	7
Terminal screw Tightening torque	Nm lb.in	M3 0.5 0.6 4.5 5.3
Converter, diameter of hole	mm	17

These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case the user may require to introduce additional damping measures.

2

Solid-State Switching Devices 3RF29 Function Modules

Power control regulators

Technical specifications

Туре		3RF290KA.3	3RF290KA.6
Main circuit			
Rated operational voltage U _e	V	110 230	400 600
Tolerance	%	-15/+10	
Rated frequency	Hz	50/60	
Rated insulation voltage U _i	V	600	
Voltage detection			
Measuring/teach range	V	93.5 253	340 660
Compensation of mains voltage fluctu	uation %	20 (only within the measuring range)	

Туре		3RF29 04-0KA	3RF29 20-0KA	3RF29 50-0KA	3RF29 90-0KA	
Current measurement						
Rated operational current I _e	Α	4	20	50	90	
Current measurement						
Teach range	Α	0.15 4	0.65 20	1.6 50	2.9 90	
Measuring range	Α	0 4	0 22	0 55	0 99	
 Minimum partial load current 	Α		0.65	1.6	2.9	
Number of partial loads			1 6	1 6		

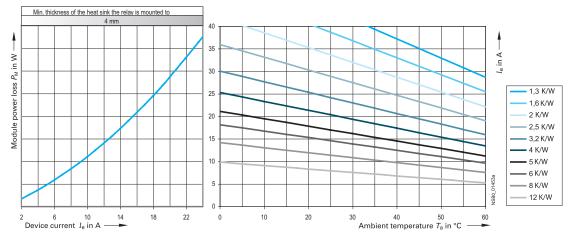
Туре		3RF290KA1.		3RF290KA3.		
Control circuit A1-A2						
General data						
Rated control supply voltage U _s	V	24 AC/DC		AC 110		
Operating range	V	20.5 26.5	DC 18 30	90 121		
Rated frequency of the control supply voltage Hz		50/60 ± 10%		50/60 ± 10%		
Current consumption	mA	< 40		< 20		
Control input IN						
Rated control voltage U _c	V	24 AC/DC		AC 110		
For actuating current	mA	< 15		< 15		
Actuating voltage, max.	mA	AC 26.5	DC 30	121		
Control supply voltage, min./max.	V	AC 20.5 26.5	DC 18 30	90 121		
Response voltage	V	AC 14	DC 15	79		
For tripping current	mA	> 2	> 2	> 2		
Drop-out voltage	V	5	5	15		
Control input 0 10 V						
Input analog	V	010				
Permissible range	V	-111				
Input resistance	kΩ	8				
Period duration	S	1				
Auxiliary circuit 11–12						
Switching voltage	V	24 AC/DC		AC 110		
Actuating current (utilization category)	Α	0.5 (DC-12)		0.5 (AC-12)		
Switching voltage, min./max.	V	15 30		90 121		
Continuous thermal current, max. Ith	А	1		1		

Project planning aids

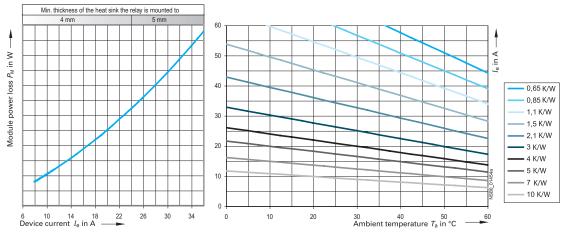
Characteristics

SIRIUS SC semiconductor relays

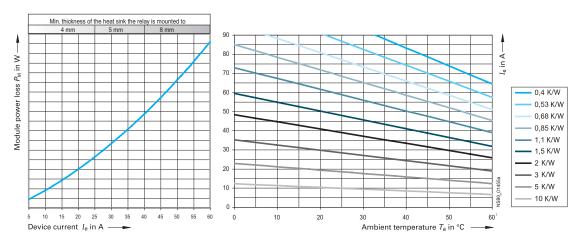
<u>Dependence of the device current I_e on the ambient temperature T_a (Chart data for SIRIUS SC relays based on I max)</u> SIRIUS SC semiconductor relay with 20 A type current (3RF21 20/3RF20 20)¹⁾



SIRIUS SC semiconductor relay with 30 A type current (3RF21 30/3RF20 30)



SIRIUS SC semiconductor relay with 50 A type current (3RF21 50/3RF20 50)



¹⁾ Arrangement example for $I_{\rm e}=20$ A and $T_{\rm a}=40$ C: The task is to find the thermal resistance $R_{\rm thha}$ and the heat-sink overtemperature $dT_{\rm ha}$. From the diagram on the left -> $P_{\rm M}=28$ W, from the diagram on the right -> $R_{\rm thha}=1.7$ K/W.

This results in: $dT_{\rm ha}=R_{\rm thha}\times P_{\rm M}=1.7$ K/W \times 28 W = 47.6 K. At $dT_{\rm ha}=47.6$ K the heat sink must therefore have an $R_{\rm thha}=1.7$ K/W. (Chart data for SIRIUS SC relays based on I max)

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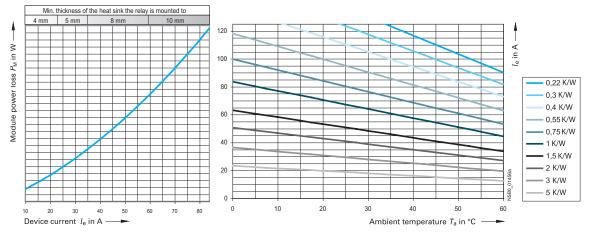
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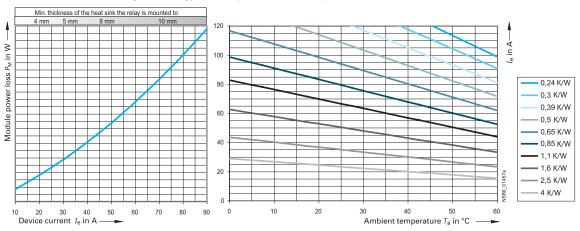
Semiconductor Relays and Contactors, Function Modules

Project planning aids

Dependence of the device current I_e on the ambient temperature T_a (Chart data for SIRIUS SC relays based on I max) SIRIUS SC semiconductor relay with 70 A type current (3RF21 70/3RF20 70)



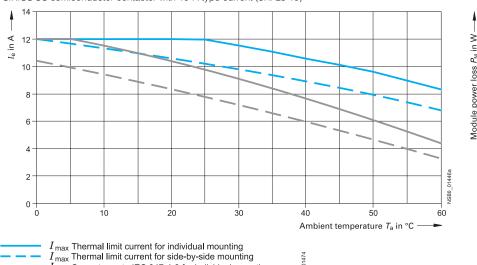
SIRIUS SC semiconductor relay with 88 A type current (3RF21 90/3RF20 90)

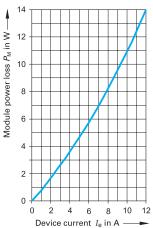


SIRIUS SC semiconductor contactors

Derating curves

SIRIUS SC semiconductor contactor with 10 A type current (3RF23 10)





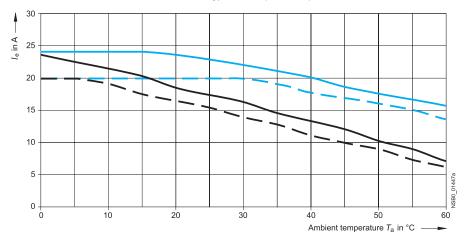
 $I_{\rm IEC}$ Current acc. to IEC 947-4-3 for individual mounting $I_{\rm IEC}$ Current acc. to IEC 947-4-3 for side-by-side mounting

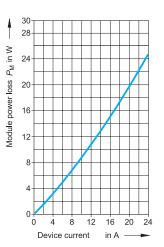
Semiconductor Relays and Contactors, Function Modules

Project planning aids

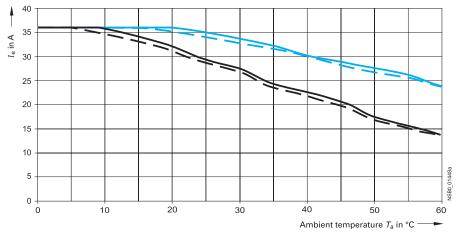


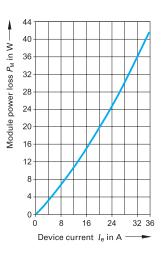
SIRIUS SC semiconductor contactor with 20 A type current (3RF23 20)



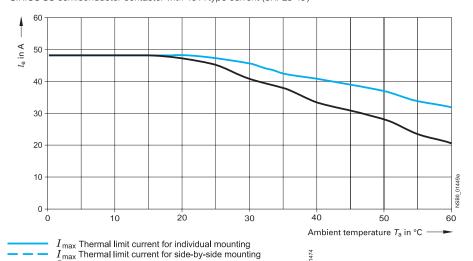


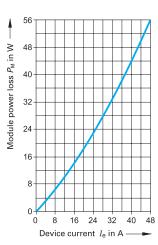
SIRIUS SC semiconductor contactor with 30 A type current (3RF23 30)





SIRIUS SC semiconductor contactor with 40 A type current (3RF23 40)¹⁾





 $I_{\rm IEC}$ Current acc. to IEC 947-4-3 for individual mounting $I_{\rm IEC}$ Current acc. to IEC 947-4-3 for side-by-side mounting

Siemens Industry, Inc.

Industrial Controls Catalog

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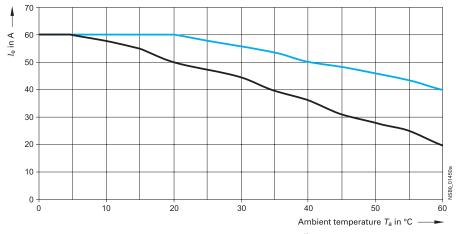
¹⁾ Identical current/temperature curves for individual and side-by-side mounting.

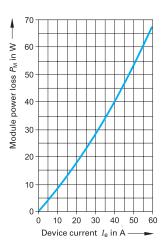
Semiconductor Relays and Contactors, Function Modules

Project planning aids

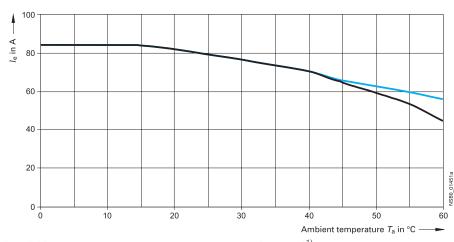


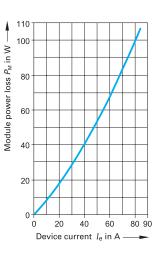
SIRIUS SC semiconductor contactor with 50 A type current (3RF23 50)1)



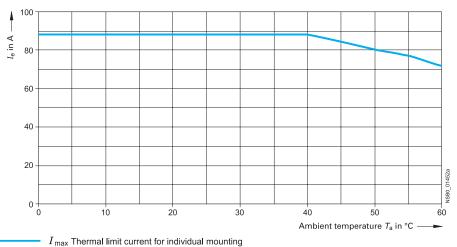


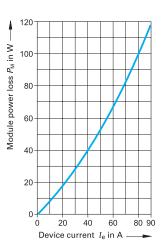
SIRIUS SC semiconductor contactor with 70 A type current (3RF23 70)¹⁾





SIRIUS SC semiconductor contactor with 88 A type current (3RF23 90)¹⁾





Imax Thermal limit current for side-by-side mounting
 I_{IEC} Current acc. to IEC 947-4-3 for individual mounting
 I_{IEC} Current acc. to IEC 947-4-3 for side-by-side mounting

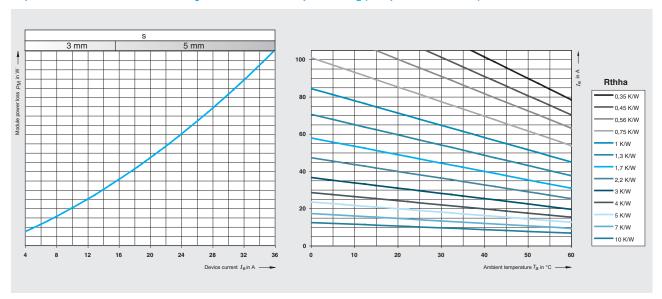
Identical current/temperature curves for individual and side-by-side mounting.

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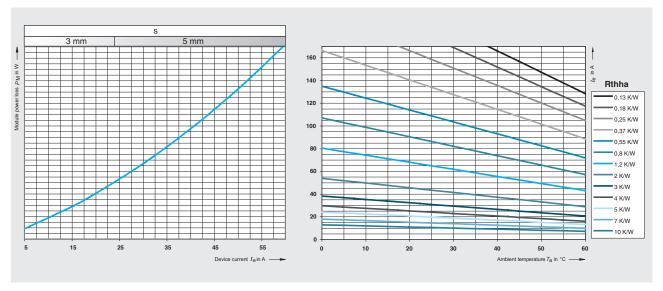
3RF22 solid-state relays, 3-phase, 45 mm

Characteristic curves

Dependence of the device current I_e on the ambient temperature T_a (two-phase controlled)



Type current 30 A (3RF22 30-.AB..)



Type current 55 A (3RF22 55-.AB..)

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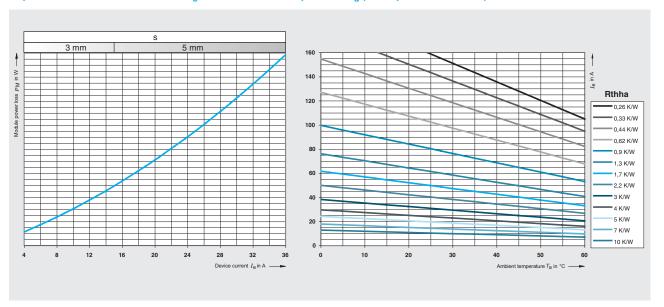
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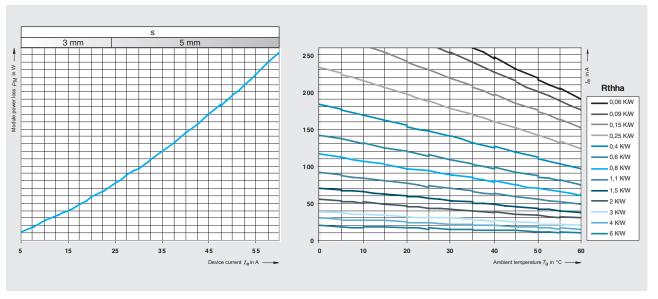
Solid-State Relays

3RF22 solid-state relays, 3-phase, 45 mm

Dependence of the device current I_e on the ambient temperature T_a (three-phase controlled)



Type current 30 A (3RF22 30-.AC..)



Type current 55 A (3RF22 55-.AC..)

Arrangement example

Given conditions: $I_{\rm e}$ = 55 A and $T_{\rm a}$ = 40 C. The task is to find the thermal resistance $P_{\rm thha}$ and the heat sink overtemperature dT_{ha} .

From the diagram on the left \rightarrow $P_{\rm M}$ = 227 W, from the diagram on the right \rightarrow $P_{\rm thha}$ = 0.09 K/W.

This results in:

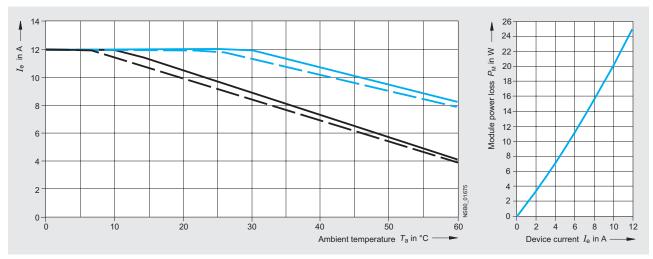
 $dT_{ha} = R_{thha} \times PM = 0.09 \text{ K/W} \times 227 \text{ W} = 20.4 \text{ K}.$

At $dT_{\rm ha}$ = 20.4 K the heat sink must therefore have an $R_{\rm thha}$ = 0.09 K/W.

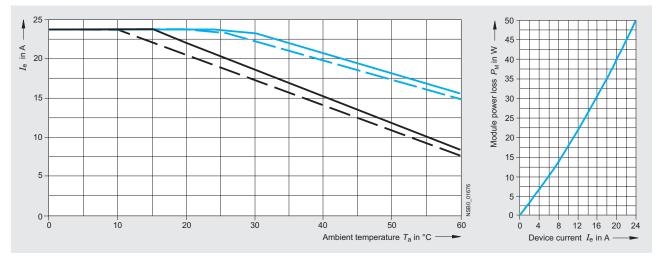
3RF24 solid-state contactors, 3-phase

Characteristic curves

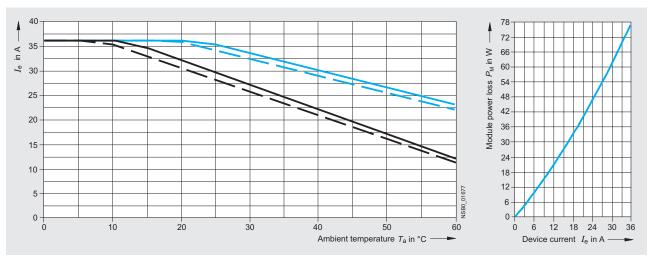
Derating curves, two-phase controlled



Type current 10.5 A (3RF24 10-.AB..)



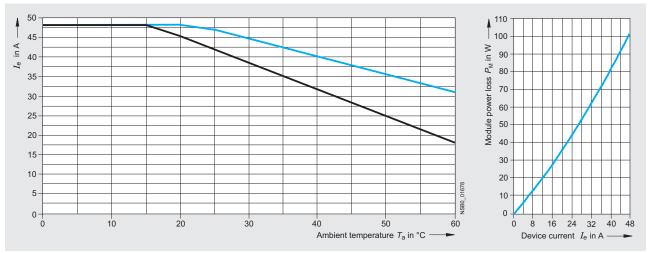
Type current 20 A (3RF24 20-.AB..)



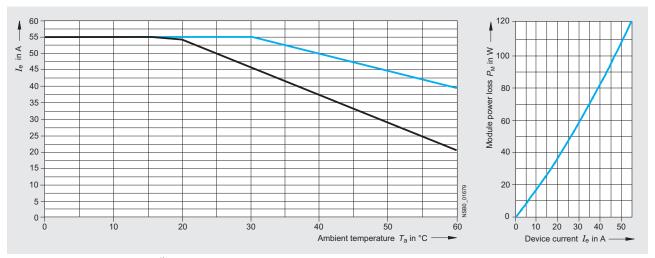
Type current 30 A (3RF24 30-.AB..)

Solid-State Contactors

3RF24 solid-state contactors, 3-phase



Type current 40 A (3RF24 40-.AB..)¹⁾



Type current 50 A (3RF24 50-.AB..)1)

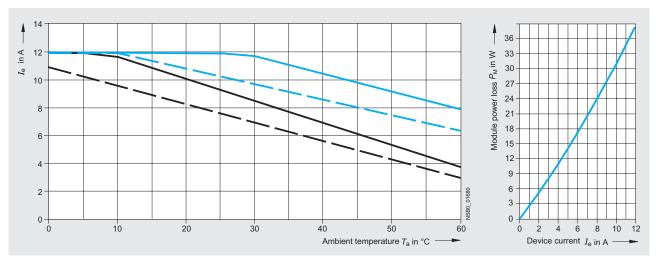
 $I_{\max} \text{ Thermal limit current for individual mounting} \\ I_{\max} \text{ Thermal limit current for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for individual mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}}$

1) Identical current/temperature curves for stand-alone and side-by-side installation.

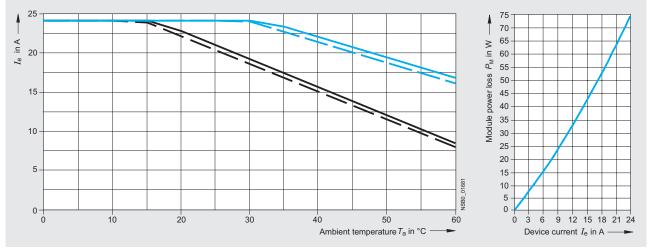
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3RF24 solid-state contactors, 3-phase

Derating curves, three-phase controlled

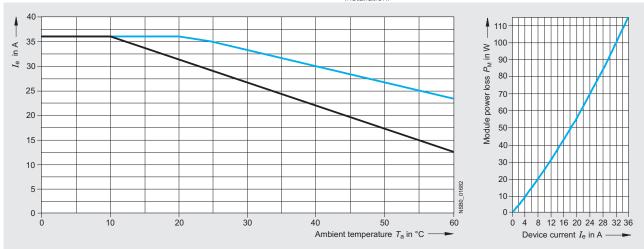


Type current 10.5 A (3RF24 10-.AC..)



Type current 20 A (3RF24 20-.AC..)





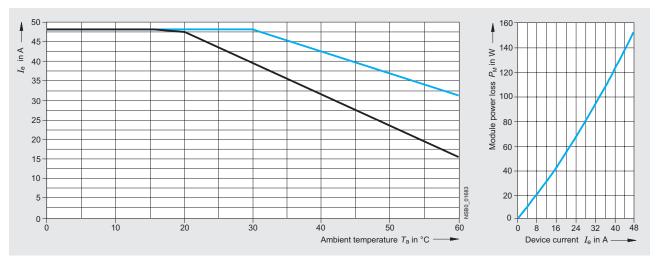
Type current 30 A (3RF24 30-.AC..)1)

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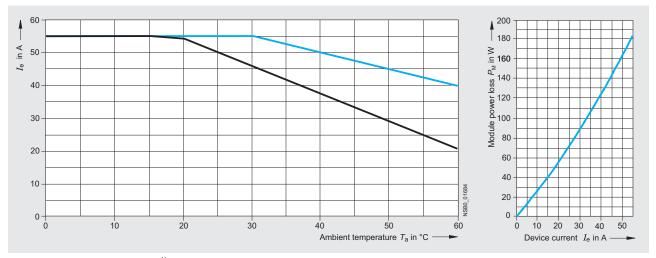
¹⁾ Identical current/temperature curves for stand-alone and side-by-side installation.

Solid-State Contactors

3RF24 solid-state contactors, 3-phase



Type current 40 A (3RF24 40-.AC..)¹⁾



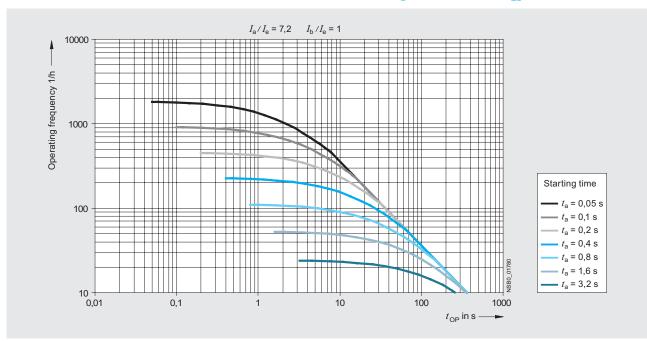
Type current 50 A (3RF24 50-.AC..)1)

 $I_{\max} \text{ Thermal limit current for individual mounting} \\ I_{\max} \text{ Thermal limit current for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for individual mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}} \text{ Current acc. to IEC 947-4-3 for side-by-side mounting} \\ I_{\text{IEC}}$

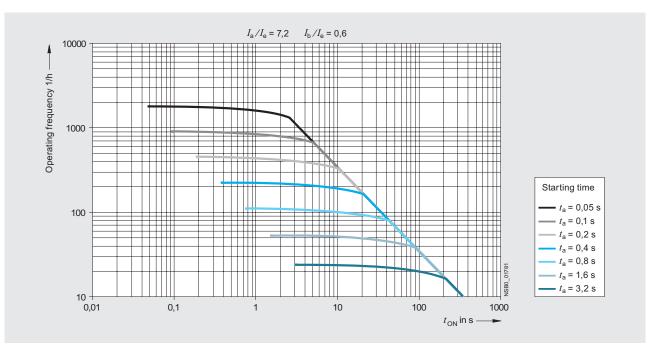
¹⁾ Identical current/temperature curves for stand-alone and side-by-side installation

3RF34 solid-state contactors, 3-phase

Maximum permissible switching frequency depending on the starting time $t_{\rm a}$ and the ON period $t_{\rm ED}$



For motors with a starting current of 4- to 7.2 times the rated current and with a full load



For motors with a starting current of 4- to 7.2 times the rated current and with a 60 % load

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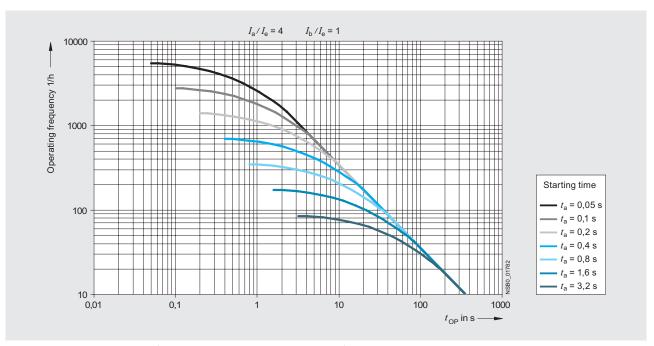
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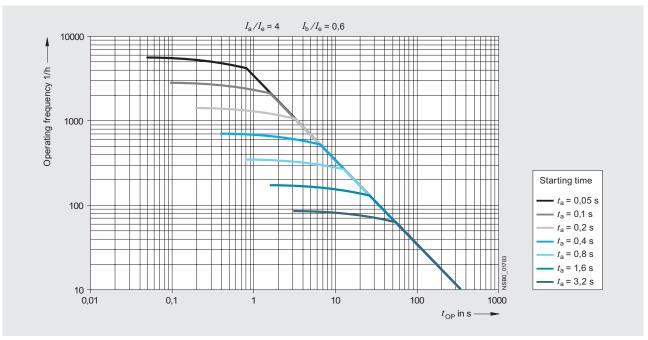
8

Solid-State Contactors

3RF34 solid-state contactors, 3-phase



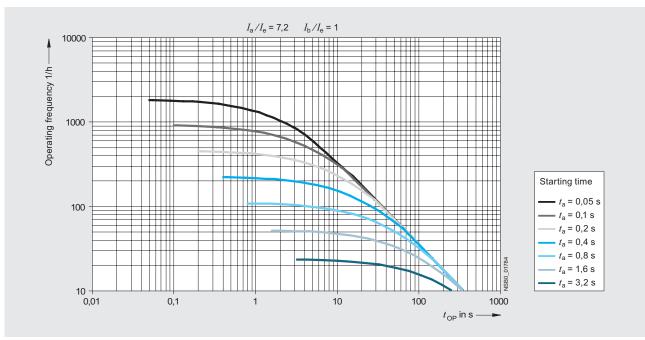
For motors with a starting current of up to 4 times the rated current and with a full load



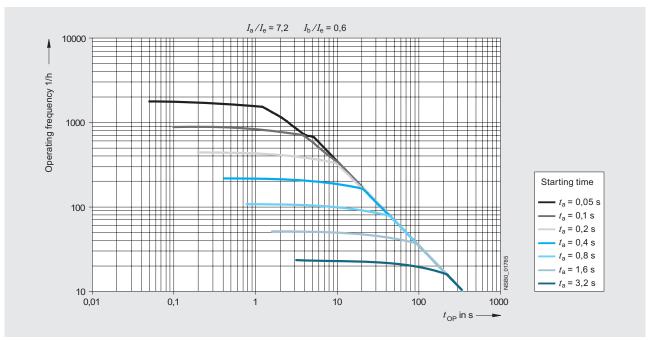
For motors with a starting current of up to 4 times the rated current and with a 60 % load

3RF34 solid-state reversing contactors, 3-phase

Maximum permissible switching frequency depending on the starting time $t_{\rm a}$ and the ON period $t_{\rm ED}$



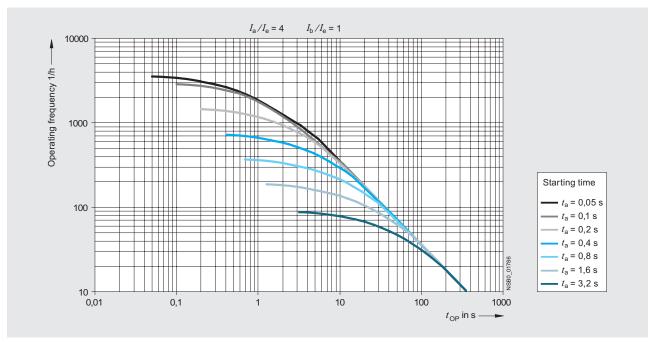
For motors with a starting current of 4- to 7.2 times the rated current and with a full load



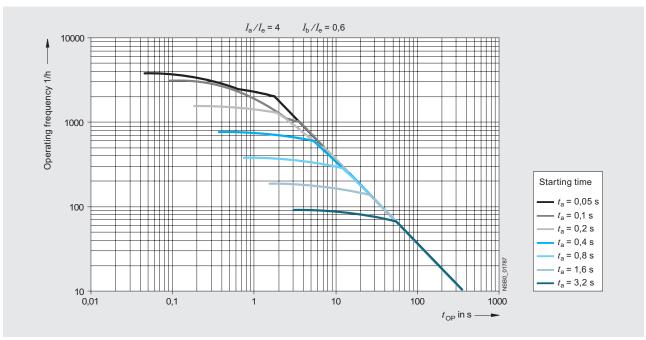
For motors with a starting current of 4- to 7.2 times the rated current and with a 60 % load

Solid-State Contactors

3RF34 solid-state reversing contactors, 3-phase



For motors with a starting current of up to 4 times the rated current and with a full load



For motors with a starting current of up to 4 times the rated current and with a 60 % load

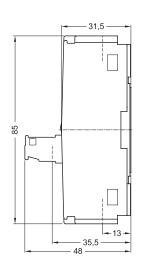
Solid-State Switching Devices Semiconductor Relays and Contactors, Function Modules

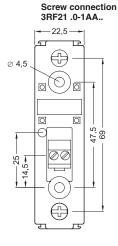
Dimensions

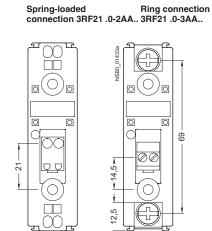
Dimension drawings

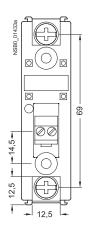
SIRIUS SC semiconductor relays

22.5 mm semiconductor relays

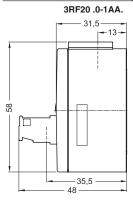


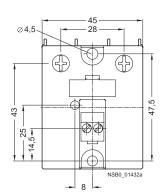






45 mm semiconductor relays



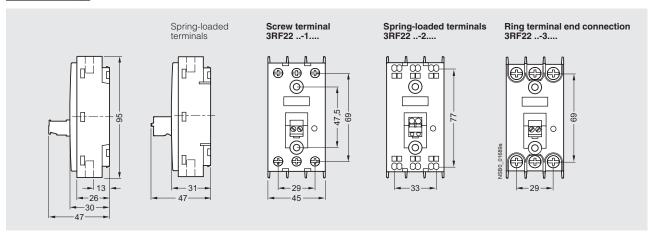


Solid-State Relays

3RF22 solid-state relays, 3-phase, 45 mm

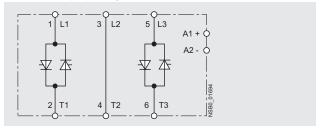
Dimensional drawings

Solid-state relays

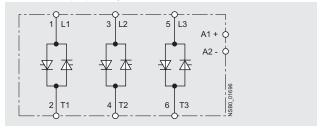


Schematics

Two-phase controlled DC control supply voltage



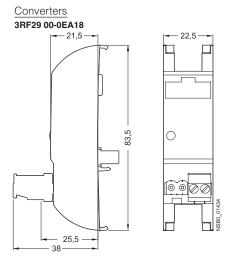
Three-phase controlled DC control supply voltage

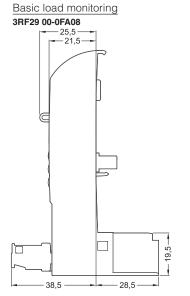


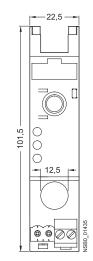
Semiconductor Relays and Contactors, Function Modules

Dimensions

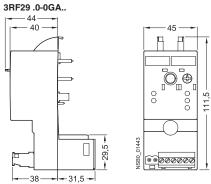
Function modules for SIRIUS SC semiconductor switching devices



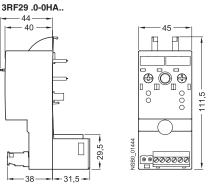




Extended load monitoring

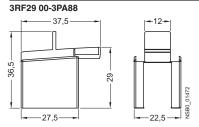






Accessories for SIRIUS SC semiconductor switching devices

Terminal cover for SIRIUS semiconductor switching devices



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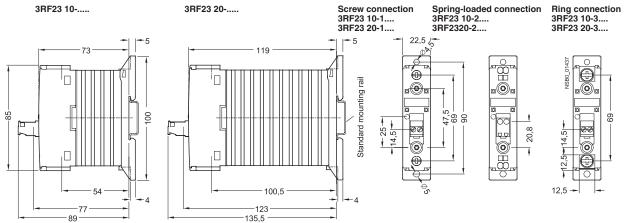
8

Semiconductor Relays and Contactors, Function Modules

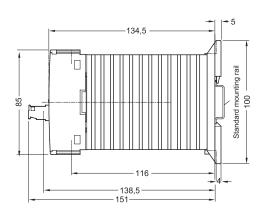
Dimensions

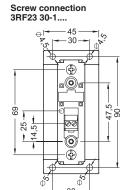
SIRIUS SC semiconductor contactors

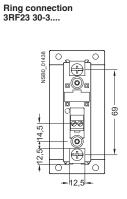
Semiconductor contactors with 10 A and 20 A type current



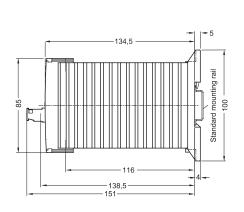
Semiconductor contactors with 30 A type current

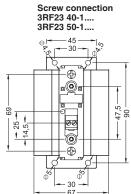


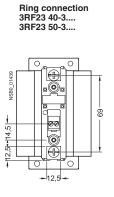




Semiconductor contactors with 40 A and 50 A type current



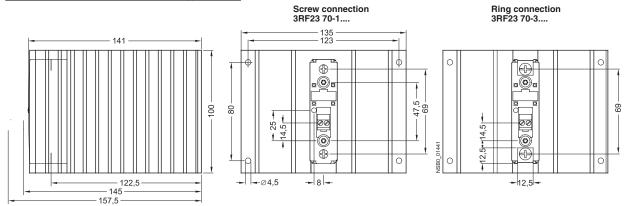




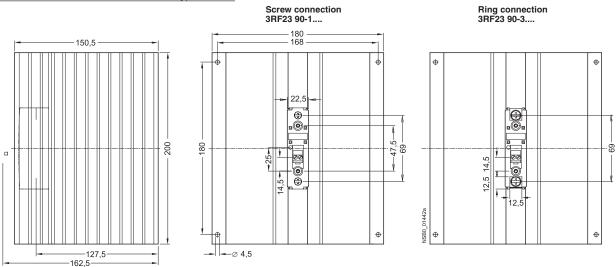
Solid-State Switching Devices Semiconductor Relays and Contactors, Function Modules

Dimensions

Semiconductor contactors with 70 A type current



Semiconductor contactors with 88 A type current



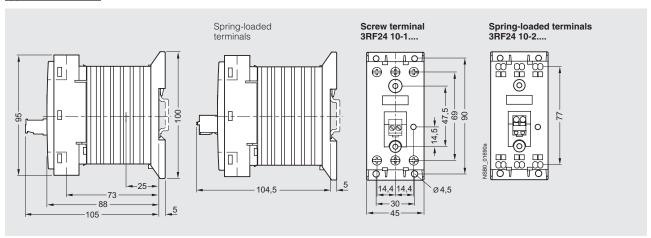
8/67

Solid-State Contactors

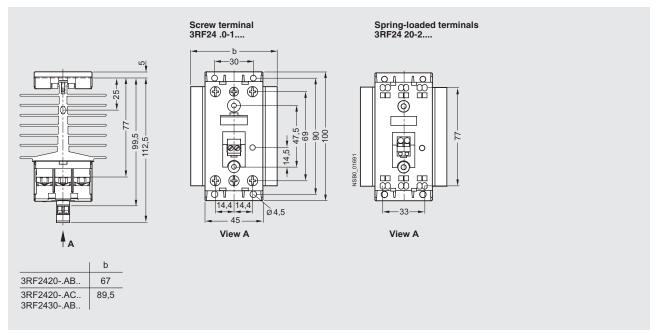
Dimensions

Dimensional drawings

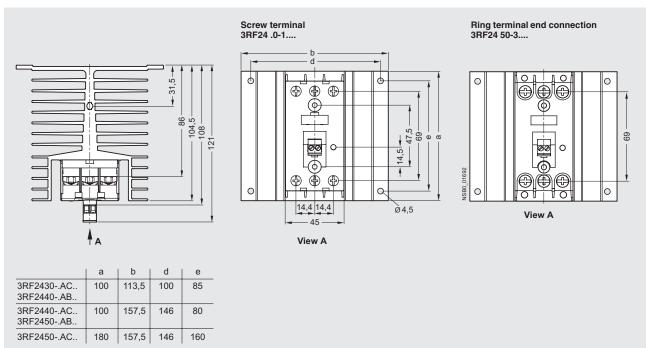
Type current 10.5 A



Type current 20 A; 30 A (2-phase controlled)

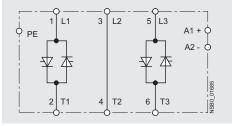


Type current 30 A (3-phase controlled); 40 A, 50 A

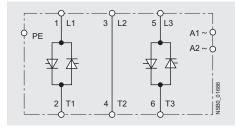


Schematics

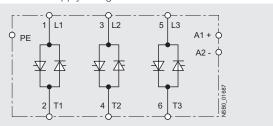
Two-phase controlled DC control supply voltage



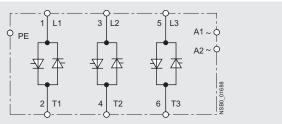
Two-phase controlled AC control supply voltage



Three-phase controlled DC control supply voltage



Three-phase controlled AC control supply voltage



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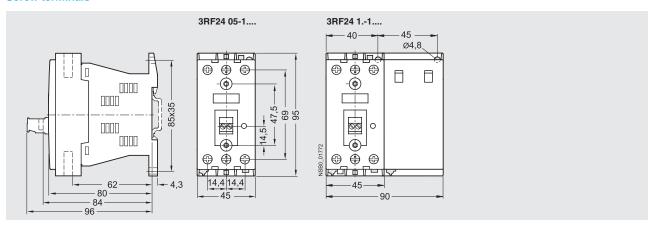
8

Solid-State Contactors

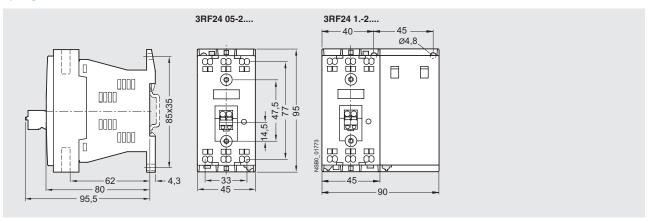
Dimensions

Dimensional drawings

Screw terminals



Spring-loaded terminals

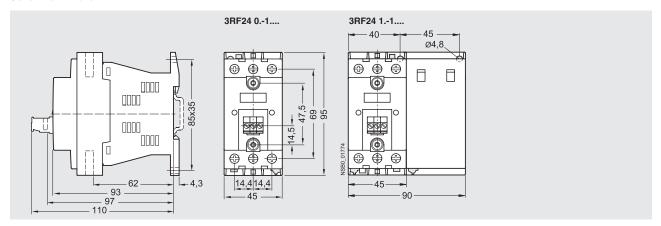


Solid-State Contactors

Dimensions

Dimensional drawings

Screw terminals



2

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8/71

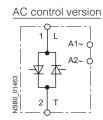
Semiconductor Relays and Contactors, Function Modules

Wiring diagrams

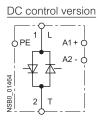
Circuit diagrams

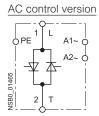
SIRIUS SC semiconductor relays

DC control version A1+0 A2-0 Typic of a control version A2-0 Typic of a control version



SIRIUS SC semiconductor contactors

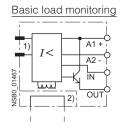


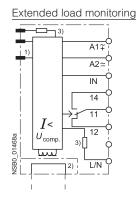


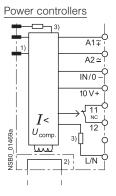
Function modules for SIRIUS SC semiconductor switching devices

Converters





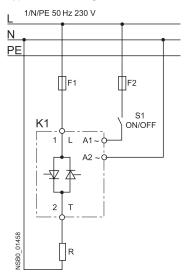




- 1) Internal connection.
- 2) Straight-through transformer.

SIRIUS SC semiconductor relays

Typical circuit diagram

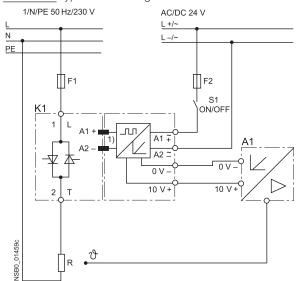


Semiconductor Relays and Contactors, Function Modules

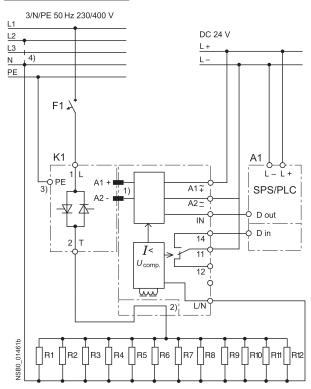
Wiring diagrams

Function modules for SIRIUS SC semiconductor switching devices

Converters Typical circuit diagram

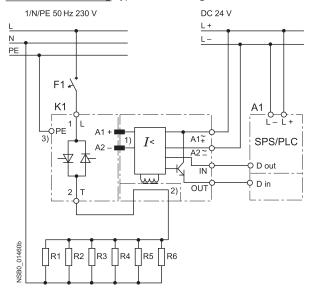


Extended load monitoring Typical circuit diagram

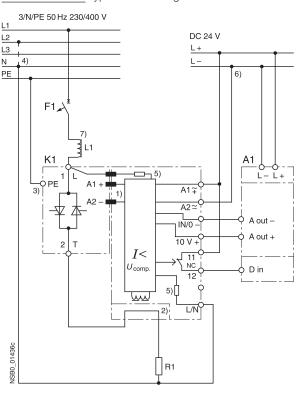


- 1) Internal connection.
- 2) Straight-through transformer.
- PE/ground connection for semiconductor contactors according to installation regulations.
- 4) Connection of contact L/N to N conductor or a second phase according to the rated operational voltage of the function module.
- 5) In order to observe the limit values of the conducted interference voltage for generalized phase control, a choke rated at at least 200 μ H must be included in the load circuit.

Basic load monitoring Typical circuit diagram



Power controllers Typical circuit diagram



- 1) Internal connection to the solid state relay/contactor.
- 2) Straight-through.
- 3) Make PE/ground connection according to installation regulations.
- Oonnection of L/N contact with
 3RF29 ..-0GA.3 load monitoring on neutral conductor N (e.g. 230 V)
 3RF29 ..-0GA.6 load monitoring on a second phase (e.g. 400V)
- 5) Voltage detection not electically isolated (3M $\!\Omega$ per path).
- 6) Grounding of connection L- is recommended
- 7) A200 µH choke must be used when operating with leading-edge phase in order to observe the limit values of the conducted interference voltage according to Class A.

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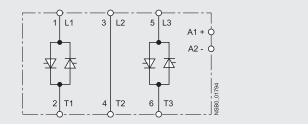
Solid-State Switching Devices for Switching Motors

Solid-State Contactors

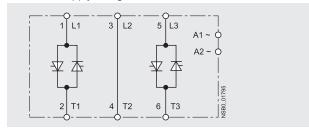
3RF24 solid-state contactors, 3-phase

Schematics

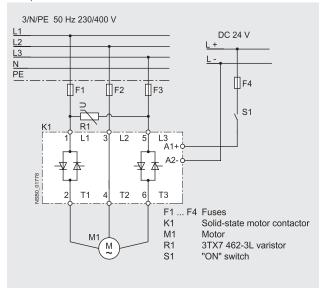
Two-phase controlled, DC control supply voltage



Two-phase controlled, AC control supply voltage



Sample schematic



Control Products NEMA & General Purpose Controls

Contents	Pages
Product Overview	9/3
Manual Control Fractional HP Starters, Class SMF Switches, Class MMS and MRS Starters and Switches, Class 11 - 3RV	9/6 - 9/7
NEMA Control Catalog Numbering System	9/10
Non-Combination Starters Features and Benefits Non-Reversing Starters, Class 14 Combination Starters Features and Benefits Combination Starters, Class 17 and 18 Reversing Starters, Class 22 Combination Reversing Starters, Class 25 and 26 Two Speed Starters Features and Benefits Two Speed Starters, Class 30 Combination Two Speed Starters, Class 32	.9/11 - 9/12 .9/13 - 9/15 9/16 .9/17 - 9/25 .9/26 - 9/27 .9/28 - 9/29 9/30
Reduced Voltage Control Reduced Voltage Features and Benefits Auto Transformer Starters, Class 36 and 37 Part Winding Starters, Class 36 and 37 Wye Delta Open Transition, Class 36 and 37 Wye Delta Closed Transition, Class 36 and 37	. 9/44 - 9/47 . 9/48 - 9/51 . 9/52 - 9/55
Heavy Duty Contactors Non-Reversing Contactors, Class 40	9/60 9/62

Contents	Pages
Duplex ControllersFeatures and BenefitsNon Combination, Class 83Combination, Class 84	9/69
Pump Control Panels Class 87 and 88 Features and Benefits Full-Voltage Type, Class 87 Vacuum Starter Type, Class 87	9/74 - 9/75 9/76
Lighting Control Electrically Held Contactors, Class LE Electrically Held Contactors, Class LC Mechanically Held Contactors, Class CLM	9/85 - 9/89
Control Power Transformers Domestic and International (UL, CSA and CE), Class MT and MTG	9/93 - 9/97
Modifications and Drawings Field Modification Kits Enclosure Kits Factory Modifications Dimensions Wiring Diagrams	9/109 - 9/114 9/115 - 9/119 9/132 - 9/165
Heater Tables and Replacement Parts Overload Relay Heater Tables	9/127 - 9/128 9/129

Control Products

NEMA & General Purpose Controls

Controls Express

Starters at the speed you need

Siemens NEMA starters, pump panels, lighting contactors and solid state soft starters are known for their dependability and ruggedness, and now they are delivered faster than ever before through Controls Express.

Controls Express puts our most popular products in your hands faster, because we stock more products across our entire product line. Our Class 14 NEMA starters, Class 87 pump panels, Class 74 enclosed soft starters, and LC & LE lighting contactors are now available in stock for immediate or next day shipping. In addition, thousands of our open and enclosed starters can now be built-to-order and shipped in 1-3 days through Controls Express.

Siemens is committed to making your job easier by stocking more products, offering more configurations, expediting factory modifications, and delivering industry leading turnaround times on our most requested control products.

To quickly identify products that are part of Controls Express and therefore available in 3 days or less, applicable catalog numbers have a light blue background. See the appropriate selection pages listed below.

Class 14 NEMA Starters see pages 9/13 & 9/15

Class 17 NEMA Combination Starters see pages 9/17 to 9/22. For quick ship versions with factory modifications see on-line at www.usa.siemens.com/controls-express

Class 18 NEMA Combination Starters see pages 9/23 & 9/25.

Class 40 NEMA Contactors see page 9/60

Class 74 Enclosed Soft Starters see page 7/89

Class 87 Pump Panels see pages 9/74 & 9/75

LE Lighting Contactors see page 9/81

LC Lighting Contactors see page 9/87 & 9/88



Controls Express lead times apply to orders of up to 6 units of the Class 14, Class 87, LC, or LE. Please contact customer service at 1-866-663-7324 for lead times of larger order volumes.

For more information on Controls Express and a complete list of available products, please visit our website at www.usa.siemens.com/controls-express



Class SMF
Fractional Horsepower
Manual Starters
Page 9/4



Class MMS & MRS
Fractional Horsepower
Manual Switches
Page 9/6



Class 11 Manual Starters and Switches Page 9/8



Class 14 NEMA Starters Page 9/13



Class 17, 18 NEMA Combination Starters Page 9/17



Class 22 NEMA Reversing Starters Page 9/26



Class 25, 26 NEMA Combination Reversing Starters Page 9/28



Class 30 NEMA Multi-Speed Starters Page 9/31



Class 32 NEMA Combination Multi-Speed Starters Page 9/35



Class 36, 37
Reduced Voltage
Electromechanical
Starters
Page 9/43



Class 40 NEMA Contactors and Vacuum Contactors Page 9/60



Class 43 NEMA Reversing Contactors Page 9/62



Class 48, 958, 3RB20 Overload Relays Page 9/63



Class 83, 84, 87, 88 Pump Controls Page 9/69



Class LE, LC, CLM Lighting Contactors Page 9/130



Class MT, MTG Control Power Transformers Page 9/93



Modifications and Drawings Page 9/98



Heater Tables and Replacement Parts Page 9/120

Fractional HP Starters, Class SMF

General

Class SMF

Class SMF fractional horsepower starters provide overload protection as well as manual on-off control for small horsepower motors in a variety of industrial and commercial applications. Available in one or two pole versions, these devices are suitable for use with AC single phase motors up to 1 HP. Two pole starters can also be used with DC motors up to ¾ HP. Typical applications include fans, conveyors, pumps, and small machine tools.

Continuous Current Rating

16 amperes.

Overload Trip Assembly

Motor protection is provided by a Class SMFH heater element which must be installed before the starter will operate.

Two Speed Starters

Two speed manual starters are designed for control of small single phase AC motors having separate windings for high and low speed operation. Two toggle operated starters are used, with overload protection included for each motor winding. Surface mounting devices, and those with a gray flush plate, utilize a mechanical interlock which allows direct control of the motor by means of the toggle operators.

Enclosures

Class SMF, NEMA Type 1 surface mounting enclosures are sheet steel with a thermo-plastic wrap-around cover for convenience in wiring. The NEMA Type 1 enclosure is also available in an oversized version which allows more wiring space. A zinc alloy die casting is used for NEMA Type 4 enclosures.

Pilot Lights

Red or green neon pilot light units are available for flush mounting plates, NEMA Type 1 enclosures, and NEMA Type 4 enclosures. Pilot lights may be either factory or field installed. (For starters that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.)

Terminals

Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

Mounting

Open types without a pilot light fit standard single gang switch boxes, and can be used with any cover plate having a standard toggle cutout. Single-unit flush mounting types, including those with pilot lights, are suitable for wall mounting in a standard switch box or for machine cavity mounting without a box.

Operation

Available with toggle handle or with removable key type operator to discourage unauthorized operation.



Enclosure with Pilot Light

Emergency Off Actuator

A toggle operator extender is available for Class SMF, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only for field installation.

Handle Guard/Lock-Off

An optional handle guard on Class SMF, NEMA Type 1 enclosed starters prevents accidental operation of the toggle operator and also allows the toggle operator to be padlocked in either the "ON" or "OFF" position. This handle guard can be factory installed on NEMA Type 1 enclosed starters and is also available in kit form for field installation on NEMA Type 1 surface and flush mounting enclosures. Standard NEMA Type 4 metallic enclosures include provisions for padlocking the device in the OFF position.

Fractional HP Starters with Melting Alloy Overload, Class SMF

Selection



Class SMF Starter in a NEMA Type 1 Enclosure with Pilot Light

Ordering Information	Horsepo	wer Ratin	gs	
► Heater Elements see page 9/120.		Maximum	Horsepower	
► Field Modification Kits see page 9/98.		AC Single	Phase	DC
► Dimensions see page 9/132.	Volts	1-Pole	2-Pole	2-Pole
► Wiring Diagrams see page 9/166.	115–230	1	1	3/4
	277	1	1	_

Starte	r—Cl	lass SMF, Si	ngle l	<u>Phas</u>	e ^①															
					Open S	tarter	ose Flush with Flu re Provid	sh Pla	Jumbo Stainless Steel		NEMA Type 1 General Purpose Enclosure, Surface Mounting			NEMA Type 3R, 4 & 12 Watertight, Dust-tight		NEMA Type 4 Watertight, Dust-tight		NEMA Type 3R, 7 & 9 Div 1 and Div 2 Class I Groups B, C, D & Class II Groups E, F, G Enclosures		
Туре			Open Ty	уре	Gray Flush Plate		Standar Stainles Steel Flush Pla	S			Standard				Metallic Enclosure with Clear Cover		Enclosure			
of	No. of		Catalog	List	Catalog	List	Catalog	List	Catalog	List	Catalog	List	Catalog	List	Catalog	List	Catalog	List	Catalog	List
Operator	Poles	Starter Features®	Number	Price\$	Number	Price\$	Number	Price\$	Number	Price\$	Number	Price\$	Number	Price\$	Number	Price\$	Number	Price\$	Number	Price\$
	1	Standard	SMFF01		SMFFF1		SMFFS1		_	_	SMFFG1		SMFFGJ1		SMFFWN1		_	_	_	
Toggle	'	Red Pilot Light	SMFF01F		SMFFF1P		SMFFS1P		SMFFSJ1P		SMFFG1P		SMFFGJ1P				_	_		-
roggie	2	Standard	SMFF02		SMFFF2		SMFFS2		_	_	SMFFG2		SMFFGJ2		SMFFWN2		_	_	_	
	4	Red Pilot Light	SMFF02P		SMFFF2P		SMFFS2P		SMFFSJ2P		SMFFG2P		SMFFGJ2P				_	_	_	—
	1	Standard	SMFF03		SMFFF3		SMFFS3		_	_	SMFFG3		SMFFGJ3		SMFFWN3		_	_	_	_
Kev	['	Red Pilot Light	SMFF03P		SMFFF3P		SMFFS3P		SMFFSJ3P		SMFFG3P		SMFFGJ3P				_	_	_	_
Key	2	Standard	SMFF04		SMFFF4		SMFFS4		_	_	SMFFG4		SMFFGJ4		SMFFWN4		_	_	_	_
	4	Red Pilot Light	SMFF04P	,	SMFFF4P		SMFFS4P		SMFFS.I4P		SMFFG4P		SMFFG.IAP				_			

Starter With Handle Guard/Lock-Off—Class SMF, Single Phase[®] SMFFW1² Standard (4) (4) SMFFG5 SMFFGJ5 SMFFR1[©] Red Pilot Light 4 4 SMFFG5P SMFFGJ5P SMFFW1P⁽²⁾ (2) 3/4" NPT Outlets SMFFW1H SMFFR1H (2) 3/4" NPT Outlets SMFFW1PH 4 4 4 and Red Pilot Light Toggle Standard SMFFG6 SMFFG.I6 SMFFW2² SMFFR2 (4) (4) (4) SMFFW2P⁽²⁾ Red Pilot Light (4) (4) (4) SMFFG6F SMFFGJ6P SMFFW2H SMFFR2H (2) 3/4" NPT Outlets 4 (2) 3/4" NPT Outlets SMFFW2PH (4) (4) (4) and Red Pilot Light

One Starter in Duplex Enclosure—Class SMF, Single Phase[®]

			General Purpos Open Starter w			ure Provided)				
			Gray Flush Pla	ate	Stainless St	eel Flush	NEMA Type	1 General		
Type of	Number		For Wall or Ca Mounting	rvity	Plate for Wa Mounting		Purpose End Surface Mod		Replacemer Starters	nt
Operator	of Poles	Starter Features ^⑤	Catalog Number List Price \$		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
Toggle	2	Standard	_	_	_	_	SMFFG02		_	_
Toggle		Red Pilot Light	_	_	_	_	SMFFG02P		_	_
Key	2	Red Pilot Light	_	_	_	_	SMFFG04P		_	_

Two Starters In Duplex Enclosure—Class SMF, Single Phase®

Toggle	2 Per Starter	Standard	SMFFF222	_	_	SMFFG222	_	_
roggic	2 r Gr Starter	Red Pilot Light on Each Starter	SMFFF222P	SMFFS22P		SMFFG222P	_	_
Key	2 Per Starter	Red Pilot Light on Each Starter	SMFFF44P	SMFFS44P		SMFFG44P	_	_

Starter And "Auto-Off-Hand" SPDT Selector Switch (AC Only)—Class SMF, Single Phase®

	1	Standard	SMFFF71	_	_	SMFFG71	_	_
Togglo	'	Red Pilot Light	SMFFF71P	SMFFS71P		SMFFG71P	_	_
Toggle	2	Standard	SMFFF72	_	_	SMFFG72	_	_
		Red Pilot Light	SMFFF72P	SMFFS72P		SMFFG72P	_	_
Key	2	Red Pilot Light	SMFFF74P	SMFFS74P		SMFFG74P	_	_

Two Speed Starters (AC Only)—Class SMF, Single Phase®

		Mechanical Interlock	SMFFF11		_	_	SMFFG11		SMFF01T	
	1	Mechanical Interlock and (2) Red Pilot Lights	SMFFF11P		_	_	SMFFG11P		SMFF01PT	
Tanala		Mechanical Interlock, HIGH-OFF-LOW Selector Switch and (2) Red Pilot Lights	_	_	SMFFS101P		_	_	SMFF01PT	
Toggle		Mechanical Interlock	SMFFF22		_	_	SMFFG22		SMFF02T	
	2	Mechanical Interlock and (2) Red Pilot Lights	SMFFF22P		_	_	SMFFG22P		SMFF02PT	
		Mechanical Interlock, HIGH-OFF-LOW Selector Switch and (2) Red Pilot Lights	_	_	SMFFS202P		_	_	SMFF02PT	

① One heater element required. ② Furnished with (1) 3/4" NPT Outlet in bottom (reversible for top feed).

Two heater elements required.

⁴ Order Open Type starter plus separate handle guard kit.

⑤ For starters that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.

Fractional HP Switches, Class MMS, MRS

General

Class MMS, MRS

Class MMS and MRS motor starting switches provide manual "ON-OFF" control of single or three phase AC motors where overload protection is not required or is provided separately. Compact construction and a 600 volt rating make these switches suitable for a wide range of industrial and commercial uses. Typical applications include small machine tools, pumps, fans, conveyors and many other types of electrical machinery. They can also be used on non-motor loads such as resistance heating applications.

Continuous Current Rating

MMS & MRS: 30 amperes at 250 volts max, 26.4 amperes at 277 volts, 20 amperes at 600 volts max, 30 amperes resistive at 600 volts max.

Two Speed—Class MRS

Two speed manual switches may be used with separate winding three phase or single phase AC motors where overload protection is not required or is provided separately. Two switches are employed to give "ON-OFF" control in each speed.

Reversing—Class MRS

Reversing manual switches provide a compact means of starting, stopping and reversing AC motors where overload protection is not required or is provided separately. They are suitable for use with three phase squirrel cage motors and for single phase motors which can be reversed by reconnecting motor leads. Two switches are used, one to connect the motor forward rotation and one for reverse.

Enclosures

Class MMS, MRS, NEMA Type 1 surface mounting enclosures are sheet steel with a thermo-plastic wrap-around cover for convenience in wiring. The NEMA Type 1 enclosure is also available in an oversized version which allows more wiring space. A zinc alloy die casting is used for NEMA Type 4 enclosures.

Pilot Lights

Red or green neon pilot light units are available for flush mounting plates, NEMA Type 1 enclosures, and NEMA Type 4 enclosures. Pilot lights may be either factory or field installed. (For switches that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.)

Terminals

Binding head screw type terminals are suitable for #10 or smaller copper wire, and are accessible from the front. All terminals are clearly marked.

Mounting

Open types without a pilot light fit standard single gang switch boxes, and can be used with any cover plate having a standard toggle cutout. Single-unit flush mounting types, including those with pilot lights, are suitable for wall mounting in a standard switch box or for machine cavity mounting without a box.

Operation

Available with toggle handle or with removable key type operator to discourage unauthorized operation.



Emergency Off Actuator

A toggle operator extender is available for Class MMS, MRS, NEMA Type 1 surface mounted units. The extender has a red vinyl button that provides a fast and easy method for locating and switching the device's toggle operator into the OFF position. The Emergency Off Actuator is available in kit form only for field installation.

Handle Guard/Lock-Off

An optional handle guard on Class MMS, MRS, NEMA Type 1 enclosed switches prevents accidental operation of the toggle operator and also allows the toggle operator to be padlocked in either the "ON" or "OFF" position. This handle guard is available in kit form for field installation on NEMA Type 1 surface and flush mounting enclosures. Standard NEMA Type 4 metallic enclosures include provisions for padlocking the device in the OFF position.

Selection



Class MMS Switch in a NEMA Type 1 Enclosure

Ordering Information	Horsepo	wer F	Ratings							
▶ Heater Elements not Required.		No of	Motor Type	Maxii	num HF	•	DC Ratings			
► Field Modification Kits see	Device	Poles	AC	115V	230V	450-575V	90V	115V	230V	
page 9/98.	Class MMS	2	Single Phase	2	2	3	1	2	11/2	
	Class IVIIVIS	3	3-Phase	2	71/2	10	1	2	11/2	
▶ Dimensions see page 9/132.	Class MRS	2	Single Phase	2	2	3	1	2	11/2	
▶ Wiring Diagrams see page 9/166.	Reversing	3	3-Phase	2	71/2	10	1	2	11/2	
p coming a regressive and page of recor	Class MMS	2	Single Phase	2	2	3	1	2	11/2	
	Two Speed	3	3-Phase, Constant or Variable Torque	2	71/2	10	1	2	11/2	
	Two Speed	3	3-Phase, Constant Horsepower	2	71/2	10	1	2	11/2	

Switch—Class MMS, Single Phase and 3-Phase

					Open Sv	vitch v		Flush Plate Enclosure Surface Mounting vided)				NEMA Type 3R, 4 & 12 Watertight,	е	NEMA Type 4 ² Watertight,		NEMA Type 7 & 9 [®] Class I Groups				
Туре	No		Open Type	,	Gray Flush Plate		Standard Stainless Steel Flush Pla	S	Jumbo Stainless Steel Flush Plat		Standard		Oversized		Dust-tight Metallic Encl with Clear C		Dust-tight Metallic Enclosure		B, C & D Class II G E, F, G Enclosure	iroups
of Operator	of Poles	Switch Features ⁴	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$		List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
•	2	Standard	MMSK01		MMSKF1		MMSKS1		_	_	MMSKG1		MMSKGJ1		MMSKWN1		MMSKW1		MMSKR1	
	2	Red Pilot Light 115V AC	MMSK01A3		MMSKF1A		MMSKS1A		MMSKSJ1A		MMSKG1A		MMSKGJ1A				MMSKW1A		_	_
Toggle		Red Pilot Light 230V AC	MMSK01B3		MMSKF1B		MMSKS1B		MMSKSJ1B		MMSKG1B		MMSKGJ1B				MMSKW1B		_	_
	3	Standard	MMSK02		MMSKF2		MMSKS2		_	_	MMSKG2		MMSKGJ2		MMSKWN2		MMSKW2		MMSKR2	
		Red Pilot Light 208-240V AC	MMSK02B3		MMSKF2B		MMSKS2B		MMSKSJ2B		MMSKG2B		MMSKGJ2B				MMSKW2B		_	_
		Red Pilot Light 440-600V AC	MMSK02C3		MMSKF2C		MMSKS2C		MMSKSJ2C		MMSKG2C		MMSKGJ2C				MMSKW2C		_	_
	2	Standard	MMSK03		MMSKF3		MMSKS3		_	_	MMSKG3		MMSKGJ3		MMSKWN3		_	_	_	_
	_	Red Pilot Light 115V AC	MMSK03A		MMSKF3A		MMSKS3A		MMSKSJ3A		MMSKG3A		MMSKGJ3A					_		_
Key		Red Pilot Light 230V AC	MMSK03B		MMSKF3B		MMSKS3B		MMSKSJ3B		MMSKG3B		MMSKGJ3B				-	_	_	
	3	Standard	MMSK04		MMSKF4		MMSKS4		_	_	MMSKG4		MMSKGJ4		MMSKWN4		_	_	_	_
		Red Pilot Light 208–240V AC	MMSK04B		MMSKF4B		MMSKS4B		MMSKSJ4B		MMSKG4B		MMSKGJ4B				_	_		_
		Red Pilot Light 440–600V AC	MMSK04C	_	MMSKF4C		MMSKS4C	_	MMSKSJ4C	_	MMSKG4C		MMSKGJ4C	_		_	_	_	_	

Reversing Switch—Class MRS, Single Phase and 3-Phase

Type of	Number of	Suitable	Switch Features [®] (Including	General Purpos Flush Mounting Open Switch with (No Enclosure F	n Flush Plate	NEMA Type 1 General Purpos Enclosure Surfac		Replacement Switch		
Operator	Poles	Motor Types	Mechanical Interlock)	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
		Single Phase	Standard	MRSKF11		MRSKG11		MRSK01T		
	2	3-Lead	Red Pilot Device—115V AC	MRSKF11A		MRSKG11A		MRSK01AT		
Togglo		Repulsion-Induction	Red Pilot Device— 230V AC	MRSKF11B		MRSKG11B		MRSK01BT		
Toggle		3-Phase: Also	Standard	MRSKF22		MRSKG22		MRSK02T		
		Single Phase Capacitor,	Red Pilot Light—110-120V AC	MRSKF22A		MRSKG22A		MRSK02AT		
	٥	Split Phase, or 4-Lead	Red Pilot Light—208–220V AC	MRSKF22B		MRSKG22B		MRSK02BT		
		Donulaian Industion	Red Pilot Light—440–600V AC	MRSKF22C		MRSKG22C		MRSK02CT		

Two Speed Switch—Class MMS, Single Phase and 3-Phase

Type of			Switch Features ((Including	General Purpos Flush Mounting Open Switch wit (No Enclosure F	n Flush Plate	NEMA Type 1 General Purpos Enclosure Surfac		Replacement Switch Class MRS		
Operator	Poles	Motor Types	Mechanical Interlock)	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
		Single Phase	Standard	MMSKF11		MMSKG11		MRSK01T		
	2	Two Winding	(2) Red Pilot Devices—115V AC	MMSKF11A		MMSKG11A		MRSK01AT		
Togglo		(3-Lead)	(2) Red Pilot Devices—230V AC	MMSKF11B		MMSKG11B		MRSK01BT		
Toggle		3-Phase	Standard	MMSKF22		MMSKG22		MRSK02T		
	3	Separate Winding (2) Red Pilot Lights—208–240V AC MMSKF22B			MMSKG22B		MRSK02BT			
		(Wye-Connected)	(2) Red Pilot Lights—440–600V AC	MMSKF22C		MMSKG22C		MRSK02CT		

① Manual switches do not include overloads. ② Furnished with (1) 3/4" NPT outlet in bottom (reversible

Siemens Industry, Inc. Industrial Controls Catalog

② Furnished with (1) 3/4" NPT outlet in bottom (reversible for top feed). In order to obtain a 3/4" NPT outlet in top and bottom, add suffix letter "H" to type number with List Price adder.

③ Do not use as replacement interiors for NEMA Type 4 metallic enclosures. For replacement unit, order Type MMSK01 or MMSK02 and separate pilot light kit.

④ For switches that contain a pilot light, a Red light is standard. For a Green pilot light add "G" to the end of the catalog number.

Starters and Switches, Class 11 - 3RV

General

Class 11 - 3RV

Class 11 across the line manual starters and switches provide control for machinery where remote start stop control is not required.

Class 11 - 3RV manual starters are used for single and poly-phase motors up to 20HP @ 575V. Starters have bimetallic heater elements to provide class 10 overcurrent protection. Each starter has a fourth bimetallic strip that reacts only to the ambient temperature inside the control panel. This ambient compensation helps prevent the starter from nuisance tripping when the panel temperature is higher than the ambient temperature of the motor.

A built-in differential trip bar causes the starter to trip faster on a phase loss condition to help reduce motor damage.

Magnetic trip elements in each starter take the device off line when it senses current of 13 times the maximum FLA dial setting.

Class 11 - 3RV switches provide control for inherently protected motors. Typical applications include metal and woodworking machinery, grinders, power saws, conveyors, fans, pumps,

blowers, textile and packaging machinery, and paper cutters.

Each switch is provided with magnetic trip elements which take the device off line when it senses current of 13 times the maximum switch rating.

Class 11 - 3RV manual starters can be used as Type E self-protected manual combination starters (up to 22 amps) per UL508 or as components in Group Installation per NEC 430.53. When using the Class 11 - 3RV as a manual combination starter upstream protection is not required.

Class 11 - 3RV controllers are available with low voltage protection which will automatically open the power poles when the voltage drops or the power is interrupted.

Controllers with the LVP option provide the OSHA requirements for protecting personnel from potential injury caused by the automatic start-up of machinery following a voltage drop or power interruption when low voltage protection is specified.

Class 11 - 3RV is available as Open style, or in NEMA 1, NEMA 7 & 9 or NEMA 7 & 9 / 3 & 4 enclosures. Standard Features include:

- ON/OFF rotary handle with lockout and visible trip indication
- Adjustment dial for setting to motor FLA (Starters only)
- Low Voltage Protection (LVP) Option
- Short Circuit trip at 13 times the maximum setting of the FLA dial or rated current
- Ambient compensated up to 140°F
- Phase loss sensitivity
- Test trip function
- LVP Option Meets OSHA Requirements
- UL Listed
- CSA Certified







Class I Group C & D Class II Group E, F & G



NEMA 3 & 4, NEMA 7 & 9 Div 1 & Div 2 Class I Group C & D Class II Group E, F & G

Starters and Switches, Class 11 - 3RV

Selection



Class 11 Manual Motor Starter

Ordering Information	Low Voltage Protection Coil Table
 No heaters required. Field Modification Kits see page 9/98. Dimensions see page 9/134. Wiring Diagrams see page 9/166. For applications requiring a low voltage protection coil see table at right. 	60 Hz Voltage 120V 208V 4D 240V 4G 460V *Add corresponding letter to end of base Class 11 catalog number for low voltage protection coil with List Price adder. Note: The LVP option for Open type 3RV is available from the factory, please order separately from the field modification kits on page 9/99.
	The coil voltage should correspond with the

line voltage.

Manual Starter—Class 11 - 3RV

FLA	Max H	IP					En	closure						
Adjustment Range ^①	Single HP Rat	Phase ings	3-Phase HP Ratir	-			Ореп Туре			se	NEMA 7 & 9 Class I Groups (Class II Groups		NEMA 3 & 4, NEMA 7 & 9 Watertight (Outdoor use) Class I Groups C & D Class II Groups E, F & G	
	115V	230V	200V	230V	460V	575V	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price \$
0.11-0.16	_	_	1_	_	_	_	3RV1021-0AA10 ^②		11AD3B		11AD3H		11AD3W	
0.14-0.2	_	_	—	Ī—	I —	_	3RV1021-0BA10 ²		11BD3B		11BD3H		11BD3W	
0.18-0.25	_	_	—	Ī—	I —	_	3RV1021-0CA10 ²		11CD3B		11CD3H		11CD3W	
0.22-0.32	_	_	_	I —	I —	_	3RV1021-0DA10 ²		11DD3B		11DD3H		11DD3W	
0.28-0.4	_	_	_	I —	I —	_	3RV1021-0EA10 ²		11ED3B		11ED3H		11ED3W	
0.35-0.5	_	_	—	Ī—	I —	_	3RV1021-0FA10 ²		11FD3B		11FD3H		11FD3W	
0.45-0.63	_	_	_	I —	I —	_	3RV1021-0GA10 ²		11GD3B		11GD3H		11GD3W	
0.55-0.8	_	_	_	I —	I —	1/2	3RV1021-0HA10 ²		11HD3B		11HD3H		11HD3W	
0.7-1	_	_	_	I —	1/2	1/2	3RV1021-0JA10 ²		11JD3B		11JD3H		11JD3W	
0.9-1.25	_	_	_	I —	3/4	3/4	3RV1021-0KA10 ²		11KD3B		11KD3H		11KD3W	
1.1-1.6	_	1/10	_	I —	3/4	1	3RV1021-1AA10 ²		11LD3B		11LD3H		11LD3W	
1.4-2	_	1/8	_	I —	1	1 ½	3RV1021-1BA10 ²		11MD3B		11MD3H		11MD3W	
1.8-2.5	_	1/6	1/2	1/2	1 ½	1 ½	3RV1021-1CA10 ²		11ND3B		11ND3H		11ND3W	
2.2-3.2	1/10	1/4	3/4	3/4	1 ½	2	3RV1021-1DA10 ²		11PD3B		11PD3H		11PD3W	
2.8-4	1/8	1/3	3/4	1	2	3	3RV1021-1EA10 ²		11QD3B		11QD3H		11QD3W	
3.5-5	1/6	1/2	1	1	3	3	3RV1021-1FA10 ^②		11RD3B		11RD3H		11RD3W	
4.5-6.3	1/4	3/4	1 ½	1 ½	5	5	3RV1021-1GA10 ²		11SD3B		11SD3H		11SD3W	
5.5-8	1/3	1	2	2	5	5	3RV1021-1HA10 ²		11TD3B		11TD3H		11TD3W	
7-10	1/2	1 ½	3	3	7 ½	10	3RV1021-1JA10 ²		11UD3B		11UD3H		11UD3W	
9-12.5	1/2	2	3	3	7 ½	10	3RV1021-1KA10 ²		11VD3B		11VD3H		11VD3W	
11-16	1	3	5	5	10	15 ³	3RV1021-4AA10 ²		11WD3B		11WD3H		11WD3W	
14-20	1 ½	3	5	7 ½	15	20 ^③	3RV1021-4BA10 ²		11XD3B		11XD3H		11XD3W	
17-22	2	3	7 ½	7 ½	15	20 ^③	3RV1021-4CA10 ²		11YD3B		11YD3H		11YD3W	
20-25	23	53	7 1/23	7 1/2/3	15 ³	203	3RV1021-4DA10 ²		11ZD3B		11ZD3H		11ZD3W	

Manual Switch—Class 11 - 3RV

Rated	Max H	P					Enclosure										
Current ^①	Single HP Rati	Phase ngs	3-Phase HP Rating				Open Type	en Type NEMA 1 General Purpose			NEMA 7 & 9 Class I Groups (Class II Groups	C & D	NEMA 3 & 4, NEMA 7 & Watertight Class I Groups C & D Class II Groups E, F & G				
	115V	230V	200V	230V	460V	575V	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price \$	Catalog Number	List Price\$			
1	_	_	_	_	1/233	1/23	3RV1321-0JC10 ²		111D3B		111D3H		111D3W				
5	1/63	1/233	1 ³	1 ³	3 ³	3 ³	3RV1321-1FC10 ²		112D3B		112D3H		112D3W				
10	1/23	1 ½ ³	3 ³	3 ³	7 ½ ³	10 ³	3RV1321-1JC10 ²		113D3B		113D3H	13D3H					
20	1 ½ ³	3 ³	5 ³	7 1/2 ³	15 ³	20 ³	3RV1321-4BC10 ²		114D3B		114D3H		114D3W				
25	2 ³	5 ³	7 ½ ³	71/23	15 ³	20 ³	3RV1321-4DC10 ²		115D3B		115D3H		115D3W				

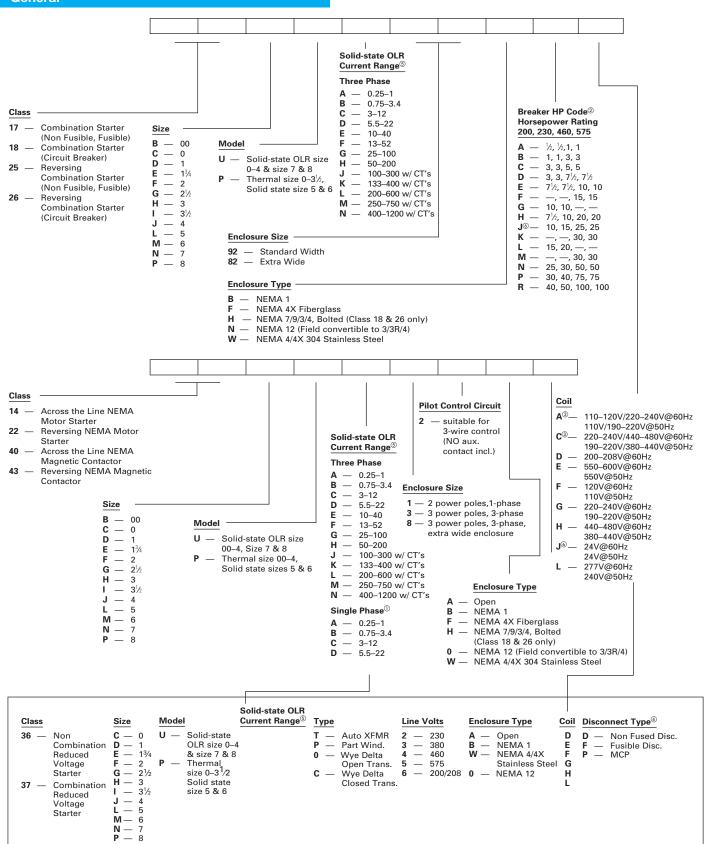
① Instantaneous Magnetic Trip will occur at 13 times the maximum FLA dial setting or rated switch current. ② Product Category: IEC

③ Shaded Ratings apply for Manual Motor Controllers Only! These Ratings do not apply as UL Listed Manual Combination Starters.

Heavy Duty Control

Catalog Numbering System

General



① Single phase solid-state OLR available on Class 14 Starters

⑤ Position used for solid-state OLR only.

[@] Not used on Class 17, 25 or with solid-state OLR versions. 3 Not available on sizes 5-8.

⁶ Not available on sizes 7 and 8. 4 For Class 37 only.



Standard Features

Size 00–4 magnetic starters include the following standard features:

- Rugged Industrial Design
- Half Sizes for Cost and Space Savings
- Dual Voltage, Dual Frequency Coils
- Solid State or Ambient Compensated Bimetal Overload Protection
- Wide Range of Accessories
- Easy Coil Access
- Overload Test Feature
- Straight Thru Wiring
- Gravity Dropout
- Large Silver Cadmium Contacts
- UL listed file #E14900 (class 14, 22, 30, 40 & 43)
- CSA certified file #LR 6535 (class 14, 22, 30, 40 & 43)

Application

Heavy Duty starters are designed for across the line starting of single phase and polyphase motors.

These controls are available in NEMA Sizes 00 through 8. In addition to the usual NEMA Starter Sizes, Siemens offers three exclusive Half Sizes; 13/4, 21/2 and 31/2. These integral sizes offer the same rugged, industrial construction as our NEMA Sizes and ensure efficient operating performance. Half Sizes provide a real cost savings by cutting down on over capacity when NEMA Sizes exceed the motor ratings. All Siemens Heavy Duty controls, including our popular Half Sizes comply with applicable NEMA and UL tests.

All starters are supplied with a NO holding interlock that in conjunction with an appropriate pilot device will provide low voltage protection or release.

NEMA starters are ideal for applications requiring dependability and durability. Typical applications include use with machine tools, air conditioning equipment, material handling equipment, compressors, hoists and various production and industrial equipment as well as in demanding automotive applications.

Starters are available as an open type or in NEMA 1, 12/3/3R, 4 (painted), 4/4X (stainless), 4X (fiberglass), and 7 & 9 enclosures.

Gravity Dropout

For added reliability, the gravity dropout of the armature and contacts is assisted by stainless steel springs which help provide quick, precise opening of the contacts.

45 Degree, Wedge Action Contacts

The 45 degree, wedge action contacts reduce tracking and provide faster arc quenching. The resulting self-cleaning and reduced contact bounce mean cooler operation and longer life for the large silver cadmium oxide contacts.

Terminal Design

Control terminals are self-rising pressure type.

Molded Coil

Magnetic coils are carefully wound and then sealed in epoxy. Encapsulation helps seal out moisture, promotes heat transfer and resists electrical, mechanical and thermal stresses.

Dual Voltage/Frequency Coil

Starters are available with dual voltage, dual frequency coils. They are designed to operate on either 50 or 60 Hertz.

Molded Stationary Contact Block

Thermoset materials resist arc tracking and the stresses of heat and severe impact.

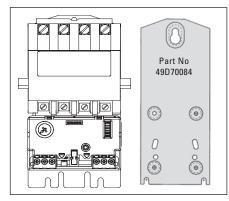
Field Modification Kits

All starters can be modified in the field with a complete range of accessories. These include pushbuttons, selector switches, pilot lights, auxiliary contacts and surge suppressors.

Auxiliary Equipment

- NEMA starters are available with built-in START-STOP push buttons for 3-wire control or a HAND-OFF-AUTO selector switch for 2-wire control
- Field modifications such as auxiliary contacts, pilot lights, push buttons, selector switches, and fuse blocks

- are available to meet particular application requirements
- Normally opened or normally closed auxiliary power pole kits are available for Sizes 00 through 13/4
- Transformers can be ordered as either factory or field modifications.
 In some cases these may require a larger enclosure
- A full line of replacement parts are available including contact kits, coils, and overload relays



Siemens Sizes 00–1¾ have as standard, universal mounting which fits the following:

Cutler Hammer—Citation Series

-Freedom Series

 $\begin{array}{ll} \text{GE} & -300 \text{ Line} \\ \text{Square D} & -\text{Type S} \end{array}$

The Starter with its existing backplate mounts onto the piggyback mounting plate and is secured in place with three mounting screws. The piggyback mounting plate fits the following:

Allen-Bradley —Bulletin 509

—Bulletin 709

Westinghouse —Series A200

Size 5 & 6 Starters Additional Features

- Solid State Overload (3RB type)
 Standard
- Latest technology in arc quenching to extend contactor life
- Wide variety of enclosures in all starter configurations

Size 7 & 8 Starters Additional Features

- New Compact Design
- Can be mounted in any position
- Same coil voltage is AC or DC

Features and Benefits

Selection



ESP200™ Solid State Starter

ESP200™ starters combine the rugged NEMA contactors with a state of the art solid state overload that provides phase loss, phase unbalance ground fault protection. It offers the user greater motor protection and extended life in heavy duty applications. The ESP200™ ultimately results in a cost savings to the user.

ESP200™ Solid State Overload Relays

Standard features provide Improved Starter Performance:

- True phase loss protection; trips within 3 seconds
- Phase unbalanced prevents motor running inefficiently
- Ground fault trip when selected
- Selectable trip class 5, 10, 20 or 30
- Reset trip can be selected Auto/ Manual restart
- Easy to select and use, Dip Switch selectable
- Overload is self powered, no need for external power source

Half Size Starters

Half-Size starters feature all the rugged performance characteristics of our NEMA rated starter sizes, but are fractionally sized to more closely match your exact motor rating. As a result, significant economic savings are made possible without sacrificing the reliability you expect from a heavy duty starter.

These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

Exclusive "half-sizes" save potentially hundreds, even thousands of dollars per project.

Using the table below, simply match the specific size starter to the horsepower rating of your motor. Every half-size starter saves you money—up to 31%.

All "half-sizes" comply to applicable NEMA and UL standards.

ESP200° FLA Adjustment Dial—Set the adjustment dial on the overload to the FLA of the motor.



Adjustment Dial Markings

Each overload is precisely calibrated and labels are laser printed.

TRIP CLASS 5 20 20 10 30 PHASE UNBAL ON OFF PHASE LOSS ON OFF RESET MODE MAN AUTO GROUND FAULT ON OFF TEST

DIP Switch Settings

Adjust DIP switch settings to the Trip Class desired 5, 10, 20, or 30.

- Set Phase Unbalance ON or OFF
- Set Phase Loss ON or OFF
- Set Reset to Manual or Automatic
- Set Ground Fault ON or OFF

Savings for Siemens "Half-Size" Starters in NEMA 1 Enclosures, FVNR

Motor Size	Motor Size		Half		"Half-Size" Savings Over
230V	460V	Size	Size	List Price \$	Next Full Size
7 1/2	10	1	-		_
10	15	_	13/4		31%
15	25	2	_		_
20	30	_	21/2		20%
30	50	3	_		_
40	75	_	31/2		13%
50	100	4	_		_

	Standard Aux	iliary Contacts	
Туре	Size (3rd Character)	Configuration	Internal / External
	B Thru E	1N.O.	Internal
All FVNR	F Thru J	1N.O.	External
Starters & Contactors	L Thru M	2N.O., 2N.C.	External
	N Thru P	1N.O., 1N.C.	External

Heavy Duty Motor Starters

Solid State Overload with Auto/Manual Reset, Class 14

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24 120	J
► Field Modification Kits see page 9/100.	110-120/220-240 ^①	Å
► Factory Modifications see page 9/115.	200–208 220–240	D G
► Dimensions see pages 9/135 open and 9/151 enclosed.	277	Ľ
➤ Wiring Diagrams see page 9/167.	220-240/440-480 [©] 440-480	C H
► Replacement Parts see page 9/127.	575–600	Ē
	For other voltages and fre see Factory Modifications	

Ope	en I	ype	& 5	tana	ard	vviatn	Enci	osure, 3-Phase, 3-Pole													
Max	Нр					Overload		Enclosure													
								Open Type Standard Auxilia Contacts®	ary	General Purpose		Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		Corrosion Resistant Watertight, Dust-tight Corrosion Resistant Div. 1 and Div. 2 Class I Groups C & Class III Bolted Enclosures Indoor/Outdoor Us		Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 NEMA 3/3R ^o Industrial Use Weatherproof (Field Convertib	
200 Volts				NEMA Size	Half Size			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$		List Price \$		
1/6	1/6	1/3	1/2	00	_	0.25-1	Α	14BUA32A*		14BUA32B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_		
1/2	3/4	1½	2	00	_	0.75-3.4	Α	14BUB32A*		14BUB32B*		Use Size 0	l —	Use Size 0	l —	Use Size 0	l —	Use Size 0	_		
1½	1½	2	<u> </u>	00	<u> </u>	3-12	A1	14BUC32A*		14BUC32B*		Use Size 0	l —	Use Size 0	l —	Use Size 0	l —	Use Size 0	_		
1/6	1/6	1/3	1/2	0	_	0.25-1	А	14CUA32A*		14CUA32B*		14CUA32@*		14CUA32F*		14CUA32H*		14CUA320*			
1/2	3/4	1½	2	0		0.75-3.4	Α	14CUB32A*		14CUB32B*		14CUB32@*		14CUB32F*		14CUB32H*		14CUB320*			
2	2	5	5	0		3–12	A1	14CUC32A*		14CUC32B*		14CUC32@*		14CUC32F*		14CUC32H*		14CUC320*			
3	3			0	_	5.5–22	A1	14CUD32A*		14CUD32B*		14CUD32@*		14CUD32F*		14CUD32H*		14CUD320*			
1/6	1/6	1/3	1/2	1		0.25-1	Α	14DUA32A*		14DUA32B*		14DUA32@*		14DUA32F*		14DUA32H*		14DUA320*			
1/2	3/4	1½	2	1	-	0.75-3.4	Α	14DUB32A*		14DUB32B*		14DUB32@*		14DUB32F*		14DUB32H*		14DUB320*			
2	2	5	5	1	-	3–12	A1	14DUC32A*		14DUC32B*		14DUC32@*		14DUC32F*		14DUC32H*		14DUC320*			
3	3	10	10	1	-	5.5–22	A1	14DUD32A*		14DUD32B*		14DUD32@*		14DUD32F*		14DUD32H*		14DUD320*			
7½	7½			1	_	10-40	A1	14DUE32A*		14DUE32B*		14DUE32@*		14DUE32F*		14DUE32H*		14DUE320*			
10	10	15	15		1¾	10-40	A1	14EUE32A*		14EUE32B*		14EUE32@*		14EUE32F*		14EUE32H*		14EUE320*			
10	15	25	25	2	_	13–52	В	14FUF32A*		14FUF32B*		14FUF32@*		14FUF32F*		14FUF32H*		14FUF320*			
15	_	30	30		2½	25–100	В	14GUG32A*		14GUG32B*		14GUG32@*		14GUG32F*		14GUG32H*		14GUG320*			
25	_	50	50	3	_		В	14HUG32A*		14HUG32B*		14HUG32@*		14HUG32F*		14HUG32H*		14HUG320*			
30	40	75	75		3½	50-200	В	14IUH32A*		14IUH32B*		14IUH32@*		14IUH32F*		14IUH32H*		14IUH320*			
40	50	100	100	4	<u> </u>	50-200	В	14JUH32A*		14JUH32B*		14JUH32@*		14JUH32F*		14JUH32H*		14JUH320*			
75		200	200	5	<u> </u>	55-250		14LPU32A*		14LPU32B*		14LPU32E* ⁴		_		14LPU32H*		14LPU320*			
150	200	400	400	6	<u> </u>	160–630		14MPX32A*		14MPX32B*		14MPX32E*4						14MPX320*			
<u></u>	300	600	600	7*⑤	<u> </u>	400-1220		14NUN32A*		14NUN32B*		14NUN32E*@					_	14NUN320*			
_	450	900	900	86		400–1220	A1+CT	14PUN32A*		14PUN32B*		14PUN32E* ⁴		<u> </u>	—			14PUN320*			

Open Type & Standard Width Enclosure, Single Phase, 2-Pole®

		50 Ct 1			ath Encio											
Max F	łp		Overload		Enclosure											
	208/				Open Type Standard Auxiliary Contacts	y General Purpose		eral Purpose V C @		Watertight, Dust-tight,		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		Class I F & G : se	NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof (Field Convertible	to 3/3R)
115 Volts	230	NEMA Size	Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/4	0	0.75-3.4	Α	14CUB12A*		14CUB12B*		14CUB12@*		14CUB12F*		14CUB12H*		14CUB120*	
1/4	1/2	0	3-12	A1	14CUC12A*		14CUC12B*	İ	14CUC12@*		14CUC12F*		14CUC12H*		14CUC120*	İ
1	2	0	5.5-22	A1	14CUD12A*		14CUD12B*		14CUD12@*		14CUD12F*		14CUD12H*		14CUD120*	
1/8	1/4	1	0.75-3.4	А	14DUB12A*		14DUB12B*		14DUB12@*		14DUB12F*		14DUB12H*		14DUB120*	
1/4	1/2	1	3-12	A1	14DUC12A*		14DUC12B*		14DUC12@*		14DUC12F*		14DUC12H*		14DUC120*	
1	2	1	5.5-22	A1	14DUD12A*		14DUD12B*		14DUD12@*		14DUD12F*		14DUD12H*		14DUD120*	
3	7½	2	25-100	В	14FUG12A*		14FUG12B*		14FUG12@*		14FUG12F*		14FUG12H*		14FUG120*	
7½	15	3	25-100	В	14HUG12A*		14HUG12B*	4HUG12B*		14HUG12@*		14HUG12F*			14HUG120*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in size 5-8 starters. ② For conduit hubs and conversion instructions, see page 9/106.

³ Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

© Enclosure is NEMA Type 4 (painted steel).

[®] F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC ® Only available F coil100-250V AC 50/60Hz, or DC

Heavy Duty Motor Starters Solid State Overload with Auto/Manual Reset, Class 14

Selection



NEMA 1

Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Field Modification Kits see page 9/100.	120 110–120/220–240	A A
► Factory Modifications see page 9/115.	200–208	D
▶ Dimensions see page 9/151.	220–240	G
► Wiring Diagrams see page 9/167.	277	L
► Replacement Parts see page 9/127.	220-240/440-480 440-480	H
· · · · · · · · · · · · · · · · · · ·	575–600	Ë
	For other voltages and fr see Factory Modification	

Extra Wide Enclosure, 3-Phase, 3-Pole

Max H	р					Overload		Enclosure								
								NEMA 1 General Purpose		Watertight, Dust-tight, Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class II Groups C & D Class III Bolted Enclosures Indoor/Outdoor Use	G	NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to	3/3R)	
200 Volts	230 Volts			NEMA Size	Half Size	Amp Range	Frame Size	•		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
1/6	1/6	1/3	1/2	00	_	0.25-1	А	14BUA82B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	
1/2	3/4	1½	2	00	_	0.75-3.4	А	14BUB82B*		Use Size 0	_	Use Size 0	_	Use Size 0	-	
1½	1½	2	_	00	_	3–12	A1	14BUC82B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	
1/6	1/6	1/3	1/2	0	_	0.25-1	А	14CUA82B*		14CUA82@*		14CUA82H*		14CUA820*		
1/2	3/4	1½	2	0	_	0.75-3.4	А	14CUB82B*		14CUB82@*		14CUB82H*		14CUB820*		
2	2	5	5	0	_	3–12	A1	14CUC82B*		14CUC82@*		14CUC82H*		14CUC820*		
3	3			0	_	5.5–22	A1	14CUD82B*		14CUD82@*		14CUD82H*		14CUD820*		
1/6	1/6	1/3	1/2	1	_	0.25-1	А	14DUA82B*		14DUA82@*		14DUA82H*		14DUA820*		
1/2	3/4	1½	2	1	-	0.75-3.4	А	14DUB82B*		14DUB82@*		14DUB82H*		14DUB820*		
2	2	5	5	1	-	3–12	A1	14DUC82B*		14DUC82@*		14DUC82H*		14DUC820*		
3	3	10	10	1	-	5.5–22	A1	14DUD82B*		14DUD82@*		14DUD82H*		14DUD820*		
7½	7½	<u> </u>	<u> </u>	1	<u> </u>	10-40	A1	14DUE82B*		14DUE82@*		14DUE82H*		14DUE820*		
10	10	15	15	<u> </u>	1¾	10-40	A1	14EUE82B*		14EUE82@*		14EUE82H*		14EUE820*		
10	15	25	25	2	<u> </u>	13–52	В	14FUF82B* 1		14FUF82@*		14FUF82H*		14FUF820*		
15	20	30	30	_	2½	25-100	В	14GUG82B* 1		14GUG82@*		14GUG82H*		14GUG820*		
25	30	50	50	3	_	25–100	В	14HUG82B* 1		14HUG82@*		14HUG82H*		14HUG820*		
30	40	75	75	_	3½	50-200	В	14IUH82B*				14IUH82H*		14IUH820*		

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

 $[\]ensuremath{\mathbb{O}}$ For conduit hubs and conversion instructions, see page 9/106.

Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 14

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage	Letter
	24	J
▶ Heater elements see page 9/120. Single phase starters require 1 heater element. 3-phase starters require 3 heater elements.	120 110–120/220–240	F A
► Field Modification Kits page 9/100.	200–208	D
► Factory Modifications page 9/115.	220–240	G
► Dimensions see page 9/135 open and 9/151 enclosed.	277	L
	220-240/440-480	С
➤ Wiring Diagrams see page 9/167.	440–480	Н
► Replacement Parts see page 9/127.	575–600	E
► For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.	For other voltages and free see Factory Modifications	

Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max H	lp						Enclosure											
200	230	460	575	Cont- actor Amp	NEMA	Half	Contacts [®]		NEMA 1 General Purpose		NEMA 4/4X Stainless® Watertight, Dust-tight Corrosion Resistant @ = W for 304 Stainless @ = X for 316 Stainless Steel				NEMA 7 & 9 NEMA 3 & 4 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof	
Volts	Volts	Volts	Volts	Rating	Size	Size	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$
11/2	11/2	2	2	9	00	_	14BP32A*81		14BP32B*81		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	
3	3	5	5	18	0	_	14CP32A*81		14CP32B*81		14CP32@*81		14CP32F*81		14CP32H*81		14CP320*81	
71/2	71/2	10	10	27	1	_	14DP32A*81		14DP32B*81		14DP32@*81		14DP32F*81		14DP32H*81		14DP320*81	
10	10	15	15	40	_	13/4	14EP32A*81		14EP32B*81		14EP32@*81		14EP32F*81		14EP32H*81		14EP320*81	
10	15	25	25	45	2	_	14FP32A*81		14FP32B*81		14FP32@*81		14FP32F*81		14FP32H*81		14FP320*81	
15	20	30	30	60	_	21/2	14GP32A*81		14GP32B*81		14GP32@*81		14GP32F*81		14GP32H*81		14GP320*81	
25	30	50	50	90	3	_	14HP32A*81		14HP32B*81		14HP32@*81		14HP32F*81		14HP32H*81		14HP320*81	
30	40	75	75	115	_	31/2	14IP32A*81		14IP32B*81		14IP32@*81		14IP32F*81		14IP32H*81		14IP320*81	
40	50	100	100	135	4	_	14JG32A*81		14JG32B*81		14JG32@*81		14JG32F*81		14JG32H*81		14JG320*81	

Open Type & Standard Width Enclosure, Single Phase, 2-Pole®

Max H	p				Enclosure									
115	208/ 230	Contactor Amp	NEMA	Half	Ореп Туре	NEMA 1 General Purpose	NEMA 4/4X Stainle Watertight, Dust-ti Corrosion Resistant @ = W for 304 Stainless @ = X for 316 Stainless	ght Steel	Watertight, Dust-tight Corrosion Resistant Steel Class II Groups E, F & G		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & Bolted Enclosures	D	NEMA 12 NEMA 3/3R [®] Industrial Use Weatherproof	
Volts	Volts	Rating	Size	Size	Catalog No	\$ Catalog No	\$ Catalog No	\$	Catalog No	\$	Catalog No	\$	Catalog No	\$
1/3	1	9	00	_	14BP12A*81	14BP12B*81	Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	
1	2	18	0	_	14CP12A*81	14CP12B*81	14CP12@*81		14CP12F*81		14CP12H*81		14CP120*81	
2	3	27	1	_	14DP12A*81	14DP12B*81	14DP12@*81		14DP12F*81		14DP12H*81		14DP120*81	
3	5	35	1P	_	14EP12A*81	14EP12B*81	14EP12@*81		14EP12F*81		14EP12H*81		14EP120*81	
3	71/2	45	2	_	14FP12A*81	14FP12B*81	14FP12@*81		14FP12F*81		14FP12H*81		14FP120*81	
5	10	60	_	21/2	14GP12A*81	14GP12B*81	14GP12@*81		14GP12F*81		14GP12H*81		14GP120*81	

Extra Wide Enclosure 3-Phase 3-Pole®

Max H	lp						Enclosure							
200	230	460	575	Cont- actor Amp	NEMA	Half	NEMA 1 General Purpose		NEMA 4/4X Stainless® Watertight, Dust-tight Corrosion Resistant @ = W for 304 Stainless Steel @ = X for 316 Stainless Steel		NEMA 7 & 9. NEMA Div 1 and Div 2 Class II Groups E, F & G Bolted Enclosures	3 & 4	NEMA 12. NEMA : Industrial Use Weatherproof Class III	3/3R ²
Volts	Volts	Volts	Volts	Rating	Size	Size	Catalog No	Price \$	Catalog No Price \$		Catalog No	Price \$	Catalog No	Price \$
11/2	11/2	2	2	9	00	_	14BP82B*81		Use Size 0	_	Use Size 0	_	Use Size 0	_
3	3	5	5	18	0	I —	14CP82B*81		14CP82@*81		14CP82H*81		14CP820*81	
71/2	71/2	10	10	27	1	I —	14DP82B*81		14DP82@*81		14DP82H*81		14DP820*81	
10	10	15	15	40	_	1 3/4	14EP82B*81		14EP82@*81		14EP82H*81		14EP820*81	
10	15	25	25	45	2	_	14FP82B*81		14FP82@*81		14FP82H*81		14FP820*81	
15	20	30	30	60	_	2 1/2	14GP82B*81		14GP82@*81		14GP82H*81		14GP820*81	
25	30	50	50	90	3	l —	14HP82B*81		14HP82@*81		14HP82H*81		14HP820*81	
30	40	75	75	115	_	3 1/2	14IP82B*81		14IP82@*81		14IP82H*81		14IP820*81	T

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating. For higher Hp single phase motors, use 3-phase starters, wire and set per diagram on page 9/167.

- ① To receive a single phase starter in an extra wide enclosure, order the enclosure kit from pg 16-91 and the open style starter from pg 16-14 or 16-16 as separate items.
- ② For conduit hubs and conversion instructions, see page 9/106.
- 3 Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.
- 4 Standard Auxiliary Contacts, Same as Contactors, refer to page 9/60.

Combination Heavy Duty Starters

Features and Benefits

General



Combination Starter Features

Combination starters include the following features:

- Manufactured with Cold Forming "TOX" Process
- Solid State Overloads Standard on Sizes 5–8
- Easy to Install
- Wide Range of Enclosure Types Available
- Heavy Duty Quarter Turns
- 100kA Short Circuit Current Rating when Protected with Class R Fuses to 600V or MCP to 480V
- Visible Blade Disconnect
- Industrial Type Disconnect Handle
- UL listed file #E185287 (class 17, 18, 25, 26 & 32)
- CSA certified file #LR 6535 (class 17, 18, 25, 26 & 32)

Application

A combination starter meets National Electrical Code requirements for:

- **1.** A means of providing short circuit motor protection with fused or breaker disconnection of line voltage.
- **2.** A means of safeguarding personnel from contact with live parts and from accidental starting of machinery by disconnecting the motor and the controller.
- **3.** A motor controller with overload protection.

Prewired combination starters eliminate the cost of wiring between separate disconnect and starter. Factory testing assures field performance. Combination starters also provide a more compact and attractive installation than separate units.

Enclosure Types

Combination starters are available in NEMA 1, 12/3/3R/4 (painted), 4/4X

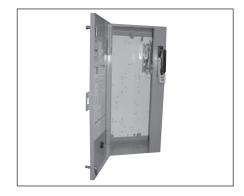
(stainless), 4X fiberglass and 7 & 9 enclosures. Enclosures protect personnel from contact with live parts and depending upon the construction, protect the control in varying degrees from physical damage and harmful atmospheres. All enclosures are supplied with corrosion resistant finishes.

Heavy Duty Disconnect Switches

The disconnect switch that goes the distance in durability, performance and reliability has the following advantages:

- Visible blades for the highest level of safety
- Double break switching action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- More rugged positive action switch
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts
- Higher horsepower rating for design E high efficiency motors
- UL listed for IIsco, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

Its rugged construction - with a high fault withstand rating of 100kA at 600 VAC when fused with class R rated fuses - meets the most stringent industry standards set forth by the automotive, petro-chemical, and pulp and paper industries. UL recognized and CSA certified, our disconnect switches are available either non-fusible or fusible with class R and class J fuse clips.



Enclosure Kits for NEMA Combination Starters Description

You can assemble a non-stocked combination starter per your unanticipated needs in minutes. Say, for example, your customer needs a fusible combination starter that you don't have in stock. You need in now, but don't sweat it.

Simply start with the enclosure kit which has the handle preinstalled. You install the required starter and fusible disconnect, connect the power wire and you are finished. Within minutes, you have the required combination starter in your hands. No more waiting on the factory. You need it, you got it!

What Is In It For You!

- Reduce Lead-time What used to take days to get now takes minutes
- Reduced Inventory Instead of stocking scores of various combination starters, simply stock a few enclosure kits, disconnect kits, circuit breaker kits and open starters. With these basic "building blocks" you virtually have hundreds of products on-hand
- Quality The same high level of quality you have been accustomed to with our products will also be found in these new enclosure kits
- UL Listed By correctly following the instructions included with the kits, the product you build is UL/CSA Listed

Refer to page 9/111 for more details.

Siemens Type ETI Circuit Breaker

The ETI circuit breaker is a device designed specifically for application in motor circuits. The ETI is a magnetic only protective device designed to provide protection against short circuit current.

The instantaneous-only type ETI circuit breaker employs adjustable magnetic trip settings to allow broader application ranges and a higher degree of motor short circuit protection.



Heavy Duty Starters

These combination starters use the same starters described in the heavy duty starter section of this catalog.

Combination Heavy Duty Starters Non-Fusible with Solid State Overload, Class 17

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► For Fusible Styles see page 9/20.	120	F
► Field Modification Kits see page 9/100.	110-120/220-240 ^①	Α
Field Modification Kits see page 9/100.	200–208	D
► Factory Modifications see page 9/115.	220–240	G
► Dimensions see page 9/153.	277	L
	220-240/440-480 [®]	С
► Wiring Diagrams see page 9/168.	440–480	Н
► Replacement Parts see page 9/127.	575–600	Е
	For other voltages and fre see Factory Modifications	

Standard Width Enclosure, 3 Phase, 3-Pole

Max H	ах Нр					Overload			Enclosure							
•								Disc.	NEMA 1 General Purpose		NEMA 4/4X St Watertight, Dust- Corrosion Resista @ = W for 304 Sta @ = X for 316 Stai	tight, nt inless Steel	NEMA 4X Fib Watertight, Dust- Corrosion Resista	tight	NEMA 12, NEMA 3/3 NEMA 4 Painted (thru- Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Range	Catalog List Number Price \$		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	0	_	0.25-1	А	30	17CUA92B*		17CUA92@*		17CUA92F*		17CUA92N*	
1/2	3/4	1½	2	0	<u> </u>	0.75-3.4	А	30	17CUB92B*		17CUB92@*		17CUB92F*		17CUB92N*	
2	2	5	5	0	_	3-12	A1	30	17CUC92B*		17CUC92@*		17CUC92F*		17CUC92N*	
3	3	_	_	0	_	5.5-22	A1	30	17CUD92B*		17CUD92@*		17CUD92F*		17CUD92N*	
1/6	1/6	1/3	1/2	1	_	0.25-1	Α	30	17DUA92B*		17DUA92@*		17DUA92F*		17DUA92N*	
1/2	3/4	1½	2	1	_	0.75-3.4	Α	30	17DUB92B*		17DUB92@*		17DUB92F*		17DUB92N*	
2	2	5	5	1	_	3–12	A1	30	17DUC92B*		17DUC92@*		17DUC92F*		17DUC92N*	
3	3	10	10	1	_	5.5-22	A1	30	17DUD92B*		17DUD92@*		17DUD92F*		17DUD92N*	
7½	7½			1	_	10-40	A1	60	17DUE92B*		17DUE92@*		17DUE92F*		17DUE92N*	
10	10	15	15	_	1¾	10-40	A1	60	17EUE92B*		17EUE92@*		17EUE92F*		17EUE92N*	
10	15	25	25	2	_	13-52	В	60	17FUF92B*		17FUF92@*		17FUF92F*		17FUF92N*	
15	20	30	30	_	2½	25-100	В	1003	17GUG92B*		17GUG92@*		17GUG92F*		17GUG92N*	
20@	25®	50	50	3	_	25-100	В	100	17HUG92B*		17HUG92@*		17HUG92F*		17HUG92N*	
30	40	75	75		3½	50-200	В	200	17IUH92B*		17IUH92@*		17IUH92F*		17IUH92N*	
40	50	100	100	4		50-200	В	200	17JUH92B*		17JUH92@*		17JUH92F*		17JUH92N*	
75	100	200	200	5		55-250		400@	17LPU92B*		17LPU92E*®		_	_	17LPU92N*	
150	200	400	400	6	_	160-630	<u> </u>	800	17MPX92B*		17MPX92E*®		_	I —	17MPX92N*	
_	300	600	600	79	_	400-1220	A1+CT	1200	17NUN92B*		<u></u>	<u> </u>	_	I —	17NUN92N*	
	450	900	900	800		400-1220	A1+CT	1600	17PUN92B*		<u> </u>				17PUN92N*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Siemens Industry, Inc. Industrial Controls Catalog

Product Category: NEMA

9/17

① Dual voltage coils not available in starter sizes 5-8. ② For conduit hubs and conversion instructions, see

page 9/106. ③ For 60A disconnect, order fusible cat. no. page 9/20.

⁴ For 25 HP and 200A disconnect, order fusible cat. no.

page 9/20. ⑤ For 30HP and 200A disconnect, order fusible cat. no. page 9/20.

For 600A disconnect, order fusible cat. no. page 9/20.
 Enclosure is NEMA Type 4 (painted steel).

[®] F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC [®] Only available

F coil 100-250V AC 50/60Hz, or DC

Combination Heavy Duty Starters Non-Fusible with Solid State Overload, Class 17

Selection



Ordering Information	Coil Table	
 ▶ Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. ▶ For Fusible Styles see page 9/21. ▶ Field Modification Kits see page 9/100. ▶ Factory Modifications see page 9/115. ▶ Dimensions see page 9/153. ▶ Wiring Diagrams see page 9/168. ▶ Replacement Parts see page 9/127. 	60Hz Voltage 24 120 110–120/220–240 [®] 200–208 220–240 277 220–240/440–480 [®] 440–480 For other voltages and fre see Factory Modifications	

Extra Wide Enclosure, 3-Phase, 3-Pole

Нр						Overload			Enclosure					
								Disc.	NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight, Con Resistant @ = W for 304 Stainless Stee @ = X for 316 Stainless Stee		NEMA 12, NEN NEMA 4 Painte Industrial Use Weatherproof Watertight, Dust-ti	ed
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Range	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	0	_	0.25-1	А	30	17CUA82B*		17CUA82@*		17CUA82N*	
1/2	3/4	1½	2	0	_	0.75-3.4	А	30	17CUB82B*		17CUB82@*		17CUB82N*	
2	2	5	5	0	_	3–12	A1	30	17CUC82B*		17CUC82@*		17CUC82N*	
3	3	-	-	0		5.5–22	A1	30	17CUD82B*		17CUD82@*		17CUD82N*	
1/6	1/6	1/3	1/2	1	_	0.25-1	А	30	17DUA82B*		17DUA82@*		17DUA82N*	
1/2	3/4	1½	2	1	_	0.75-3.4	А	30	17DUB82B*		17DUB82@*		17DUB82N*	
2	2	5	5	1	_	3–12	A1	30	17DUC82B*		17DUC82@*		17DUC82N*	
3	3	10	10	1	_	5.5-22	A1	30	17DUD82B*		17DUD82@*		17DUD82N*	
7½	7½			1	_	10-40	A1	60	17DUE82B*		17DUE82@*		17DUE82N*	
10	10	15	15	-	1¾	10-40	A1	60	17EUE82B*		17EUE82@*		17EUE82N*	
10	15	25	25	2	_	13-52	В	60	17FUF82B*		17FUF82@*		17FUF82N*	
15	20	30	30	_	2½	25-100	В	1003	17GUG82B*		17GUG82@*		17GUG82N*	
20@	25®	50	50	3	_	25-100	В	100	17HUG82B*		17HUG82@*		17HUG82N*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① For conduit hubs and conversion instructions, see page 9/106.

 $[\]ensuremath{\textcircled{2}}$ For 60A disconnect, order fusible cat. no. page 9/21. $\ensuremath{\textcircled{3}}$ For 25 HP and 200A disconnect, order fusible cat. no.

 $[\]ensuremath{\mathfrak{G}}$ For 30HP and 200A disconnect, order fusible cat. no. page 9/21.

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120. (3 required)	120	F
	110-120/220-240 [®]	Α
► Field Modification Kits see page 9/100.	200–208	D
► Factory Modifications see page 9/115.	220–240	G
► Dimensions see page 9/153.	277	L
	220-240/440-480 [®]	С
► Wiring Diagrams see page 9/168.	440–480	Н
► Replacement Parts see page 9/127.	575–600	Е
► For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact	For other voltages and fre see Factory Modifications	

Standard Width Enclosure 3-Phase 3-Pole

		viati	LIIC	iosure, 3	-i iiast	5, J-I	Oic								
Max H	р							Enclosure							
								NEMA 1		NEMA 4/4X Stain	less ^①	NEMA 4X Fiberg	lass	NEMA 12, NEMA	
								General Purpose		Watertight, Dust-tight	t	Watertight, Dust-tigh	t	NEMA 4 Painted	
												Corrosion Resistant		Industrial Use	
				Contactor			Disc			@ = W for 304 Stainless Steel				Weatherproof	
200	230	460	575	Amp	NEMA	Half	Amp			@ = X for 316 Stainless Steel				Watertight, Dust-tigh	ıt
Volts	Volts	Volts	Volts	Rating	Size	Size	Rating	Catalog Number			List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
3	3	5	5	18	0	I —	30	17CP92B*81		17CP92@*81		17CP92F*81		17CP92N*81	
71/23	71/23	10	10	27	1	I—	30	17DP92B*81		17DP92@*81		17DP92F*81		17DP92N*81	
10	10	15	15	40	_	13/4	60	17EP92B*81		17EP92@*81		17EP92F*81		17EP92N*81	
10	15	25	25	45	2	I —	60	17FP92B*81		17FP92@*81		17FP92F*81		17FP92N*81	
15	20	30	30	60	_	21/2	100	17GP92B*81		17GP92@*81		17GP92F*81		17GP92N*81	
254	304	50	50	90	3		100	17HP92B*81		17HP92@*81		17HP92F*81		17HP92N*81	
30	40	75	75	115	_	31/2	200	17IP92B*81		17IP92@*81		17IP92F*81		17IP92N*81	
40	50	100	100	135	4	<u> </u>	200	17JP92B*81		17JP92@*81		17JP92F*81		17JP92N*81	

-//	Wide		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,									
Max H	р							Enclosure					
								NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight	(1)	NEMA 12, NEMA 3/3R, ^① NEMA 4 Painted)
										Corrosion Resistant		Industrial Use	
				Contactor			Disc			@ = W for 304 Stainless Ste	el	Weatherproof	
200	230	460	575	Amp	NEMA	Half	Amp			@ = X for 316 Stainless Ste	el	Watertight, Dust-tight	
Volts	Volts	Volts	Volts	D-4inn	0:	C:	D - 41	O-4-1 Nii		0		0 4 1 1 1	List Dais - 6
		Anira	VOILS	Rating	Size	Size	Rating	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	18	Size	Size	30	17CP82B*81	List Price \$	17CP82@*81	List Price \$	17CP82N*81	LIST Price \$
3 7½3	3 7½3	5	5	18 27		Size		- · · · · J	List Price \$		List Price \$		LIST Price \$
3 7½3 10	3	5	5	18		_	30	17CP82B*81	List Price \$	17CP82@*81	List Price \$	17CP82N*81	LIST Price \$
	3	5	5	18 27			30	17CP82B*81 17DP82B*81	List Price \$	17CP82@*81 17DP82@*81	List Price \$	17CP82N*81 17DP82N*81	List Price \$
10	3	5 10 15	5 10 15	18 27 40			30 30 60	17CP82B*81 17DP82B*81 17EP82B*81	List Price \$	17CP82@*81 17DP82@*81 17EP82@*81	List Price \$	17CP82N*81 17DP82N*81 17EP82N*81	LIST Price \$

Standard Width Enclosure, Single Phase, (Catalog Numbers are three phase, wire for single phase in the field)

Max H)					Enclosure				_			
						NEMA 1 General Purpose		NEMA 4/4X Stainless ^o Watertight, Dust-tight	3	NEMA 4X Fiberglass Watertight, Dust-tight		NEMA 12, NEMA 3/3 NEMA 4 Painted	R,3
								Corrosion Resistant		Corrosion Resistant		Industrial Use	
								@ = W for 304 Stainless Steel				Weatherproof	
	208/	Contactor			Disc			@ = X for 316 Stainless Stee	I			Watertight, Dust-tight	
115	230	Amp	NEMA	Half	Amp								
Volts	Volts	Rating	Size	Size	Rating	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1	2	18	0	_	30	17CP92B*81		17CP92@*81		17CP92F*81		17CP92N*81	
2	3	27	1	_	30	17DP92B*81		17DP92@*81		17DP92F*81		17DP92N*81	
3	5	35	1P	_	60			17EP92@*81		17EP92F*81		17EP92N*81	
3	7½	45	2	_	60	17FP92B*81		17FP92@*81		17FP92F*81		17FP92N*81	
5	10	60		21/2	100	17GP92B*81		17GP92@*81		17GP92F*81		17GP92N*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① For conduit hubs and conversion instructions, see page 9/106.

② For 60A disc, order fusible cat. no. page 9/22.

³ For 200A disc, order fusible cat. no. page 9/22.

Combination Heavy Duty Starters Fusible with Solid State Overload, Class 17

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Field Modification Kits see page 9/100.	120	F
1 3 ,	110-120/220-240 [®]	Α
► Factory Modifications see page 9/115.	200–208	D
▶ Dimensions see page 9/153.	220–240	G
► Wiring Diagrams see page 9/168.	277	L
	220-240/440-480 [®]	С
► Replacement Parts see page 9/127.	440–480	Н
	575–600	E
	For other voltages and fre	

Standard Width Enclosure, 3-Phase, 3-Pole®

Max H	lp					Overload				Enclosure							
				_		CVOIIGUA		Disc.		NEMA 1 General Purpose		Watertight, Dust-tig Corrosion Resistant @ = W for 304 Stain @ = X for 316 Stainl	ght, less Steel	NEMA 4X Fibe Watertight, Dust-t Corrosion Resistar	ight	NEMA 12, NEN NEMA 4 Painte Industrial Use Weatherproof Watertight, Dust-ti	ed (thru size 4)
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Range	Fuse Clip Amp/Volts	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	_	_	0	_	0.25-1	А	30	30A/250V	17CUA92B*10		17CUA92@*10		17CUA92F*10		17CUA92N*10	
_	<u> </u>	1/3	1/2	0	<u> </u>	0.25-1	Α	30	30A/600V	17CUA92B*11		17CUA92@*11	İ	17CUA92F*11		17CUA92N*11	
1/2	3/4	_	_	0	_	0.75-3.4	Α	30	30A/250V	17CUB92B*10		17CUB92@*10		17CUB92F*10		17CUB92N*10	
_	<u> </u>	1½	2	0	<u> </u>	0.75-3.4	A	30	30A/600V	17CUB92B*11		17CUB92@*11		17CUB92F*11		17CUB92N*11	
2	2		_	0	_	3-12	A1	30	30A/250V	17CUC92B*10		17CUC92@*10		17CUC92F*10		17CUC92N*10	
_		5	5	0	<u> </u>	3-12	A1	30	30A/600V	17CUC92B*11		17CUC92@*11		17CUC92F*11		17CUC92N*11	
3	3	_		0	_	5.5-22	A1	30	30A/250V	17CUD92B*10		17CUD92@*10		17CUD92F*10		17CUD92N*10	
1/6	1/6	_	_	1	_	0.25-1	Α	30	30A/250V	17DUA92B*10		17DUA92@*10		17DUA92F*10		17DUA92N*10	
_	_	1/3	1/2	1	_	0.25-1	Α	30	30A/600V	17DUA92B*11		17DUA92@*11		17DUA92F*11		17DUA92N*11	
1/2	3/4			1	<u> </u>	0.75-3.4	A	30	30A/250V	17DUB92B*10		17DUB92@*10		17DUB92F*10		17DUB92N*10	
_	_	1½	2	1	_	0.75-3.4	A	30	30A/600V	17DUB92B*11		17DUB92@*11		17DUB92F*11		17DUB92N*11	
2	2	_		1	<u> </u>	3-12	A1	30	30A/250V	17DUC92B*10		17DUC92@*10		17DUC92F*10		17DUC92N*10	
_		5	5	1	_	3-12	A1	30	30A/600V	17DUC92B*11		17DUC92@*11		17DUC92F*11		17DUC92N*11	
3	3	<u> </u>	_	1	_	5.5-22	A1	30	30A/250V	17DUD92B*10		17DUD92@*10		17DUD92F*10		17DUD92N*10	
_	<u> </u>	10	10	1	_	5.5-22	A1	30	30A/600V	17DUD92B*11		17DUD92@*11		17DUD92F*11		17DUD92N*11	
5	5	<u> </u>	_	1	_	10-40	A1	30	30A/250V	17DUE92B*10		17DUE92@*10		17DUE92F*10		17DUE92N*10	1
7½	7½	<u> </u>	_	1	_	10-40	A1	60	60A/250V	17DUE92B*12		17DUE92@*12	İ	17DUE92F*12		17DUE92N*12	
	<u> </u>	15	15	_	1¾	10-40	A1	60	60A/600V	17EUE92B*13		17EUE92@*13		17EUE92F*13	İ	17EUE92N*13	
10	10	<u> </u>	_	_	1¾	10-40	A1	60	60A/250V	17EUE92B*12		17EUE92@*12		17EUE92F*12		17EUE92N*12	1
10	15	_	_	2		13-52	В	60	60A/250V	17FUF92B*12		17FUF92@*12		17FUF92F*12		17FUF92N*12	
_	_	25	25	2	_	13–52	В	60	60A/600V	17FUF92B*13		17FUF92@*13		17FUF92F*13		17FUF92N*13	1
		_	30		2½	25-100	В	60	60A/600V	17GUG92B*13		17GUG92@*13		17GUG92F*13		17GUG92N*13	
_	_	30	_	_	2½	25-100	В	100	100A/600V	17GUG92B*15		17GUG92@*15		17GUG92F*15		17GUG92N*15	
15	20	_	_	_	2½	25-100	В	100	100A/250V	17GUG92B*14		17GUG92@*14		17GUG92F*14		17GUG92N*14	
20	25	_		3		25-100	R	100	100A/250V	17HUG92B*14		17HUG92@*14		17HUG92F*14		17HUG92N*14	
	25	50	50	3		25-100	В	100	100A/200V	17HUG92B*15		17HUG92@*15		17HUG92F*15		17HUG92N*15	
25	30			3	_	25-100	В	200	200A/250V	17HUG92B*16		17HUG92@*16		17HUG92F*16		17HUG92N*16	
30	40				3½	50-200	В	200	200A/250V	1711UH92B*16		1711UH92@*16		1711UH92F*16		17IUH92N*16	+
	40	75	75		3½	50-200	В	200	200A/230V 200A/600V	17IUH92B*17		171UH92@*17		171UH92F*17		17IUH92N*17	
40	50	7.5	7.5	1	3/2	50-200	В	200	200A/000V	17JUH92B*16		17JUH92@*16		17JUH92F*16		17JUH92N*16	+
40	30	100	100	4		50-200	В	200	200A/230V 200A/600V	17JUH92B*17		17JUH92@*17		17JUH92F*17		17JUH92N*17	
 75	100	100	100	5		55-250	D	400	400A/250V	17LPU92B*18	1	17LPU92E*18@		1/3011321 1/	l _	17LPU92N*18	+
75	100			5		55-250		600	600A/250V			17LPU92E*20@				17LPU92N*10	
	100		125	5		55-250		400	200A/600V	17LPU92B 20		17LPU92E*17@				17LPU92N*17	
		200	200	5		55-250		400	400A/600V	17LPU92B*19		17LPU92E*19@				17LPU92N*19	
		200	200	5		55-250		600	600A/600V						1	1	
150	200	200	F	6		160-630		600	<u> </u>		1	17LPU92E*21@	-		-	17LPU92N*21	
150	200	400	400	1				1	600A/250V	17MPX92B*20		17MPX92E*20@			_	17MPX92N*20	
_		400	400	6		160-630		600	600A/600V	17MPX92B*21		17MPX92E*21@	1		-	17MPX92N*21	
	_	400	400	6		160-630	A4 CT	800	800A/600V	17MPX92B*23	-	17MPX92E*23 ⁽⁴⁾	 		 -	17MPX92N*23	
	_	600	600	76		400-1220	A1+CT	1200	1200A/600V	17NUN92B*24	-	_			<u> </u>	17NUN92N*24	
_	<u> </u>	900	900	8⑦		400-1220	A1+CT	1600	1600A/600V	17PUN92B*25		<u> </u>	-	<u> </u>	-	17PUN92N*25	1

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5-8.

② For conduit hubs and conversion instructions, see page 9/106.

<sup>③ Use Class J fuses only.
④ Enclosure is NEMA Type 4 (painted steel).
⑤ Single phase wiring page 9/167.
⑥ F coil 100-250V AC 50/60Hz, or DC,</sup> H coil 150-500V AC 50/60Hz, or DC

⑦ Only available F coil 100-250V AC 50/60Hz, or DC

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Field Modification Kits see page 9/100.	120	F
► Factory Modifications see page 9/115.	110-120/220-240	Α
,	200–208	D
▶ Dimensions see page 9/153.	220–240	G
► Wiring Diagrams see page 9/168.	277	L
	220-240/440-480	С
► Replacement Parts see page 9/127.	440–480	Н
	575–600	E
	For other voltages and fre see Factory Modifications	

Extra Wide Enclosure, 3-Phase, 3-Pole

Max H	р					Overload				Enclosure					
								Disc.		NEMA 1 General Purpose		NEMA 4/4X Stain Watertight, Dust-tigh @ = W for 304 Stainle: @ = X for 316 Stainle:	NEMA 4 Paint s Steel Industrial Use		1
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Range	Fuse Clip Amp/Volts	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6			0		0.25-1	А	30	30A/250V	17CUA82B*10		17CUA82@*10		17CUA82N*10	
_		1/3	1/2	0	_	0.25-1	А	30	30A/600V	17CUA82B*11		17CUA82@*11		17CUA82N*11	
1/2	3/4	_	_	0	_	0.75-3.4	А	30	30A/250V	17CUB82B*10		17CUB82@*10		17CUB82N*10	
_		1½	2	0	_	0.75-3.4	А	30	30A/600V	17CUB82B*11		17CUB82@*11		17CUB82N*11	
2	2	_	_	0	_	3-12	A1	30	30A/250V	17CUC82B*10		17CUC82@*10		17CUC82N*10	
_		5	5	0	_	3-12	A1	30	30A/600V	17CUC82B*11		17CUC82@*11		17CUC82N*11	
3	3	_	_	0	_	5.5-22	A1	30	30A/250V	17CUD82B*10		17CUD82@*10		17CUD82N*10	
1/6	1/6	_	_	1	_	0.25-1	А	30	30A/250V	17DUA82B*10		17DUA82@*10		17DUA82N*10	
_		1/3	1/2	1	_	0.25-1	А	30	30A/600V	17DUA82B*11		17DUA82@*11		17DUA82N*11	
1/2	3/4	_	_	1	_	0.75-3.4	А	30	30A/250V	17DUB82B*10		17DUB82@*10		17DUB82N*10	
_		1½	2	1	_	0.75-3.4	А	30	30A/600V	17DUB82B*11		17DUB82@*11		17DUB82N*11	
2	2	_		1	_	3-12	A1	30	30A/250V	17DUC82B*10		17DUC82@*10		17DUC82N*10	
		5	5	1	_	3-12	A1	30	30A/600V	17DUC82B*11		17DUC82@*11		17DUC82N*11	
3	3	_	_	1	_	5.5-22	A1	30	30A/250V	17DUD82B*10		17DUD82@*10		17DUD82N*10	
		10	10	1	_	5.5-22	A1	30	30A/600V	17DUD82B*11		17DUD82@*11		17DUD82N*11	
5	5			1	_	10-40	A1	30	30A/250V	17DUE82B*10		17DUE82@*10		17DUE82N*10	
7½	7½	_	_	1	_	10-40	A1	60	60A/250V	17DUE82B*12		17DUE82@*12		17DUE82N*12	
		15	15		1¾	10-40	A1	60	60A/600V	17EUE82B*13		17EUE82@*13		17EUE82N*13	
10	10	_	_		1¾	10-40	A1	60	60A/250V	17EUE82B*12		17EUE82@*12		17EUE82N*12	
10	15	_		2	_	13-52	В	60	60A/250V	17FUF82B*12		17FUF82@*12		17FUF82N*12	
_	_	25	25	2	_	13-52	В	60	60A/600V	17FUF82B*13		17FUF82@*13		17FUF82N*13	
_		_	30		2½	25-100	В	60	60A/600V	17GUG82B*13		17GUG82@*13		17GUG82N*13	
_		30			2½	25-100	В	100	100A/600V	17GUG82B*15		17GUG82@*15		17GUG82N*15	
15	20	_			2½	25-100	В	100	100A/250V	17GUG82B*14		17GUG82@*14		17GUG82N*14	
20	25			3		25-100	В	100	100A/250V	17HUG82B*14		17HUG82@*14		17HUG82N*14	
		50	50	3		25-100	В	100	100A/600V	17HUG82B*15		17HUG82@*15		17HUG82N*15	
25	30			3		25-100	В	200	200A/250V	17HUG82B*16		17HUG82@*16		17HUG82N*16	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① For conduit hubs and conversion instructions, see page 9/106.

Combination Heavy Duty Starters Fusible with Ambient Compensated Bimetal Overload, Class 17

"81" indicates one NC contact.

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120. (3 required)	120	F
► Field Modification Kits see page 9/100.	110-120/220-240	Α
	200–208	D
► Factory Modifications see page 9/115.	220–240	G
► Dimensions see page 9/153.	277	L
	220-240/440-480	С
► Wiring Diagrams see page 9/168.	440–480	Н
► Replacement Parts see page 9/127.	575–600	E
► For NO/NC SPDT contact on overload relay, replace "81" with "91".	For other voltages and from see Factory Modification	

Standard Width Enclosure, 3-Phase, 3-Pole²

Max H	lp								Enclosure							
				Cont-			Disc	Fuse Clip	NEMA 1 General Purpose	General Purpose		ht less Steel ess Steel	NEMA 4X Fibe Watertight, Dust-t Corrosion Resistan	ight	NEMA 12, NEMA 3/3R,© NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts	Amp Rating	NEMA Size	Half Size	Amp Rating	Size Amps/Volts	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	_	_	18	0	_	30	30A/250V	17CP92B*1081		17CP92@*1081		17CP92F*1081		17CP92N*1081	
_	_	5	5	18	0	_	30	30A/600V	17CP92B*1181		17CP92@*1181		17CP92F*1181		17CP92N*1181	
5	5	_	l —	27	1	_	30	30A/250V	17DP92B*1081		17DP92@*1081		17DP92F*1081		17DP92N*1081	
_	_	10	10	27	1	l —	30	30A/600V	17DP92B*1181		17DP92@*1181		17DP92F*1181		17DP92N*1181	
71/2	7½	_	l —	27	1	l —	60	60A/250V	17DP92B*1281		17DP92@*1281		17DP92F*1281		17DP92N*1281	
10	10	_	_	40	_	13/4	60	60A/250V	17EP92B*1281		17EP92@*1281		17EP92F*1281		17EP92N*1281	
_	—	15	15	40	_	13/4	60	60A/600V	17EP92B*1381		17EP92@*1381		17EP92F*1381		17EP92N*1381	
10	15	_	_	45	2	_	60	60A/250V	17FP92B*1281		17FP92@*1281		17FP92F*1281		17FP92N*1281	
_	_	25	25	45	2	_	60	60A/600V	17FP92B*1381		17FP92@*1381		17FP92F*1381		17FP92N*1381	
_	_	_	30	60	_	21/2	60	60A/600V	17GP92B*1381		17GP92@*1381		17GP92F*1381		17GP92N*1381	
_	_	30	_	60	_	21/2	100	100A/600V	17GP92B*1581		17GP92@*1581		17GP92F*1581		17GP92N*1581	
15	20		_	60	_	21/2	100	100A/250V	17GP92B*1481		17GP92@*1481		17GP92F*1481		17GP92N*1481	
20	25	_	_	90	3	_	100	100A/250V	17HP92B*1481		17HP92@*1481		17HP92F*1481		17HP92N*1481	
_	_	50	50	90	3	l —	100	100A/600V	17HP92B*1581		17HP92@*1581		17HP92F*1581		17HP92N*1581	
25	30	_	_	90	3		200	200A/250V	17HP92B*1681		17HP92@*1681		17HP92F*1681		17HP92N*1681	
30	40	_	_	115	_	31/2	200	200A/250V	17IP92B*1681		17IP92@*1681		17IP92F*1681		17IP92N*1681	
_		75	75	115	_	3½	200	200A/600V	17IP92B*1781		17IP92@*1781		17IP92F*1781		17IP92N*1781	
40	50	_	_	135	4	_	200	200A/250V	17JP92B*1681		17JP92@*1681		17JP92F*1681		17JP92N*1681	
_	_	100	100	135	4	_	200	200A/600V	17JP92B*1781		17JP92@*1781		17JP92F*1781		17JP92N*1781	

Extra Wide Enclosure, 3-Phase, 3-Pole

Max H	р								Enclosure					
200	230	460	575	Cont- actor Amp	NEMA	Half	Disc Amp	Fuse Clip Size	NEMA 1 General Purpose		NEMA 4/4X Stainles Watertight, Dust-tight Industrial Use Weatherpru @ = W for 304 Stainless S @ = X for 316 Stainless S	oof Steel	NEMA 12, NEMA 3/ NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	3R, [⊕]
Volts	Volts	Volts	Volts	Rating	Size	Size	Rating	Amps/Volts	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	— 5	— 5	18 18	0		30 30	30A/250V 30A/600V	17CP82B*1081 17CP82B*1181		17CP82@*1081 17CP82@*1181		17CP82N*1081 17CP82N*1181	1405.00 1423.00
5	5	_	_	27	1	_	30	30A/250V	17DP82B*1081		17DP82@*1081		17DP82N*1081	1447.00
_	_	10	10	27	1	—	30	30A/600V	17DP82B*1181		17DP82@*1181		17DP82N*1181	1465.00
7½	71/2	_	_	27	1	_	60	60A/250V	17DP82B*1281		17DP82@*1281		17DP82N*1281	1465.00
10	10	_	_	40	_	13/4	60	60A/250V	17EP82B*1281		17EP82@*1281		17EP82N*1281	1595.00
_	_	15	15	40	_	13/4	60	60A/600V	17EP82B*1381		17EP82@*1381		17EP82N*1381	1612.00
10	15	_	_	45	2	_	60	60A/250V	17FP82B*1281		17FP82@*1281		17FP82N*1281	2034.00
_	_	25	25	45	2		60	60A/600V	17FP82B*1381		17FP82@*1381		17FP82N*1381	2051.00
_	_	_	30	60	_	21/2	60	60A/600V	17GP82B*1381		17GP82@*1381		17GP82N*1381	2998.00
—		30	_	60	—	21/2	100	100A/600V	17GP82B*1581		17GP82@*1581		17GP82N*1581	3075.00
15	20	_	—	60	_	21/2	100	100A/250V	17GP82B*1481		17GP82@*1481		17GP82N*1481	3075.00
20	25	-	_	90	3	_	100	100A/250V	17HP82B*1481		17HP82@*1481		17HP82N*1481	3471.00
—		50	50	90	3	—	100	100A/600V	17HP82B*1581		17HP82@*1581		17HP82N*1581	3471.00
25	30		_	90	3	—	200	200A/250V	17HP82B*1681		17HP82@*1681		17HP82N*1681	3987.00

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

see Factory Modifications page 9/115.

① For conduit hubs and conversion instructions, see page 9/106.

² Single phase wiring page 9/167.

Combination Heavy Duty Starters MCP Type with Solid State Overload, Class 18

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Field Modification Kits see page 9/100.	120	F
	110-120/220-240 [®]	Α
► Factory Modifications see page 9/115.	200–208	D
► Dimensions see page 9/153.	220–240	G
► Wiring Diagrams see page 9/168.	277	L
	220-240/440-480 [®]	С
► Replacement Parts see page 9/127.	440–480	Н
	575–600	E
	For other voltages and fre see Factory Modifications	

Standard Width Enclosure, 3-Phase, 3-Pole

Max Hp Overload Enclosure																		
Max	Нр						Overload		NEMA 1 General Purpose		NEMA 4/4X Sometime Watertight, Dust-Corrosion Resista	tight, nt	NEMA 4X Fiberglass Watertight, Du Corrosion Resi		NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. Class I Groups) 2	NEMA 12, NE 3/3R ^② , NEMA Painted (thru s	4
						Motor Circuit					@ = X for 316 Sta				Class II Groups Class III Bolted Enclosur Indoor/Outdoor	E, F & G es	Weatherproof Watertight, Dust	-tight
200 Volts						Interruter ETI Amps		Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	0	_	3	0.75-3.4	А	18CUB92B*		18CUB92@*		18CUB92F*		18CUB92H*		18CUB92N*	
2	2	5	5	0		10	3–12	A1	18CUC92B*		18CUC92@*		18CUC92F*		18CUC92H*		18CUC92N*	
3	3	_	_	0	_	25	5.5-22	A1	18CUD92B*		18CUD92@*		18CUD92F*		18CUD92H*		18CUD92N*	
1/2	1/2	1	1	1	_	3	0.75-3.4	А	18DUB92B*		18DUB92@*		18DUB92F*		18DUB92H*		18DUB92N*	
2	2	5	5	1	_	10	3–12	A1	18DUC92B*		18DUC92@*		18DUC92F*		18DUC92H*		18DUC92N*	
3	3	7 ½	10	1		25	5.5–22	A1	18DUD92B*		18DUD92@*		18DUD92F*		18DUD92H*		18DUD92N*	
7 ½	7 ½	10		1		30	10-40	A1	18DUE92B*		18DUE92@*		18DUE92F*		18DUE92H*		18DUE92N*	
		15	15		1¾	40	10-40	A1	18EUE92B*		18EUE92@*		18EUE92F*		18EUE92H*		18EUE92N*	
10	15	25	25	2		50	13–52	В	18FUF92B*		18FUF92@*		18FUF92F*		18FUF92H*		18FUF92N*	
15	20	30	30		2 ½	100	25–100	В	18GUG92B*		18GUG92@*		18GUG92F*		18GUG92H*		18GUG92N*	
25	30	50	50	3		125	25–100	В	18HUG92B*		18HUG92@*		18HUG92F*		18HUG92H*		18HUG92N*	
30	40	75	75		3 ½	125	50-200	В	18IUH92B*		18IUH92@*		18IUH92F*		18IUH92H*		18IUH92N*	
40	50	100	100	4		150	50-200	В	18JUH92B*		18JUH92@*		18JUH92F*		18JUH92H*		18JUH92N*	
50	75	150	200	5		250	55-250		18LPT92B*		18LPT92E*3		_		18LPT92H*		18LPT92N*	
75	100	200		5	<u> </u>	400	55–250		18LPU92B*		18LPU92E*3		_		_	_	18LPU92N*	
100	125	250	300	6		400	160-630		18MPW92B*		18MPW92E*3		_		_		18MPW92N*	
150	200	400	400	6	_	600	160–630		18MPX92B*		18MPX92E*3		_	_	_		18MPX92N*	
	250	500	500	7@	_	800	400-1220	A1+CT	18NUV92B*		<u> -</u>	_	_	_	-	_	18NUV92N*	
	300	600	600	7@	_	1000	400–1220	A1+CT	18NUY92B*		_	_	_		_	_	18NUY92N*	
	400	800	800	8⑤	_	1200	400-1220	A1+CT	18PUW92B*		<u> </u>	_	_	_	_	_	18PUW92N*	
	450	900	900	8⑤		1600	400–1220	A1+CT	18PUZ92B*		<u></u>	—			_	—	18PUZ92N*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code). ① Dual voltage coils not available in starter sizes 5-8.

Siemens Industry, Inc. Industrial Controls Catalog

② For conduit hubs and conversion instructions, see page 9/106.

[©] Enclosure is NEMA Type 4 (painted steel).

© F coil 100-250V AC 50/60Hz, or DC,
H coil 150-500V AC 50/60Hz, or DC

⑤ Only available F coil 100-250V AC 50/60Hz, or DC

Combination Heavy Duty Starters MCP Type with Solid State Overload, Class 18

Selection



Ordering Information	Coil Table	
 Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. Field Modification Kits see page 9/100. Factory Modifications see page 9/115. Dimensions see page 9/153. Wiring Diagrams see page 9/168. Replacement Parts see page 9/127. 	60Hz Voltage 24 120 110–120/220–240 200–208 220–240 277 220–240/440–480 440–480 575–600	Letter J F A D G L C H E
	For other voltages and free see Factory Modifications	quencies,

Extra Wide Enclosure, 3-Phase, 3-Pole

Max H	p						Overload		Enclosure					
						Motor Circuit		General Purpose Watertight, Dust-tight, Corrosion Resistant Industr @ W for 304 Stainless Steel Weath		NEMA 1 General Purpose		NEMA 12, NEN NEMA 4 Painte Industrial Use Weatherproof Watertight, Dust-ti	ed	
200	230	460	575	NEMA	Half	Interruter	Amp	Frame	Catalog	Catalog List		List	Catalog	List
/olts	Volts	Volts	Volts	Size	Size	ETI Amps	Range	Size	Number	Price \$	Number	Price \$	Number	Price \$
4	1/2	1	1	0	_	3	0.75-3.4	А	18CUB82B*		18CUB82@*		18CUB82N*	
	2	5	5	0	<u> </u>	10	3–12	A1	18CUC82B*		18CUC82@*		18CUC82N*	
:	3	_	_	0	_	25	5.5-22	A1	18CUD82B*		18CUD82@*		18CUD82N*	
<u>′</u>	1/2	1	1	1	_	3	0.75-3.4	А	18DUB82B*		18DUB82@*		18DUB82N*	
	2	5	5	1	<u> </u>	10	3–12	A1	18DUC82B*		18DUC82@*		18DUC82N*	
	3	7½	10	1	_	25	5.5-22	A1	18DUD82B*		18DUD82@*		18DUD82N*	
1/2	7½	10	_	1	-	30	10-40	A1	18DUE82B*		18DUE82@*		18DUE82N*	
_		15	15		1¾	40	10-40	A1	18EUE82B*		18EUE82@*		18EUE82N*	
10	15	25	25	2		50	13-52	В	18FUF82B*		18FUF82@*		18FUF82N*	
5	20	30	30		2½	100	25-100	В	18GUG82B*		18GUG82@*		18GUG82N*	
25	30	50	50	3		125	25-100	В	18HUG82B*		18HUG82@*		18HUG82N*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

 $[\]ensuremath{\mathbb{O}}$ For conduit hubs and conversion instructions, see page 9/106.

Combination Heavy Duty Starters MCP Type with Ambient Compensated Bimetal Overload, Class 18

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120. (3 required)	120	F
► Field Modification Kits see page 9/100.	110–120/220–240 200–208	A D
► Factory Modifications see page 9/115.	220–240	G
► Dimensions see page 9/153.	277 220–240/440–480	L C
➤ Wiring Diagrams see page 9/168.	440-480	H
► Replacement Parts see page 9/127.	575–600	Е
For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact	For other voltages and fr see Factory Modification	

Standard Width Enclosure, 3-Phase, 3-Pole

Max	Нр							Enclosure									
				Cont-			Motor Circuit	NEMA 1 General Purpose		NEMA 4/4X St. Watertight, Du: Corrosion Resis @ = W for 304 Stainless Steel @ = X for 316 S Steel	st-tight stant	NEMA 4X Fib Watertight, Du Corrosion Res Class I Groups Class II Groups	stant C & D	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Weatherproof Watertight, Du Class III Bolted Enclosu Indoor/Outdoo	st-tight ires	NEMA 12,NEM NEMA 4 Paint Industrial Use	
200 Volts		460 Volts		Amp Rating	NEMA Size	Half Size	Interrupter ETI Amps	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	18	0	_	3	18CP92BA*81		18CP92@A*81		18CP92FA*81		18CP92HA*81		18CP92NA*81	
1	1	3	3	18	0	—	10	18CP92BB*81		18CP92@B*81		18CP92FB*81		18CP92HB*81		18CP92NB*81	
3	3	5	5	18	0	_	25	18CP92BC*81		18CP92@C*81		18CP92FC*81		18CP92HC*81		18CP92NC*81	
1/2	1/2	1	1	27	1	—	3	18DP92BA*81		18DP92@A*81		18DP92FA*81		18DP92HA*81		18DP92NA*81	
1	1	3	3	27	1	—	10	18DP92BB*81		18DP92@B*81		18DP92FB*81		18DP92HB*81		18DP92NB*81	
3	3	71/2	7½	27	1	—	25	18DP92BD*81		18DP92@D*81		18DP92FD*81		18DP92HD*81		18DP92ND*81	
7½	7½	10	10	27	1	_	30	18DP92BE*81		18DP92@E*81		18DP92FE*81		18DP92HE*81		18DP92NE*81	
I —		15	15	40	_	13/4	40	18EP92BF*81		18EP92@F*81		18EP92FF*81		18EP92HF*81		18EP92NF*81	
10	10		_	40	_	13/4	50	18EP92BG*81		18EP92@G*81		18EP92FG*81		18EP92HG*81		18EP92NG*81	
-		20	20	45	2	—	40	18FP92BH*81		18FP92@H*81		18FP92FH*81		18FP92HH*81		18FP92NH*81	
10	15	25	25	45	2	_	50	18FP92BJ*81		18FP92@J*81		18FP92FJ*81		18FP92HJ*81		18FP92NJ*81	
10	15	30	30	60	—	21/2	50	18GP92BK*81		18GP92@K*81		18GP92FK*81		18GP92HK*81		18GP92NK*81	
15	20		—	60	_	21/2	100	18GP92BL*81		18GP92@L*81		18GP92FL*81		18GP92HL*81		18GP92NL*81	
		30	30	90	3		50	18HP92BM*81		18HP92@M*81		18HP92FM*81		18HP92HM*81		18HP92NM*81	
25	30	50	50	90	3	_	125	18HP92BN*81		18HP92@N*81		18HP92FN*81		18HP92HN*81		18HP92NN*81	
30	40	75	75	115	_	31/2	125	18IP92BP*81		18IP92@P*81		18IP92FP*81		18IP92HP*81		18IP92NP*81	
40	50	100	100	135	4	I —	150	18JP92BR*81		18JP92@R*81		18JP92FR*81		18JP92HR*81		18JP92NR*81	

"81" indicates one NC contact.

Extra Wide Enclosure, 3-Phase, 3-Pole

Max F	lp .							Enclosure NEMA 1 NEMA 4/4X Stainless® NEMA					
				Contactor				NEMA 1 General Purpose	General Purpose		less® ght less Steel	NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts	Amp Rating	NEMA Size	Half Size	Motor Circuit Interrupter ETI Amps	Catalog Number	Catalog List C		List Price \$	Catalog Number	List Price \$
1/2	1/2	1	1	18	0	_	3	18CP82BA*81		18CP82@A*81		18CP82NA*81	
1	1	3	3	18	0	—	10	18CP82BB*81		18CP82@B*81		18CP82NB*81	
3	3	5	5	18	0	—	25	18CP82BC*81		18CP82@C*81		18CP82NC*81	
1/2	1/2	1	1	27	1	_	3	18DP82BA*81		18DP82@A*81		18DP82NA*81	
1	1	3	3	27	1	—	10	18DP82BB*81		18DP82@B*81		18DP82NB*81	
3	3	7½	71/2	27	1	—	25	18DP82BD*81		18DP82@D*81		18DP82ND*81	
71/2	71/2	10	10	27	1	—	30	18DP82BE*81		18DP82@E*81		18DP82NE*81	
_	_	15	15	40	_	13/4	40	18EP82BF*81		18EP82@F*81		18EP82NF*81	
10	10	_	—	40	_	13/4	50	18EP82BG*81		18EP82@G*81		18EP82NG*81	
_	_	20	20	45	2	_	40	18FP82BH*81		18FP82@H*81		18FP82NH*81	
10	15	25	25	45	2	—	50	18FP82BJ*81		18FP82@J*81		18FP82NJ*81	
10	15	30	30	60	_	21/2	50	18GP82BK*81		18GP82@K*81		18GP82NK*81	
15	20	—	—	60	_	21/2	100	18GP82BL*81		18GP82@L*81		18GP82NL*81	
_	_	30	30	90	3	_	50	18HP82BM*81		18HP82@M*81		18HP82NM*81	
25	30	50	50	90	3	_	125	18HP82BN*81		18HP82@N*81		18HP82NN*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

Siemens Industry, Inc. Industrial Controls Catalog

① For conduit hubs and conversion instructions, see page 9/106.

Reversing Heavy Duty Starters Solid State Overload, Class 22

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage	Letter J
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. 	120 110–120/220–240 [©] 200–208	F A D
 Dimensions see page 9/137 open and 9/156 enclosed. Wiring Diagrams see page 9/170. 	220–240 277 220–240/440–480 [©] 440–480	G L C H
	575–600 For other voltages and fre	E equencies,

Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max I	Нр					Overload		Enclosure											
								Open Type Standard Auxili Contacts®	iary	NEMA 1 General Purpos	ee	NEMA 4/4X S Watertight, Dust Corrosion Resista 304 Stainless Sta	-tight, ant	NEMA 4X Fiberglass Watertight, D Corrosion Res	ust-tight	NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor, Outdoor Use		NEMA 12 NEMA 3/3R Industrial Use Weatherproof (Field Convertil	
	230 Volts			NEMA Size		Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	00	<u> </u>	0.25-1	А	22BUA32A*		22BUA32B*		Use Size 0	_	Use Size 0	_	Use Size 0	<u> </u>	Use Size 0	l —
1/2	3/4	1½	2	00	_	0.75-3.4	Α	22BUB32A*		22BUB32B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_
1½	1½	2	_	00	_	3-12	A1	22BUC32A*		22BUC32B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_
1/6	1/6	1/3	1/2	0	_	0.25-1	А	22CUA32A*		22CUA32B*		22CUA32W*		22CUA32F*		22CUA32H*		22CUA320*	
1/2	3/4	1½	2	0	_	0.75-3.4	Α	22CUB32A*		22CUB32B*		22CUB32W*		22CUB32F*		22CUB32H*		22CUB320*	
2	2	5	5	0	_	3-12	A1	22CUC32A*		22CUC32B*		22CUC32W*		22CUC32F*		22CUC32H*		22CUC320*	
3	3	_	_	0	_	5.5-22	A1	22CUD32A*		22CUD32B*		22CUD32W*		22CUD32F*		22CUD32H*		22CUD320*	
1/6	1/6	1/3	1/2	1	F	0.25-1	А	22DUA32A*		22DUA32B*		22DUA32W*		22DUA32F*		22DUA32H*		22DUA320*	
1/2	3/4	1½	2	1	_	0.75-3.4	Α	22DUB32A*		22DUB32B*		22DUB32W*		22DUB32F*	1	22DUB32H*		22DUB320*	
2	2	5	5	1	_	3–12	A1	22DUC32A*		22DUC32B*		22DUC32W*		22DUC32F*		22DUC32H*		22DUC320*	
3	3	10	10	1	_	5.5-22	A1	22DUD32A*		22DUD32B*		22DUD32W*		22DUD32F*		22DUD32H*		22DUD320*	
7½	7½	_	_	1	_	10-40	A1	22DUE32A*		22DUE32B*		22DUE32W*		22DUE32F*		22DUE32H*		22DUE320*	
10	10	15	15	_	1¾	10-40	A1	22EUE32A*		22EUE32B*		22EUE32W*		22EUE32F*		22EUE32H*		22EUE320*	
10	15	25	25	2	_	13-52	В	22FUF32A*		22FUF32B*		22FUF32W*		22FUF32F*		22FUF32H*		22FUF320*	
15	20	30	30	_	2½	25-100	В	22GUG32A*		22GUG32B*		22GUG32W*		22GUG32F*		22GUG32H*		22GUG320*	
25	30	50	50	3		25-100	В	22HUG32A*		22HUG32B*		22HUG32W*		22HUG32F*		22HUG32H*		22HUG320*	
30	40	75	75	_	3½	50-200	В	22IUH32A*		22IUH32B*		22IUH32W*		22IUH32F*		22IUH32H*		22IUH320*	
40	50	100	100	4	_	50-200	В	22JUH32A*		22JUH32B*		22JUH32W*		22JUH32F*		22JUH32H*		22JUH320*	
75	100	200	200	5	_	55-250	_	22LPU32A*		22LPU32B*		22LPU32E*3		_	_	_	_	22LPU320*	
150	200	400	400	6	<u> </u>	160-630	_	22MPX32A*		22MPX32B*		22MPX32E*3		<u> </u>	_	_	_	22MPX320*	
_	300	600	600	7@	<u> </u>	400-1220	A1+CT	22NUN32A*		22NUN32B*		_	_	_	_	_	_	22NUN320*	
	450	900	900	8⑤	_	400-1220	A1+CT	22PUN32A*		22PUN32B*		_	<u> </u>	_	l _	_	_	22PUN320*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in size 5-8 starters. ② For conduit hubs and conversion instructions, see page 9/106.

³ Enclosure is rated only NEMA 4 (painted steel).

Only available
 F coil 100-250V AC 50/60Hz, or DC H coil 150-500V AC 50/60Hz, or DC

⑤ Only available F coil 100-250V AC 50/60Hz, or DC

⁽⁶⁾ Auxiliary contacts 22B-22E 4th pole built-in 22F-22J 2 NO & 2 NC

Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 22

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120. Single phase starters require 1 heater ele-	120	F
ment. 3-phase starters require 3 heater elements.	110-120/220-240	Α
► Field Modification Kits see page 9/100.	200–208	D
	220–240	G
► Factory Modifications see page 9/115.	277	L
▶ Dimensions see pages 9/137 open and 9/156 enclosed.	220-240/440-480	C H
➤ Wiring Diagrams see page 9/169.	440–480 575–600	E E
► Replacement Parts see page 9/127.	For other voltages and fr	
► For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact.	see Factory Modification	ıs page 9/115.

Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Opt	,,, ,	ype	~ ~	rtarra	uiu		til Elicios	aic, c	i ilase, e	1 010								
Max	Нр						Enclosure											
				Cont- actor			Open Type [®])	NEMA 1 General Purpose		NEMA 4/4X Stainless® Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fibe Watertight, Du Corrosion Resi Indoor/Outdoor	st-tight stant	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class III Groups E, F & G Class III Bolted Enclosures		NEMA 3/3R NEMA 3/3R Industrial Use Weatherproo	9
			575				Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1 ½	1½	2	2	9	00	_	22BP32A*81		22BP32B*81		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_
3	3	5	5	18	0	_	22CP32A*81		22CP32B*81		22CP32W*81		22CP32F*81		22CP32H*81		22CP320*81	
7 ½	7½	10	10	27	1	_	22DP32A*81		22DP32B*81		22DP32W*81		22DP32F*81		22DP32H*81		22DP320*81	
10	10	15	15	40		1 3/4	22EP32A*81		22EP32B*81		22EP32W*81		22EP32F*81		22EP32H*81		22EP320*81	
10	15	25	25	45	2	_	22FP32A*81		22FP32B*81		22FP32W*81		22FP32F*81		22FP32H*81		22FP320*81	
15	20	30	30	60		2½	22GP32A*81		22GP32B*81		22GP32W*81		22GP32F*81		22GP32H*81		22GP320*81	
25	30	50	50	90	3	_	22HP32A*81		22HP32B*81		22HP32W*81		22HP32F*81		22HP32H*81		22HP320*81	
30	40	75	75	115		3½	22IP32A*81		22IP32B*81		22IP32W*81		22IP32F*81		22IP32H*81		22IP320*81	
40	50	100	100	135	4		22JG32A*81		22JG32B*81		22JG32W*81		22JG32F*81		22JG32H*81		22JG320*81	

Open Type & Standard Width Enclosure, Single Phase, 3-Wire, 2-Pole[®]

Max H	łp			Enclosure											
				Open Type		NEMA 1		NEMA 4/4X S	tainless ^①	NEMA 4X Fib	erglass	NEMA 7 & 9		NEMA 12 ^①	
	208/	Contactor				General Purpose		Watertight, Du Corrosion Res 304 Stainless	istant	Watertight, Du Corrosion Res		NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 3/3R Industrial Use Weatherproof	
115 Volts	230 Volts	Amp Rating	NEMA Size	Catalog Number	List Price \$	Catalog Number			List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/3	1	9	00	22BP12A*81		22BP12B*81		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	
1	2	18	0	22CP12A*81		22CP12B*81		22CP12W*81		22CP12F*81		22CP12H*81		22CP120*81	
2	3	27	1	22DP12A*81		22DP12B*81		22DP12W*81		22DP12F*81		22DP12H*81		22DP120*81	
3	5	35	1P	22EP12A*81		22EP12B*81		22EP12W*81		22EP12F*81		22EP12H*81		22EP120*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating.

① For conduit hubs and conversion instructions, see page 9/106.

[©] Coil D, F, or G will be wired for Incoming Voltage.

J coil will be wired for 24V separate source. Coils E, H, and L do not apply to single phase starters.

³ Auxiliary contacts 22B-22E 4th pole built-in 22F-22J 2 NO & 2 NC

Combination Reversing Heavy Duty Starters

Non-Fusible, Class 25

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120.	120	F
► Fuse clips see page 9/116.	110-120/220-240 [®] 200-208	A D
► Field Modification Kits see page 9/100.	220–240	G
► Factory Modifications see page 9/115.	277 220–240/440–480 ^①	L
► Dimensions see page 9/158.	440–480	H
➤ Wiring Diagrams see page 9/171.	575–600	E
► Replacement Parts see page 9/127.	For other voltages and fre see Factory Modifications	
► For NO/NC SPDT contact on overload, replace "81" with "91". "81" indicates one NC contact.		, page 6, 110.

Standard Width Enclosure with Solid State Overload, 3-Phase, 3-Pole

Max H	lp					Overload			Enclosure							
								Disc.	NEMA 1 General Purpose		NEMA 4/4X Sta Watertight, Dust-tig Corrosion Resistant 304 Stainless Steel		NEMA 4X Fibe Watertight, Dust-ti Corrosion Resistan	ight	NEMA 12, NEMA 3/3R NEMA 4 Painted (thru si Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Rating	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	0	<u> </u>	0.25-1	А	30	25CUA92B*		25CUA92W*		25CUA92F*		25CUA92N*	
1/2	3/4	1½	2	0	_	0.75-3.4	А	30	25CUB92B*		25CUB92W*		25CUB92F*		25CUB92N*	
2	2	5	5	0	_	3-12	A1	30	25CUC92B*		25CUC92W*		25CUC92F*		25CUC92N*	
3	3	_	<u> </u>	0	_	5.5-22	A1	30	25CUD92B*		25CUD92W*		25CUD92F*		25CUD92N*	
%	1/6	1/3	1/2	1	_	0.25-1	А	30	25DUA92B*		25DUA92W*		25DUA92F*		25DUA92N*	
1/2	3/4	1½	2	1	<u> -</u>	0.75-3.4	Α	30	25DUB92B*		25DUB92W*		25DUB92F*		25DUB92N*	
2	2	5	5	1	_	3-12	A1	30	25DUC92B*		25DUC92W*		25DUC92F*		25DUC92N*	
3	3	10	10	1	_	5.5-22	A1	30	25DUD92B*		25DUD92W*		25DUD92F*		25DUD92N*	
7½	7½	_	_	1	_	10-40	A1	60	25DUE92B*		25DUE92W*		25DUE92F*		25DUE92N*	
10	10	15	15	_	1¾	10-40	A1	60	25EUE92B*		25EUE92W*		25EUE92F*		25EUE92N*	
10	15	25	25	2	_	13-52	В	60	25FUF92B*		25FUF92W*		25FUF92F*		25FUF92N*	
15	20	30	30	_	2½	25-100	В	100	25GUG92B*		25GUG92W*		25GUG92F*		25GUG92N*	
20	25	50	50	3	<u> </u>	25-100	В	100	25HUG92B*		25HUG92W*		25HUG92F*		25HUG92N*	Ì
30	40	75	75	_	3½	50-200	В	200	25IUH92B*		25IUH92W*		25IUH92F*		25IUH92N*	
40	50	100	100	4	_	50-200	В	200	25JUH92B*		25JUH92W*		25JUH92F*		25JUH92N*	
75	100	200	200	5	<u> </u>	55-250	_	400	25LPU92B*		25LPU92E*3		<u> </u>	_	25LPU92N*	
150	200	400	400	6	<u> </u>	160-630	<u> </u>	800	25MPX92B*		25MPX92E*3		<u> </u>	_	25MPX92N*	
	300	600	600	7@	<u> </u>	400-1220	A1+CT	1200	25NUN92B*		_	_	_	_	25NUN92N*	
	450	900	900	8©	<u> </u>	400-1220	A1+CT	1600	25PUN92B*		_	_	<u> </u>	_	25PUN92N*	

Standard Width Enclosure with Ambient Compensated Bimetal Overload, 3-Phase, 3-Pole

Max H	lp .							Enclosure								
				Cont- actor			Disc	NEMA 1 General Purpos	General Purpose		tainless ² st-tight stant teel	NEMA 4X Fibe Watertight, Dus Corrosion Resis	st-tight	NEMA 12® NEMA 3/3R NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight		
200 Volts	230 Volts	460 Volts	575 Volts	Amp Rating	NEMA Size	Half Size	Amp Rating	•		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
3	3	5	5	18	0	_	30	25CP92B*81	1 11			25CP92F*81		25CP92N*81		
7½	71/2	10	10	27	1	_	30	25DP92B*81		25DP92W*81		25DP92F*81		25DP92N*81		
10	10	15	15	40	_	1¾	60	25EP92B*81		25EP92W*81		25EP92F*81		25EP92N*81		
10	15	25	25	45	2	_	60	25FP92B*81		25FP92W*81		25FP92F*81		25FP92N*81		
15	20	30	30	60	_	21/2	100	25GP92B*81		25GP92W*81	/*81 25GP92F*8			25GP92N*81		
25	30	50	50	90	3	_	100	25HP92B*81		25HP92W*81		25HP92F*81		25HP92N*81		
30	40	75	75	115	_	3½	200	25IP92B*81		25IP92W*81		25IP92F*81		25IP92N*81		
40	50	100	100	135	4	_	200	25JP92B*81		25JP92W*81		25JP92F*81		25JP92N*81		

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

① Dual voltage coils not available in starter sizes 5-8.

② For conduit hubs and conversion instructions, see page 9/106.

³ Enclosure is NEMA Type 4 (painted steel).

⁴ F coil 100-250V AC 50/60Hz, or DC,

H coil 150-500V AC 50/60Hz, or DC

⁽⁵⁾ Only available F coil 100-250V AC 50/60Hz, or DC

Combination Reversing Heavy Duty Starters

MCP Type, Class 26

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Field Modification Kits see page 9/100.	120	F
► Factory Modifications see page 9/115.	110-120/220-240®	A
, , , , , , , , , , , , , , , , , , , ,	200–208	D
► Dimensions see page 9/158.	220–240	G
► Wiring Diagrams see page 9/171.	277	L
	220-240/440-480 [®]	С
► Replacement Parts see page 9/127.	440–480	Н
► For NO/NC SPDT contact on overload relay, replace "81" with "91".	575–600	E
"81" indicates one NC contact.	For other voltages and fre see Factory Modifications	

Standard Width Enclosure with Solid State Overload, 3-Phase, 3-Pole

Max	Нр						Overload		Enclosure									
						Motor Circuit			General Purpose		NEMA 4/4X S Watertight, Dust Corrosion Resista 304 Stainless Sta	-tight, ant	NEMA 4X Fi Watertight, Du: Corrosion Resis	st-tight	NEMA 7 & 9 NEMA 3 & 4 Div. 1 and Div. 2 Class I Groups 0 Class III Bolted Enclosur Indoor/Outdoor	2 C & D E, F & G	NEMA 12, NEMA 3/3R®, NEMA Painted (thru size 4) Industrial Use Weatherproof Watertight, Dust-tight	
200	230	460	575	NEMA	1		Amp	Frame	Catalog	List	Catalog	List	Catalog	List	Catalog	List	Catalog	List
	Volts						Range		Number	Price \$	Number	Price \$		Price \$	Number	Price \$	Number	Price \$
1/2	1/2	1	1	0	_	3	0.75-3.4	А	26CUB92B*		26CUB92W*		26CUB92F*		26CUB92H*		26CUB92N*	
2	2	5	5	0	<u> </u>	10	3-12	A1	26CUC92B*		26CUC92W*		26CUC92F*		26CUC92H*		26CUC92N*	
3	3	_	_	0	_	25	5.5-22	A1	26CUD92B*		26CUD92W*		26CUD92F*		26CUD92H*		26CUD92N*	
4	1/2	1	1	1	<u> </u>	3	0.75-3.4	А	26DUB92B*		26DUB92W*		26DUB92F*		26DUB92H*		26DUB92N*	
	2	5	5	1	_	10	3-12	A1	26DUC92B*		26DUC92W*		26DUC92F*		26DUC92H*		26DUC92N*	
3	3	7½	10	1	_	25	5.5-22	A1	26DUD92B*		26DUD92W*		26DUD92F*		26DUD92H*		26DUD92N*	
1½	7½	10	_	1	_	30	10-40	A1	26DUE92B*		26DUE92W*		26DUE92F*		26DUE92H*		26DUE92N*	
_	_	15	15	_	1¾	40	10-40	A1	26EUE92B*		26EUE92W*		26EUE92F*		26EUE92H*		26EUE92N*	
10	15	25	25	2	_	50	13-52	В	26FUF92B*		26FUF92W*		26FUF92F*		26FUF92H*		26FUF92N*	
15	20	30	30	_	2½	100	25-100	В	26GUG92B*		26GUG92W*		26GUG92F*		26GUG92H*		26GUG92N*	
25	30	50	50	3	_	125	25-100	В	26HUG92B*		26HUG92W*		26HUG92F*		26HUG92H*		26HUG92N*	
30	40	75	75	_	3½	125	50-200	В	26IUH92B*		26IUH92W*		26IUH92F*		26IUH92H*		26IUH92N*	
40	50	100	100	4	_	150	50-200	В	26JUH92B*		26JUH92W*		26JUH92F*		26JUH92H*		26JUH92N*	
50	75	150	200	5	_	250	55-250	_	26LPT92B*		26LPT92E*3		_	_	_	_	26LPT92N*	
75	100	200	<u> </u>	5	_	400	55-250	<u> </u>	26LPU92B*		26LPU92E*3		<u> </u>	—	_	_	26LPU92N*	
100	125	250	300	6	_	400	160-630	_	26MPW92B*		26MPW92E*3		<u> </u>	I —	_	_	26MPW92N*	
150	200	400	400	6	_	600	160-630	_	26MPX92B*		26MPX92E*3		_	—	_	—	26MPX92N*	
_	250	500	500	7*4	_	800	400-1220	A1+CT	26NUV92B*		<u> </u>	l –	<u> </u>	_	_	_	26NUV92N*	
	300	600	600	7*4	_	1000	400-1220	A1+CT	26NUY92B*			—	<u> </u>			_	26NUY92N*	
	400	800	800	8⑤		1200	400-1220	A1+CT	26PUW92B*		<u> </u>		_			l —	26PUW92N*	
_	450	900	900	8©	_	1600	400-1220	A1+CT	26PUZ92B*		_	_	<u> </u>	_	<u></u>	_	26PUZ92N*	

Standard Width Enclosure with Ambient Compensated Bimetal Overload, 3-Phase, 3-Pole

Stai	iuai	u vvi	utii	LIICI	Jaui	e with	Allibiei	IL GO	iiipeiisateu	Dillie	stai Overit	au, s	riiase, s	-r ole			
1/2	1/2	1	1	0	_	3	18		26CP92BA*81		26CP92WA*81		26CP92FA*81		26CP92HA*81	26CP92NA*81	
1	1	3	3	0		10	18		26CP92BB*81		26CP92WB*81		26CP92FB*81		26CP92HB*81	26CP92NB*81	
3	3	5	5	0	-	25	18		26CP92BC*81		26CP92WC*81		26CP92FC*81		26CP92HC*81	26CP92NC*81	
1/2	1/2	1	1	1	-	3	27		26DP92BA*81		26DP92WA*81		26DP92FA*81		26DP92HA*81	26DP92NA*81	
1	1	3	3	1	<u> </u>	10	27		26DP92BB*81		26DP92WB*81		26DP92FB*81		26DP92HB*81	26DP92NB*81	
3	3	71/2	71/2	1	<u> </u>	25	27		26DP92BD*81		26DP92WD*81		26DP92FD*81		26DP92HD*81	26DP92ND*81	
71/2	71/2	10	10	1	-	30	27		26DP92BE*81		26DP92WE*81		26DP92FE*81		26DP92HE*81	26DP92NE*81	
_	_	15	15	_	13/4	40	40		26EP92BF*81		26EP92WF*81		26EP92FF*81		26EP92HF*81	26EP92NF*81	
10	10	_	_	_	13/4	50	40		26EP92BG*81		26EP92WG*81		26EP92FG*81		26EP92HG*81	26EP92NG*81	
_	<u> </u>	20	20	2	I—	40	45		26FP92BH*81		26FP92WH*81		26FP92FH*81		26FP92HH*81	26FP92NH*81	
10	15	25	25	2	-	50	45		26FP92BJ*81		26FP92WJ*81		26FP92FJ*81		26FP92HJ*81	26FP92NJ*81	
10	15	30	30	_	21/2	50	60		26GP92BK*81		26GP92WK*81		26GP92FK*81		26GP92HK*81	26GP92NK*81	
15	20			_	21/2	100	60		26GP92BL*81		26GP92WL*81		26GP92FL*81		26GP92HL*81	26GP92NL*81	
_	_	30	30	3	_	50	90		26HP92BM*81		26HP92WIM*81		26HP92FM*81		26HP92HM*81	26HP92NM*81	
25	30	50	50	3	-	125	90		26HP92BN*81		26HP92WN*81		26HP92FN*81		26HP92HN*81	26HP92NN*81	
30	40	75	75		3½	125	115		26IP92BP*81		26IP92WP*81		26IP92FP*81		26IP92HP*81	26IP92NP*81	
40	50	100	100	4		150	135		26JP92BR*81		26JP92WR*81		26JP92FR*81		26JP92HR*81	26JP92NR*81	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code). ① Dual voltage coils not available in starter sizes 5-8.

 $[\]ensuremath{\mathfrak{D}}$ For conduit hubs and conversion instructions, see © For conduit nubs and conversion instruction page 9/106.

© Enclosure is NEMA Type 4 (painted steel).

© F coil 100-250V AC 50/60Hz, or DC,
H coil 150-500V AC 50/60Hz, or DC

⑤ Only available F coil 100-250V AC 50/60Hz, or DC

Two Speed Heavy Duty Starters

Features and Benefits

General

Features

- Rugged Industrial Design
- Dual Voltage, Dual Frequency Coils
- Compact Design
- Snap-On Front Removable Auxiliary Contacts
- Electrical and Mechanical Interlocks
- Half Sizes Space and Cost Savings
- Industrial Type Disconnect Operating Handle
- Visible Blade Disconnect Thru Size 4
- Adjustable Motor Circuit Protector
- 100,000 Amp Fault Protection with MCP or Class R Fuses
- Pilot Device Locations identified on All Enclosures
- UL Listed File #E14900
- CSA Certified File #LR6535

Applications

Multi-speed magnetic starters automatically reconnect multi-speed motor windings for the desired speed in response to a signal received from push button stations or other pilot devices.

These starters are available for two speed motors.

Consequent Pole multi-speed motors having two speeds on a single winding (consequent pole) require a starter which reconnects the motor leads to half the number of effective motor poles at the high speed point. In this type of motor, the low speed is one half the high speed.

Separate Windings motors having separate windings for each speed provide more varied speed combinations in that the low speed need not be one half the high speed.

Starters for separate winding motors consist of a starter unit for each speed.

Multi-speed motor starters are available for constant torque, variable torque and constant horsepower motors.

Constant Torque motors maintain constant torque at all speeds. Horsepower varies directly with speed. This type of motor is applicable to conveyors, mills and similar applications.

Variable Torque motors produce a torque characteristic which varies as the square of the speed. This type of

motor is applicable to fans, blowers and centrifugal pumps.

Constant Horsepower motors maintain constant horsepower at all speeds and therefore torque varies inversely with speed. This type of motor is applicable where the same horsepower is required at all speeds.

The higher current required at low speed requires derating on starters for constant horsepower applications. This type of motor is applicable to metal working machines such as drills, lathes, mills, bending machines, punch presses, and power wrenches.

Operation

Magnetic starters for multi-speed applications select the desired speed in accordance with the pilot control.

The shock to machinery upon the reduction of speed is greater than when the speed is increased. Therefore, the pilot control should be wired so that the stop button must be depressed before dropping to a lower speed or time delays should be used for applications requiring full automatic operations. The multi-speed controls are available with the necessary interlocks or relays to provide this type of operation.

These controls may be modified for compelling or acceleration pilot control.

Selective Control permits the operator to start the motor at any speed and to change to a higher speed by merely pushing a button. To change to a lower speed it is necessary to first depress the stop button and to then press the proper speed button. Selective control is a function of the pilot control selected and requires no starter modifications.

Compelling Control requires that the motor always be started at the lower speed and that the push buttons be operated in speed sequence to go to the next higher speed. To change to a lower speed, the stop button must be depressed and then the push buttons operated in speed sequence until the desired speed is reached. Compelling control can be added from the factory modification section page 9/118.

Acceleration Control provides that the motor be accelerated automatically with timers by progressively energizing the controls from the push button station from the lowest to highest speed. To change to a lower speed the stop button is depressed and then it is necessary to proceed as if starting from rest. Acceleration control can be added from the factory modification section page 9/118.

Deceleration Control provides that the motor be decelerated automatically with a timer when going from high speed to low speed. The timer allows the motor to decelerate from high speed to a lower speed before automatically restarting the motor in low speed. Deceleration control can be added from the factory modification section page 9/118.



Open Style Two Speed Starter (ESP100 Overload)



Open Style Two Speed Starter (Ambient Compensated Overload)

Constant or Variable Torque with Solid Overload, Class 30

Selection

+

Α

В

C

D

Ε

F

Н

9/31

Frame Size

Low Speed FLA Table

FLA



2S2W Starter (ESP200 Overload)

- **Ordering Information Coil Table** ► Replace the (*) with a letter from the coil table. Dual voltage coils 60Hz Voltage are wired on high voltage unless 24 specified on order. 120 ► Replace the (†) with the letter that 110-120/220-240 200-208 corresponds to the correct low speed FLA in the FLA table.² 220-240 277 ► Field Modification Kits see page 220-240/440-480 440-480 ► Factory Modifications see page 9/115.
 - 0,1 0.25 - 1F 0,1 0.75 - 3.4Α Α 0,1 3-12 A1 D 0,1 5.5-22 Α1 G 10-40 Α1 $0-1^3/4$ 2-3 13-52 В L С 2-3 25-100 Н $3^{1}/_{2}-4$ 50-200 В 575-600 For other voltages and frequencies, see Factory Modifications page 9/115.

Letter

Size

One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

Dimensions see page 9/145.Wiring Diagrams see page 9/172.

► Replacement Parts see page 9/127.

Max	Нр					Overload	i	Enclosure									
								Open Type Standard Auxiliary C	ontacts ^③	NEMA 1 General Purpose		NEMA 4/4X Stair Watertight, Dust-tigh Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiber Watertight, Dust-tig Corrosion Resistant		NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to	3/3R)
200	230	460	575	NEMA	Half	Amp	Frame	Catalog	-		List	Catalog	List	Catalog	List	Catalog	List
Volts	Volts	Volts	Volts	Size	Size	Range	Size	Number	nber Price \$ Nur		Price \$	Number	Price \$	Number	Price \$	Number	Price \$
1/2	3/4	1½	2	0	_	0.75-3.4	А	30CUB†32A2V*		30CUB†32B2V*		30CUB†32W2V*		30CUB†32F2V*		30CUB†3202V*	
2	2	5	5	0	_	3-12	A1	30CUC†32A2V*		30CUC†32B2V*		30CUC†32W2V*		30CUC†32F2V*		30CUC†3202V*	
3	3	_	_	0	_	5.5-22	A1	30CUD†32A2V*		30CUD†32B2V*		30CUD†32W2V*		30CUD†32F2V*		30CUD†3202V*	
1/2	3/4	1½	1½	1	<u> </u>	0.75-3.4	А	30DUB†32A2V*		30DUB†32B2V*		30DUB†32W2V*		30DUB†32F2V*		30DUB†3202V*	
2	2	5	5	1	_	3-12	A1	30DUC†32A2V*		30DUC†32B2V*		30DUC†32W2V*		30DUC†32F2V*		30DUC†3202V*	
3	3	10	10	1	_	5.5-22	A1	30DUD†32A2V*		30DUD†32B2V*		30DUD†32W2V*		30DUD†32F2V*		30DUD†3202V*	
7½	7½	_	_	1	_	10-40	A1	30DUE†32A2V*		30DUE†32B2V*		30DUE†32W2V*		30DUE†32F2V*		30DUE†3202V*	
10	10	15	15	_	1¾	10-40	A1	30EUE†32A2V*		30EUE†32B2V*		30EUE†32W2V*		30EUE†32F2V*		30EUE†3202V*	
10	15	25	25	2	_	13-52	В	30FUF†32A2V*		30FUF†32B2V*		30FUF†32W2V*		30FUF†32F2V*		30FUF†3202V*	
15	20	30	30	_	2½	25-100	В	30GUG†32A2V*		30GUG†32B2V*		30GUG†32W2V*		30GUG†32F2V*		30GUG†3202V*	
25	30	50	50	3	_	25-100	В	30HUG†32A2V*		30HUG†32B2V*		30HUG†32W2V*		30HUG†32F2V*		30HUG†3202V*	
30	40	75	75	_	3½	50-200	В	30IUH†32A2V*		30IUH†32B2V*		30IUH†32W2V*		30IUH†32F2V*		30IUH†3202V*	
40	50	100	100	4	<u> </u>	50-200	В	30JUH†32A2V*		30JUH†32B2V*		30JUH†32W2V*		30JUH†32F2V*		30JUH†3202V*	

Two Separate Windings, 3-Phase (Constant or Variable Torque)

		para			.90,			Unstant or	· aiia	olo Torquo,							
Max	Hp					Overload		Enclosure									
								Open Type® Standard Auxiliary C	ontacts	NEMA 1 General Purpose		NEMA 4/4X Stair Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel 316 Stainless Steel (C	t,	NEMA 4X Fiber Watertight, Dust-tig Corrosion Resistant	ht	NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to	3/3R)
200	230	460	575	NEMA	Half	Amp	Frame	Catalog			List	Catalog	List	Catalog	List	Catalog	List
	Volts		1			Range	Size				Price \$		Price \$	Number	Price \$	Number	Price \$
1/2	3/4	1½	2	0		0.75-3.4	Α	30CUB†32A1V*		30CUB†32B1V*		30CUB†32W1V*		30CUB†32F1V*		30CUB†3201V*	
2	2	5	5	0	_	3-12	A1	30CUC†32A1V*		30CUC†32B1V*		30CUC†32W1V*		30CUC†32F1V*		30CUC†3201V*	
3	3	_	_	0	_	5.5-22	A1	30CUD†32A1V*		30CUD†32B1V*		30CUD†32W1V*		30CUD†32F1V*		30CUD†3201V*	
1/2	3/4	1½	1½	1	_	0.75-3.4	А	30DUB†32A1V*		30DUB†32B1V*		30DUB†32W1V*		30DUB†32F1V*		30DUB†3201V*	
2	2	5	5	1	_	3-12	A1	30DUC†32A1V*		30DUC†32B1V*		30DUC†32W1V*		30DUC†32F1V*		30DUC†3201V*	
3	3	10	10	1	_	5.5-22	A1	30DUD†32A1V*		30DUD†32B1V*		30DUD†32W1V*		30DUD†32F1V*		30DUD†3201V*	
7½	7½	_	_	1	_	10-40	A1	30DUE†32A1V*		30DUE†32B1V*		30DUE†32W1V*		30DUE†32F1V*		30DUE†3201V*	
10	10	15	15	_	1¾	10-40	A1	30EUE†32A1V*		30EUE†32B1V*		30EUE†32W1V*		30EUE†32F1V*		30EUE†3201V*	
10	15	25	25	2	_	13-52	В	30FUF†32A1V*		30FUF†32B1V*		30FUF†32W1V*		30FUF†32F1V*		30FUF†3201V*	
15	20	30	30	_	2½	25-100	В	30GUG†32A1V*		30GUG†32B1V*		30GUG†32W1V*		30GUG†32F1V*		30GUG†3201V*	
25	30	50	50	3	_	25-100	В	30HUG†32A1V*		30HUG†32B1V*		30HUG†32W1V*		30HUG†32F1V*		30HUG†3201V*	
30	40	75	75	_	3½	50-200	В	30IUH†32A1V*		30IUH†32B1V*		30IUH†32W1V*		30IUH†32F1V*		30IUH†3201V*	
40	50	100	100	4	_	50-200	В	30JUH†32A1V*		30JUH†32B1V*		30JUH†32W1V*		30JUH†32F1V*		30JUH†3201V*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Siemens Industry, Inc. Industrial Controls Catalog 2

1

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① For conduit hubs and conversion instructions, see page 9/106.

② If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

③ Auxiliary contacts 30C-30E 4th pole built-in 30F-30J 2 NO & 2 NC

Constant HP with Solid Overload, Class 30

Selection



2S2W Starter (ESP200 Overload)

Ordering Information	Coil Table		High/Lo	ow Speed	d FLA Tabl	e [®]
► Replace the (*) with a letter from the coil table. Dual voltage coils	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†
are wired on high voltage unless specified on order.	24 120	J F	0,1 0,1	0.25–1 0.75–3.4	A A	A B
► Replace the (†) with the letter that corresponds to the correct FLA in High/Low Speed FLA Table. [®]	110–120/220–240 200–208 220–240	A D G	0,1 0,1 0-1 ³ / ₄	3–12 5.5–22 10–40	A1 A1 A1	C D E
► Field Modification Kits see page 9/100.	277 220–240/440–480	C L	2-3 2-3 3 ¹ /2-4	13–52 25–100	B B	F G

► Factory Modifications see page

9/115.

▶ Dimensions see page 9/145.

► Wiring Diagrams see page 9/172.

► Replacement Parts see page 9/127.

For other voltages and frequencies, see Factory Modifications page 9/115.

575-600

Ε

* First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50~% of high speed FLA.

One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max H	l p					Enclosure								
						Open Type Standard Auxiliary Con	itacts®	NEMA 1 General Purpose		NEMA 4/4X Stainle Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	ess [®]	NEMA 4X Fibergl Watertight, Dust-tight Corrosion Resistant	 NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to 3/	/3R)
200 Volts		460 Volts			1	Catalog Number	ber Price \$ Nu		List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$
2	2	3	3	0	_	30CU1132A2H*	†32A2H* 30CU			30CU††32W2H*		30CU††32F2H*	30CU113202H*	
5	5	7½	7½	1	_	30DU††32A2H*	132A2H* 30CU			30DU††32W2H*		30DU††32F2H*	30DU††3202H*	
7½	7½	10	10	_	1¾	30EU††32A2H*		30EU††32B2H*		30EU††32W2H*		30EU††32F2H*	30EU††3202H*	
7½	10	20	20	2	_	30FU††32A2H*		30FU††32B2H*		30FU††32W2H*		30FU††32F2H*	30FU††3202H*	
10	15	25	25	_	2½	30GU††32A2H*		30GU††32B2H*		30GU††32W2H*		30GU††32F2H*	30GU††3202H*	
20	25	40	40	3	_	30HU††32A2H*		30HU††32B2H*		30HU††32W2H*		30HU††32F2H*	30HU††3202H*	
25	30	50	50	_	3½	30IU††32A2H*		30IU††32B2H*		30IU††32W2H*		30IU††32F2H*	30IU††3202H*	
30	40	75	75	4	_	30JU††32A2H*		30JU††32B2H*		30JU††32W2H*		30JU††32F2H*	30JU††3202H*	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max I	lp .					Enclosure								
						Open Type Standard Auxiliary Con	tacts③	NEMA 1 General Purpose		NEMA 4/4X Stainle Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	ess [®]	NEMA 4X Fibergl Watertight, Dust-tight Corrosion Resistant	 NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to 3/	/3R)
200 Volts	230 Volts				Half Size	Catalog Number	ber Price \$ Num		List Price \$	Catalog Number	List Price \$	Catalog Number	Catalog Number	List Price \$
2	2	3	3	0	_	30CU1132A1H*				30CU††32W1H*		30CU††32F1H*	30CU††3201H*	
5	5	7½	7½	1	_	30DU††32A1H*		30DU††32B1H*		30DU††32W1H*		30DU††32F1H*	30DU††3201H*	
7½	7½	10	10	_	13/4	30EU††32A1H*		30EU††32B1H*		30EU††32W1H*		30EU††32F1H*	30EU††3201H*	
7½	10	20	20	2	_	30FU††32A1H*		30FU††32B1H*		30FU††32W1H*		30FU††32F1H*	30FU††3201H*	
10	15	25	25	_	2½	30GU††32A1H*		30GU††32B1H*		30GU††32W1H*		30GU††32F1H*	30GU††3201H*	
20	25	40	40	3	_	30HU††32A1H*		30HU††32B1H*		30HU††32W1H*		30HU††32F1H*	30HU††3201H*	
25	30	50	50		3½	30IU††32A1H*		30IU††32B1H*		30IU††32W1H*		30IU††32F1H*	30IU††3201H*	
30	40	75	75	4	_	30JU††32A1H*		30JU††32B1H*		30JU††32W1H*		30JU††32F1H*	30JU††3201H*	

① For conduit hubs and conversion instructions, see page 9/106.

[@] First (†) for high speed, second (†) for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

³ Auxiliary contacts 30C-30E 4th pole built-in 30F-30J 2 NO & 2 NC

Constant or Variable Torque with Ambient Compensated Bimetal Overload, Class 30

Selection

For other voltages and frequencies,

see Factory Modifications page 9/115.



2S2W starter (Amb. Comp. Bimetal OL) **Ordering Information** Coil Table 60Hz Voltage Letter Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order. 24 ► Heater elements see page 9/120 (6 required)^② 120 F Field Modification Kits see page 9/100. Α 110-120/220-240 D 200-208 Factory Modifications see page 9/115. 220-240 G Dimensions see pages 9/138 open and 9/145 enclosed. 277 L С Wiring Diagrams see page 9/172. 220-240/440-480 440-480 Н Replacement Parts see page 9/127. 575-600 Ε For NO/NC SPDT contact on overload relay, replace "81" with "91".

One Winding Consequent Pole, 3 Phase (Constant or Variable Torque)

"81" indicates one NC contact.

Max I	łp						Enclosure									
200	230	460	575	Cont- actor Amp	NEMA	Half	Open Type [®]	Open Type ^③ Catalog Number ListPrice\$		1	NEMA 4/4X Sta Watertight, Dust Corrosion Resista 304 Stainless Sta	tight ant	NEMA 4X Fibe Watertight, Dus Corrosion Resis	t-tight	NEMA 12 ^① NEMA 3/3R Industrial Use Weatherproof	
Volts	Volts	Volts		Rating		Size		List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
3	3	5	5	18	0	_	30CP32A2V*81				30CP32W2V*81		30CP32F2V*81		30CP3202V*81	
71/2	7½	10	10	27	1	_	30DP32A2V*81		30DP32B2V*81		30DP32W2V*81		30DP32F2V*81		30DP3202V*81	
10	10	15	15	40	_	13/4	30EP32A2V*81		30EP32B2V*81		30EP32W2V*81		30EP32F2V*81		30EP3202V*81	
10	15	25	25	45	2	_	30FP32A2V*81		30FP32B2V*81		30FP32W2V*81		30FP32F2V*81		30FP3202V*81	
15	20	30	30	60	_	21/2	30GP32A2V*81		30GP32B2V*81		30GP32W2V*81		30GP32F2V*81		30GP3202V*81	
25	30	50	50	90	3	_	30HP32A2V*81		30HP32B2V*81		30HP32W2V*81		30HP32F2V*81		30HP3202V*81	
30	40	75	75	115	_	3½	30IP32A2V*81		30IP32B2V*81		30IP32W2V*81		30IP32F2V*81		30IP3202V*81	
40	50	100	100	135	4	_	30JG32A2V*81		30JG32B2V*81		30JG32W2V*81		30JG32F2V*81		30JG3202V*81	

Two Separate Windings, 3-Phase (Constant or Variable Torque)

Max I	łр						Enclosure									
200	230	460	575	Cont- actor Amp	NEMA	Half	Open Type [®]		NEMA 1 General Purpose		NEMA 4/4X Sta Watertight, Dust Corrosion Resist 304 Stainless Sta	-tight ant	NEMA 4X Fibel Watertight, Dust Corrosion Resist	-tight	NEMA 12 ^① NEMA 3/3R Industrial Use Weatherproof	
Volts	Volts	Volts	Volts	Rating		Size		talog Number List Price\$ (List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
3	3	5	5	18	0	_	30CP32A1V*81		30CP32B1V*81		30CP32W1V*81		30CP32F1V*81		30CP3201V*81	
7½	7½	10	10	27	1	_	30DP32A1V*81		30DP32B1V*81		30DP32W1V*81		30DP32F1V*81		30DP3201V*81	
10	10	15	15	40	_	13/4	30EP32A1V*81		30EP32B1V*81		30EP32W1V*81		30EP32F1V*81		30EP3201V*81	
10	15	25	25	45	2	_	30FP32A1V*81		30FP32B1V*81		30FP32W1V*81		30FP32F1V*81		30FP3201V*81	
15	20	30	30	60	_	21/2	30GP32A1V*81		30GP32B1V*81		30GP32W1V*81		30GP32F1V*81		30GP3201V*81	
25	30	50	50	90	3	_	30HP32A1V*81		30HP32B1V*81		30HP32W1V*81		30HP32F1V*81		30HP3201V*81	
30	40	75	75	115		3½	30IP32A1V*81		30IP32B1V*81		30IP32W1V*81		30IP32F1V*81		30IP3201V*81	
40	50	100	100	135	4	_	30JG32A1V*81		30JG32B1V*81		30JG32W1V*81		30JG32F1V*81		30JG3201V*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① For conduit hubs and conversion instructions, see page 9/106.

② If motor FLA are unknown, select heater elements on the basis that low speed FLA will be no greater than 50% of high speed FLA.

³ Auxiliary contacts 30C-30E 4th pole built-in

Constant HP with Ambient Compensated Bimetal Overload, Class 30

"81" indicates one NC contact.

Selection



2S2W starter (Amb. Comp. Bimetal OL)

Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120 (6 required) [®]	120	F
► Field Modification Kits see page 9/100.	110-120/220-240	Α
1 3 ,	200–208	D
► Factory Modifications see page 9/115.	220–240	G
► Dimensions see pages 9/138 open and 9/145 enclosed.	277	L
	220-240/440-480	С
▶ Wiring Diagrams see page 9/172.	440–480	Н
► Replacement Parts see page 9/127.	575–600	E
For NO/NC SPDT contact on overload relay, replace "81" with "91".	For other voltages and fr see Factory Modification	

One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max	Нр						Enclosure									
				Cont- actor			Open Type [®]			1	NEMA 4/4X Sta Watertight, Dust Corrosion Resist 304 Stainless St	-tight ant	NEMA 4X Fibe Watertight, Dust Corrosion Resist	t-tight	NEMA 12 ¹ NEMA 3/3R Industrial Use Weatherproof	
200 Volts	230 Volts	460 Volts		Amp Rating	NEMA Size	Half Size	Catalog Number			List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
2	2	3	3	18	0	_	30CP32A2H*81		30CP32B2H*81		30CP32W2H*81		30CP32F2H*81		30CP3202H*81	
5	5	7½	7½	27	1	_	30DP32A2H*81		30DP32B2H*81		30DP32W2H*81		30DP32F2H*81		30DP3202H*81	
71/2	71/2	10	10	40	_	13/4	30EP32A2H*81		30EP32B2H*81		30EP32W2H*81		30EP32F2H*81		30EP3202H*81	
7½	10	20	20	45	2	_	30FP32A2H*81		30FP32B2H*81		30FP32W2H*81		30FP32F2H*81		30FP3202H*81	
10	15	25	25	60	_	21/2	30GP32A2H*81		30GP32B2H*81		30GP32W2H*81		30GP32F2H*81		30GP3202H*81	
20	25	40	40	90	3	_	30HP32A2H*81		30HP32B2H*81		30HP32W2H*81		30HP32F2H*81		30HP3202H*81	
25	30	50	50	115	_	3½	30IP32A2H*81		30IP32B2H*81		30IP32W2H*81		30IP32F2H*81		30IP3202H*81	
30	40	75	75	135	4	_	30JG32A2H*81		30JG32B2H*81		30JG32W2H*81		30JG32F2H*81		30JG3202H*81	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max	Нр						Enclosure									
200	230	460	575	Cont- actor Amp	NEMA	Half	Open Type [®]		NEMA 1 General Purpose		NEMA 4/4X Sta Watertight, Dust- Corrosion Resista 304 Stainless Ste	tight int	NEMA 4X Fiber Watertight, Dust Corrosion Resista	-tight	NEMA 12 ^① NEMA 3/3R Industrial Use Weatherproof	
Volts	Volts					Size	Catalog Number			List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
2	2	3	3	18	0	_	30CP32A1H*81		30CP32B1H*81		30CP32W1H*81		30CP32F1H*81		30CP3201H*81	
5	5	71/2	7½	27	1	_	30DP32A1H*81		30DP32B1H*81		30DP32W1H*81		30DP32F1H*81		30DP3201H*81	
71/2	7½	10	10	40	_	13/4	30EP32A1H*81		30EP32B1H*81		30EP32W1H*81		30EP32F1H*81		30EP3201H*81	
71/2	10	20	20	45	2	_	30FP32A1H*81		30FP32B1H*81		30FP32W1H*81		30FP32F1H*81		30FP3201H*81	
10	15	25	25	60	_	21/2	30GP32A1H*81		30GP32B1H*81		30GP32W1H*81		30GP32F1H*81		30GP3201H*81	
20	25	40	40	90	3	_	30HP32A1H*81		30HP32B1H*81		30HP32W1H*81		30HP32F1H*81		30HP3201H*81	
25	30	50	50	115	_	31/2	30IP32A1H*81		30IP32B1H*81		30IP32W1H*81		30IP32F1H*81		30IP3201H*81	
30	40	75	75	135	4	_	30JG32A1H*81		30JG32B1H*81		30JG32W1H*81		30JG32F1H*81		30JG3201H*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① For conduit hubs and conversion instructions, see page 9/106.

② If motor FLA are unknown, select heater element on the basis that low speed FLA will be no greater than 50% of high speed FLA.

③ Auxiliary contacts 30C-30E 4th pole built-in 30F-30J 2 NO & 2 NC

Combination Two Speed Heavy Duty Starters Non-Fusible, Constant or Variable Torque with Solid Overload, Class 32

Selection



Ordering Information	Coil Table		Low S	Speed FL	A Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	†
are wired on high voltage unless specified on order.	24 120	J	0,1 0.1	0.25–1 0.75–3.4	A A	A B
► Replace the (†) with the letter that corresponds to the correct low speed FLA in the FLA table.®	110-120/220-240 ^① 200-208	A D	0,1 0,1	3–12 5.5–22	A1 A1	C D
► Fuse clips see page 9/116.	220–240 277	G L	0-1 ³ / ₄ 2-3	10–40 13–52	A1 B	E F
► Field Modification Kits see page 9/100.	220-240/440-480 ^① 440-480	H	2-3 3 ¹ /2-4	25–100 50–200	B B	G H
► Factory Modifications see page 9/115.	575–600	E				
 Dimensions see page 9/160. Wiring Diagrams see page 9/172. Replacement Parts see page 9/127. 	For other voltages and fre see Factory Modifications					

One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

					1	l		1	I							
Max I	lp					Overload	<u> </u>]	Enclosure							
								Disc.	NEMA 1 General Purpose	General Purpose V C 31		SS ²	NEMA 4X Fibergla Watertight, Dust-tight Corrosion Resistant	ass	NEMA 12, NEMA 3 NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	/3 R ②,
200	230	460	575	NEMA	Half	Amp	Frame	Amp	Catalog	atalog List Ca		List	Catalog	List	Catalog	List
Volts	Volts							Range	Number			Price \$	Number	Price \$	Number	Price \$
1/2	3/4	1½	2	0		0.75-3.4	Α	30	32CUB†92B2V2*		32CUB†92W2V2*		32CUB†92F2V2*		32CUB†92N2V2*	
2	2	5	5	0	_	3-12	A1	30	32CUC†92B2V2*		32CUC†92W2V2*		32CUC†92F2V2*		32CUC†92N2V2*	
3	3	_	_	0	_	5.5-22	A1	30	32CUD†92B2V2*		32CUD†92W2V2*		32CUD†92F2V2*		32CUD†92N2V2*	
1/2	3/4	1½	1½	1		0.75-3.4	А	30	32DUB†92B2V2*		32DUB†92W2V2*		32DUB†92F2V2*		32DUB†92N2V2*	
2	2	5	5	1	_	3-12	A1	30	32DUC†92B2V2*		32DUC†92W2V2*		32DUC†92F2V2*		32DUC†92N2V2*	
3	3	10	10	1	_	5.5-22	A1	30	32DUD†92B2V2*		32DUD†92W2V2*		32DUD†92F2V2*		32DUD†92N2V2*	
7½	7½	_	_	1	_	10-40	A1	60	32DUE†92B2V2*		32DUE†92W2V2*		32DUE†92F2V2*		32DUE†92N2V2*	
10	10	15	15	_	1¾	10-40	A1	60	32EUE†92B2V2*		32EUE†92W2V2*		32EUE†92F2V2*		32EUE†92N2V2*	
10	15	25	25	2	_	13-52	В	60	32FUF†92B2V2*		32FUF†92W2V2*		32FUF†92F2V2*		32FUF†92N2V2*	
15	20	30	30	_	2½	25-100	В	100	32GUG†92B2V2*		32GUG†92W2V2*		32GUG†92F2V2*		32GUG†92N2V2*	
20	25	50	50	3	_	25-100	В	100	32HUG†92B2V2*		32HUG†92W2V2*		32HUG†92F2V2*		32HUG†92N2V2*	
30	40	75	75	<u> </u>	3½	50-200	В	200	32IUH†92B2V2*		32IUH†92W2V2*		32IUH†92F2V2*		32IUH†92N2V2*	
40	50	100	100	4	_	50-200	В	200	32JUH†92B2V2*		32JUH†92W2V2*		32JUH†92F2V2*		32JUH†92N2V2*	

Max I	-lp					Overload			Enclosure							
								Disc.	NEMA 1 General Purpose			SS [©]	NEMA 4X Fibergla Watertight, Dust-tight Corrosion Resistant	ass	NEMA 12, NEMA 3 NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	3/3R ² ,
200	230	460	575	NEMA	Half	Amp	Frame	Amp	Catalog List C		Catalog	List	Catalog	List	Catalog	List
Volts	Volts	Volts	Volts	Size	Size	Range	Size	Range	Number	Price \$	Number	Price \$	Number	Price \$	Number	Price \$
1/2	3/4	1½	2	0	_	0.75-3.4	А	30	32CUB†92B1V2*		32CUB†92W1V2*		32CUB†92F1V2*		32CUB†92N1V2*	
2	2	5	5	0	_	3-12	A1	30	32CUC†92B1V2*		32CUC†92W1V2*		32CUC†92F1V2*		32CUC†92N1V2*	
3	3	_	_	0	_	5.5-22	A1	30	32CUD†92B1V2*		32CUD†92W1V2*		32CUD†92F1V2*		32CUD†92N1V2*	
1/2	3/4	1½	1½	1	_	0.75-3.4	А	30	32DUB†92B1V2*		32DUB†92W1V2*		32DUB†92F1V2*		32DUB†92N1V2*	
2	2	5	5	1	_	3-12	A1	30	32DUC†92B1V2*		32DUC†92W1V2*		32DUC†92F1V2*		32DUC†92N1V2*	
3	3	10	10	1	_	5.5-22	A1	30	32DUD†92B1V2*		32DUD†92W1V2*		32DUD†92F1V2*		32DUD†92N1V2*	
7½	7½		_	1	_	10-40	A1	60	32DUE†92B1V2*		32DUE†92W1V2*		32DUE†92F1V2*		32DUE†92N1V2*	
10	10	15	15	_	1¾	10-40	A1	60	32EUE†92B1V2*		32EUE†92W1V2*		32EUE†92F1V2*		32EUE†92N1V2*	
10	15	25	25	2	_	13-52	В	60	32FUF†92B1V2*		32FUF†92W1V2*		32FUF†92F1V2*		32FUF†92N1V2*	
15	20	30	30	_	2½	25-100	В	100	32GUG†92B1V2*		32GUG†92W1V2*		32GUG†92F1V2*		32GUG†92N1V2*	
20	25	50	50	3	_	25-100	В	100	32HUG†92B1V2*		32HUG†92W1V2*		32HUG†92F1V2*		32HUG†92N1V2*	
30	_	75	75	<u> </u>	3½	50-200	В	200	32IUH†92B1V2*		32IUH†92W1V2*		32IUH†92F1V2*		32IUH†92N1V2*	
40	50	100	100	4	_	50-200	В	200	32JUH†92B1V2*		32JUH†92W1V2*		32JUH†92F1V2*		32JUH†92N1V2*	

① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see

③ If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

Combination Two Speed Heavy Duty Starters

Non-Fusible, Constant Horsepower with Solid State Overload, Class 32

Selection



•	Replace the (*) with a letter from
	the coil table. Dual voltage coils are
	wired on high voltage unless
	specified on order.

Ordering Information

- ► Replace the (†) with the letter that corresponds to the correct FLA in the High/Low Speed FLA Table.[®]
- ► Fuse clips see page 9/116.
- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ► Dimensions see page 9/160.
- ► Wiring Diagrams see page 9/172.
- ► Replacement Parts see page 9/127.

s see page 9/1/2. frequencies see Factory
Modifications page 9/115.

Coil Table

For other voltages and

OLR 60Hz Voltage Size FLA Frame Size Letter 24 0,1 0.25-1 Α Α 0.75 - 3.4В 120 F 0,1 Α 110-120/220-240^① Α 0,1 3-12 A1 С D D 5.5 - 22200-208 0,1 Α1 220-240 G 0-13/4 10-40 Α1 Ε F 13-52 2-3 277 L В 220-240/440-480^① С 2-3 25-100 В G 440-480 Н $3^{1}/_{2}-4$ 50-200 В Н 575-600

> * First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.

High/Low Speed FLA Table[®]

One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max I	łр					Overload			Enclosure						
								Disc.	NEMA 1 General Purpose		NEMA 4/4X Stainle Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	SS ^②	NEMA 4X Fibergla Watertight, Dust-tight Corrosion Resistant	NEMA 12, NEMA 3, NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	/3R ² ,
	230 Volts		l		Half Size		Frame Size	Amp	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number		List Price \$
2	2	3	3	0	_		_		32CU††92B2H2*		32CU††92W2H2*	4054.00	32CU††92F2H2*	32CU††92N2H2*	
5	5	7½	7½	1	_	_	_	30	32DU††92B2H2*		32DU††92W2H2*	4173.00	32DU††92F2H2*	32DU††92N2H2*	
7½	7½	10	10	_	1¾	_	_	60	32EU††92B2H2*		32EU††92W2H2*	4873.00	32EU††92F2H2*	32EU††92N2H2*	
7½	10	20	20	2	_	_	_	60	32FU††92B2H2*		32FU††92W2H2*	6146.00	32FU††92F2H2*	32FU††92N2H2*	
10	15	25	25	_	2½	_	_	100	32GU††92B2H2*		32GU††92W2H2*	7219.00	32GU††92F2H2*	32GU††92N2H2*	
20	25	40	40	3				100	32HU††92B2H2*		32HU††92W2H2*	9321.00	32HU††92F2H2*	32HU††92N2H2*	
25	30	50	50	_	3½		_	200	32IU††92B2H2*		32IU††92W2H2*	18079.00	32IU††92F2H2*	32IU††92N2H2*	
30	40	75	75	4	_	_	_	200	32JU††92B2H2*		32JU††92W2H2*	19263.00	32JU††92F2H2*	32JU††92N2H2*	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max I	łр					Overload			Enclosure							
								Disc.	NEMA 1 General Purpose		NEMA 4/4X Stainle Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	SS ²	NEMA 4X Fibergla Watertight, Dust-tight Corrosion Resistant	iss	NEMA 12, NEMA 3, NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	/ 3R ②,
			575 Volts			Amp Range	Frame	Amp	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	0	_	_	_	30	32CU††92B1H2*		32CU††92W1H2*		32CU††92F1H2*		32CU††92N1H2*	
5	5	7½	7½	1	_	_	_	30	32DU††92B1H2*		32DU††92W1H2*		32DU††92F1H2*		32DU††92N1H2*	
7½	7½	10	10	_	1¾	_	_	60	32EU††92B1H2*		32EU††92W1H2*		32EU††92F1H2*		32EU††92N1H2*	
7½	10	20	20	2	_	_	_	60	32FU††92B1H2*		32FU††92W1H2*		32FU††92F1H2*		32FU††92N1H2*	
10	15	25	25	_	2½	_	_	100	32GU††92B1H2*		32GU††92W1H2*		32GU††92F1H2*		32GU††92N1H2*	
20	25	40	40	3		_	_	100	32HU††92B1H2*		32HU††92W1H2*		32HU††92F1H2*		32HU††92N1H2*	
25	30	50	50	_	3½	_	_	200	32IU††92B1H2*		32IU††92W1H2*		32IU††92F1H2*		32IU††92N1H2*	
30	40	75	75	4		_	_	200	32JU††92B1H2*		32JU††92W1H2*		32JU††92F1H2*		32JU††92N1H2*	

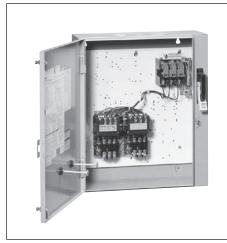
① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see page 9/106.

③ First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

Combination Two Speed Heavy Duty Starters Non-Fusible, Constant or Variable Torque with Ambient Compensated Bimetal Overload, Class 32

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil	60Hz Voltage	Letter
table. Dual voltage coils are wired on high	24	J
voltage unless specified on order.	120	F
► Heater elements see page 9/120. (6 required)	110-120/220-240 ^①	Α
	200–208	D
► Fuse clips see page 9/116.	220–240	G
► Field Modification Kits see page 9/100.	277	L
► Factory Modifications see page 9/115.	220-240/440-480®	C
, , , , , , , , , , , , , , , , , , , ,	440–480	H
▶ Dimensions see page 9/160.	575–600	E
► Wiring Diagrams see page 9/172.	For other voltages and frequencies, s Modifications page 9/115.	see Factory
► Replacement Parts see page 9/127.	Would all one page 6, 116.	
► For NO/NC SPDT contact on overload relay, replace "81" with "91"."81" indicates one NC contact.		

One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

Max H	łр							Enclosure		•					
200				NEMA 1 General Purpose		NEMA 4/4X Sta Watertight, Dust- Corrosion Resista 304 Stainless Ste	tight ınt	NEMA 4X Fibergla Watertight, Dust-tig Corrosion Resistant	ht	NEMA 12, NEMA 3 NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tig					
Volts	Volts	Volts	Volts	Rating	Size	Size	Rating	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
3	3	5	5	18	0	_	30	32CP92B2V2*81		32CP92W2V2*81		32CP92F2V2*81		32CP92N2V2*81	
7½	7½	10	10	27	1	_	30	32DP92B2V2*81		32DP92W2V2*81		32DP92F2V2*81		32DP92N2V2*81	
10	10	15	15	40	_	13/4	60	32EP92B2V2*81		32EP92W2V2*81		32EP92F2V2*81		32EP92N2V2*81	
10	15	25	25	45	2	_	60	32FP92B2V2*81		32FP92W2V2*81		32FP92F2V2*81		32FP92N2V2*81	
15	20	30	30	60	_	21/2	100	32GP92B2V2*81		32GP92W2V2*81		32GP92F2V2*81		32GP92N2V2*81	
20	25	50	50	90	3	_	100	32HP92B2V2*81		32HP92W2V2*81		32HP92F2V2*81		32HP92N2V2*81	
30	40	75	75	115	_	3½	200	32IP92B2V2*81		32IP92W2V2*81		32IP92F2V2*81		32IP92N2V2*81	
40	50	100	100	135	4	_	200	32JP92B2V2*81		32JP92W2V2*81		32JP92F2V2*81		32JP92N2V2*81	

Two Separate Windings, 3-Phase (Constant or Variable Torque)

Max I	Нр							Enclosure							
200 230 460 575 Volts Volts Volts Volts		575	Cont- actor Amp	NEMA	Half	Disc Amp	NEMA 1 General Purpose		NEMA 4/4X Sta Watertight, Dust- Corrosion Resista 304 Stainless Ste	tight ant	NEMA 4X Fibergla Watertight, Dust-tig Corrosion Resistant	ht	NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tig		
Volts	Volts	Volts	Volts	Rating	Size	Size	Rating	Catalog Number	Catalog Number ListPrice\$ C		List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
3	3	5	5	18	0	_	30	32CP92B1V2*81		32CP92W1V2*81		32CP92F1V2*81		32CP92N1V2*81	
7½	71/2	10	10	27	1	_	30	32DP92B1V2*81		32DP92W1V2*81		32DP92F1V2*81		32DP92N1V2*81	
10	10	15	15	40	_	13/4	60	32EP92B1V2*81		32EP92W1V2*81		32EP92F1V2*81		32EP92N1V2*81	
10	15	25	25	45	2	_	60	32FP92B1V2*81		32FP92W1V2*81		32FP92F1V2*81		32FP92N1V2*81	
15	20	30	30	60	_	21/2	100	32GP92B1V2*81		32GP92W1V2*81		32GP92F1V2*81		32GP92N1V2*81	
20	25	50	50	90	3	_	100	32HP92B1V2*81		32HP92W1V2*81		32HP92F1V2*81		32HP92N1V2*81	
30	40	75	75	115	_	31/2	200	32IP92B1V2*81		32IP92W1V2*81		32IP92F1V2*81		32IP92N1V2*81	
40	50	100	100	135	4	_	200	32JP92B1V2*81		32JP92W1V2*81		32JP92F1V2*81		32JP92N1V2*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

9/37

① Dual voltage coils not available in modified starters. ② For conduit hubs and conversion instructions, see page 9/106.

Combination Two Speed Heavy Duty Starters Non-Fusible, Constant Horsepower with Ambient Compensated Bimetal Overload, Class 32

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter
wired on high voltage unless specified on order.	24	J
► Heater elements see page 9/120. (6 Required)	120	F
► Fuse clips see page 9/116.	110-120/220-240 [©]	Α
	200–208	D
► Field Modification Kits see page 9/100.	220–240	G
► Factory Modifications see page 9/115.	277	L
► Dimensions see page 9/160.	220-240/440-480 [©]	С
1 0 7	440–480	H
▶ Wiring Diagrams see page 9/172.	575–600	E
► Replacement Parts see page 9/127.	For other voltages and fre see Factory Modifications	
 For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact 	ooo i doto. y iviodine ddon.	, pago 0/110.

One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max I	łр							Enclosure							
200	230	460	575	Contactor Amp	NEMA	Half	Disc Amp	NEMA 1 General Purpose		NEMA 4/4X Stai Watertight, Dust- Corrosion Resista 304 Stainless Ste	tight nt	NEMA 4X Fibergla Watertight, Dust-tigl Corrosion Resistant	ht	NEMA 12, NEMA 3 NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tigl	
Volts	Volts	Volts	Volts	Rating	Size	Size	Rating	Catalog Number ListPrice\$ Ca		Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
2	2	3	3	18	0	_	30	32CP92B2H2*81		32CP92W2H2*81		32CP92F2H2*81		32CP92N2H2*81	
5	5	7½	71/2	27	1	_	30	32DP92B2H2*81		32DP92W2H2*81		32DP92F2H2*81		32DP92N2H2*81	
7½	7½	10	10	40	_	13/4	60	32EP92B2H2*81		32EP92W2H2*81		32EP92F2H2*81		32EP92N2H2*81	
7½	10	20	20	45	2	_	60	32FP92B2H2*81		32FP92W2H2*81		32FP92F2H2*81		32FP92N2H2*81	
10	15	25	25	60	_	21/2	100	32GP92B2H2*81		32GP92W2H2*81		32GP92F2H2*81		32GP92N2H2*81	
20	25	40	40	90	3	_	100	32HP92B2H2*81		32HP92W2H2*81		32HP92F2H2*81		32HP92N2H2*81	
25	30	50	50	115	_	3½	200	32IP92B2H2*81		32IP92W2H2*81		32IP92F2H2*81		32IP92N2H2*81	
30	40	75	75	135	4	_	200	32JP92B2H2*81		32JP92W2H2*81		32JP92F2H2*81		32JP92N2H2*81	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max I	łр							Enclosure							
200	230	460	575	Contactor Amp	NEMA	Half	Disc Amp	NEMA 1 General Purpose		NEMA 4/4X Stai Watertight, Dust-t Corrosion Resista 304 Stainless Ste	tight nt	NEMA 4X Fibergla Watertight, Dust-tigl Corrosion Resistant	ht	NEMA 12, NEMA 3 NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tigl	
Volts	Volts	Volts	Volts	Rating	Size	Size	Rating	Catalog Number	Catalog Number ListPrice\$ Ca		List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
2	2	3	3	18	0	_	30	32CP92B1H2*81		32CP92W1H2*81		32CP92F1H2*81		32CP92N1H2*81	
5	5	71/2	7½	27	1	_	30	32DP92B1H2*81		32DP92W1H2*81		32DP92F1H2*81		32DP92N1H2*81	
71/2	7½	10	10	40	_	13/4	60	32EP92B1H2*81		32EP92W1H2*81		32EP92F1H2*81		32EP92N1H2*81	
71/2	10	20	20	45	2	_	60	32FP92B1H2*81		32FP92W1H2*81		32FP92F1H2*81		32FP92N1H2*81	
10	15	25	25	60	_	21/2	100	32GP92B1H2*81		32GP92W1H2*81		32GP92F1H2*81		32GP92N1H2*81	
20	25	40	40	90	3	_	100	32HP92B1H2*81		32HP92W1H2*81		32HP92F1H2*81		32HP92N1H2*81	
25	30	50	50	115	_	31/2	200	32IP92B1H2*81		32IP92W1H2*81		32IP92F1H2*81		32IP92N1H2*81	
30	40	75	75	135	4	_	200	32JP92B1H2*81		32JP92W1H2*81		32JP92F1H2*81		32JP92N1H2*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available in modified starters.

② For conduit hubs and conversion instructions, see page 9/106.

Combination Two Speed Heavy Duty Starters MCP Type, Constant or Variable Torque with Solid State Overload, Class 32

Selection



Ordering Information	Coil Table		Low S	Speed FL	A Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	t
wired on high voltage unless speci- fied on order.	24 120	J F	0,1 0.1	0.25–1 0.75–3.4	A A	A B
► Replace the (†) with the letter that corresponds to the correct low speed	110–120/220–240 [©] 200–208	A D	0,1 0,1	3–12 5.5–22	A1 A1	C D
FLA in the FLA table.®	220–240 277	G I	0-1 ³ / ₄ 2-3	10–40 13–52	A1 B	E F
Field Modification Kits see page 9/100.Factory Modifications see page 9/115.	220-240/440-480 [©] 440-480	C H	2-3 3 ¹ /2-4	25–100 50–200	B B	G H
► Dimensions see page 9/160.	575–600	Ë	3 /2-4	30-200	Ь	"
Wiring Diagrams see page 9/172.						

For other voltages and frequencies, see Factory Modifications page 9/115.

► Replacement Parts see page 9/127.

One	Win	ding	Con	seque	ent F	Pole, 3-P	hase (Const	ant or Varia	ble To	rque)					
Max I	l p						Overload		Enclosure							
						Motor Circuit			NEMA 1 General Purpose		NEMA 4/4X Stainl Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel	ess ^②	NEMA 4X Fiberg Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	1	460 Volts	575 Volts	NEMA Size	1	Interruter ETI Amps		Frame Size	•		Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	3/4	1½	2	0		3	0.75-3.4	А	32CUB†92B2V*		32CUB†92W2V*		32CUB†92F2V*		32CUB†92N2V*	
2	2	5	5	0	<u> </u>	10	3-12	A1	32CUC†92B2V*		32CUC†92W2V*		32CUC†92F2V*		32CUC†92N2V*	
3	3	_	_	0		25	5.5-22	A1	32CUD†92B2V*		32CUD†92W2V*		32CUD†92F2V*		32CUD†92N2V*	
1/2	3/4	1½	1½	1	_	3	0.75-3.4	А	32DUB†92B2V*		32DUB†92W2V*		32DUB†92F2V*		32DUB†92N2V*	
2	2	5	5	1	<u> </u>	10	3-12	A1	32DUC†92B2V*		32DUC†92W2V*		32DUC†92F2V*		32DUC†92N2V*	
3	3	10	10	1		25	5.5-22	A1	32DUD†92B2V*		32DUD†92W2V*		32DUD†92F2V*		32DUD†92N2V*	
7½	7½	_	_	1	_	30	10-40	A1	32DUE†92B2V*		32DUE†92W2V*		32DUE†92F2V*		32DUE†92N2V*	
_		15	15	_	1¾	40	10-40	A1	32EUE†92B2V*		32EUE†92W2V*		32EUE†92F2V*		32EUE†92N2V*	
10	15	25	25	2	<u> </u>	50	13-52	В	32FUF†92B2V*		32FUF†92W2V*		32FUF†92F2V*		32FUF†92N2V*	
15	20	30	30		2½	100	25-100	В	32GUG†92B2V*		32GUG†92W2V*		32GUG†92F2V*		32GUG†92N2V*	
25	30	50	50	3	_	125	25-100	В	32HUG†92B2V*		32HUG†92W2V*		32HUG†92F2V*		32HUG†92N2V*	
30	40	75	75	_	3½	125	50-200	В	32IUH†92B2V*		32IUH†92W2V*		32IUH†92F2V*		32IUH†92N2V*	1
40	50	100	100	4	_	150	50-200	В	32JUH†92B2V*		32JUH†92W2V*		32JUH†92F2V*		32JUH†92N2V*	

Two Separate Windings, 3-Phase (Constant or Variable Torque)

Max H	lp						Overload		Enclosure							
						Motor Circuit			General Purpose Catalog List		NEMA 4/4X Stain Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberg Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts		575 Volts			Interruter		Frame Size			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	3/4	1½	2	0	_	3	0.75-3.4	Α	32CUB†92B1V*		32CUB†92W1V*		32CUB†92F1V*		32CUB†92N1V*	
2	2	5	5	0	_	10	3-12	A1	32CUC†92B1V*		32CUC†92W1V*		32CUC†92F1V*		32CUC†92N1V*	
3	3	_	_	0	_	25	5.5-22	A1	32CUD†92B1V*		32CUD†92W1V*		32CUD†92F1V*		32CUD†92N1V*	
1/2	3/4	1½	1½	1	_	3	0.75-3.4	А	32DUB†92B1V*		32DUB†92W1V*		32DUB†92F1V*		32DUB†92N1V*	
2	2	5	5	1		10	3-12	A1	32DUC†92B1V*		32DUC†92W1V*		32DUC†92F1V*		32DUC†92N1V*	
3	3	10	10	1	_	25	5.5-22	A1	32DUD†92B1V*		32DUD†92W1V*		32DUD†92F1V*		32DUD†92N1V*	
7½	7½	_	_	1	_	30	10-40	A1	32DUE†92B1V*		32DUE†92W1V*		32DUE†92F1V*		32DUE†92N1V*	
_	_	15	15	_	1¾	40	10-40	A1	32EUE†92B1V*		32EUE†92W1V*		32EUE†92F1V*		32EUE†92N1V*	
10	15	25	25	2		50	13-52	В	32FUF†92B1V*		32FUF†92W1V*		32FUF†92F1V*		32FUF†92N1V*	
15	20	30	30	_	2½	100	25-100	В	32GUG†92B1V*		32GUG†92W1V*		32GUG†92F1V*		32GUG†92N1V*	
25	30	50	50	3	_	125	25-100	В	32HUG†92B1V*		32HUG†92W1V*		32HUG†92F1V*		32HUG†92N1V*	
30	40	75	75	_	3½	125	50-200	В	32IUH†92B1V*		32IUH†92W1V*		32IUH†92F1V*		32IUH†92N1V*	
40	50	100	100	4	<u> </u>	150	50-200	В	32JUH†92B1V*		32JUH†92W1V*		32JUH†92F1V*		32JUH†92N1V*	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

9/39 Product Category: NEMA

① Dual voltage coils not available in modified starters.

For conduit hubs and conversion instructions, see page 9/106.
 If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

Combination Two Speed Heavy Duty Starters

MCP Type, Constant Horsepower with Solid State Overload, Class 32

Selection



Ordering Information	Coil Table		High/L	ow Speed	FLA Table [®]	
► Replace the (*) with a letter from	60Hz Voltage	Letter	Size	FLA	OLR Frame Size	t
the coil table. Dual voltage coils are	24	J	0,1	0.25–1	A	Α
wired on high voltage unless specified	120	F	0,1	0.75 - 3.4	Α	В
on order.	110-120/220-240 ^①	Α	0,1	3-12	A1	С
► Replace the (†) with the letter that	200–208	D	0,1	5.5-22	A1	D
corresponds to the correct FLA in the	220-240	G	0-13/4	10-40	A1	Е
High/Low Speed FLA table.®	277	L	2-3	13–52	В	F
► Field Modification Vita and page 0/100	220-240/440-480 ^①	С	2-3	25-100	В	G
► Field Modification Kits see page 9/100.	440–480	Н	31/2-4	50-200	В	Н
► Factory Modifications see page 9/115.	575–600	Е				
► Dimensions see page 9/160.) for high spee w speed. Use r		
► Wiring Diagrams see page 9/172.	For other voltages a	nd		select FLA. If m		

► Replacement Parts see page 9/127. frequencies see Factory Modifications page 9/115.

For other voltages and

* First (†) for high speed, second (†) for low speed. Use motor nameplate to select FLA. If motor FLA are unknown, select overload on the bases that the low speed FLA will be no greater than 50 % of high speed FLA.

One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max H	lp						Overload		Enclosure							
						Motor Circuit			General Purpose Catalog List		NEMA 4/4X Stainless® Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		NEMA 4X Fibergl Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts				NEMA Size		Interruter ETI Amps		Frame Size			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	0	_	10	_	A or A1	32CU††92B2H*		32CU††92W2H*		32CU††92F2H*		32CU††92N2H*	
5	5	7½	7½	1	_	25	_	A or A1	32DU††92B2H*		32DU††92W2H*		32DU††92F2H*		32DU††92N2H*	
7½	7½	10	10	_	1¾	40	_	A1	32EU††92B2H*		32EU††92W2H*		32EU††92F2H*		32EU††92N2H*	
7½	10	20	20	2	<u> </u>	50	_	В	32FU††92B2H*		32FU††92W2H*		32FU††92F2H*		32FU††92N2H*	
10	15	25	25	_	2½	100	_	В	32GU††92B2H*		32GU††92W2H*		32GU††92F2H*		32GU††92N2H*	
20	25	40	40	3	_	100	_	В	32HU††92B2H*		32HU††92W2H*		32HU††92F2H*		32HU††92N2H*	
25	30	50	50	_	3½	125	_	В	32IU††92B2H*		32IU††92W2H*		32IU††92F2H*		32IU††92N2H*	
30	40	75	75	4	_	150	_	В	32JU††92B2H*		32JU††92W2H*		32JU††92F2H*		32JU††92N2H*	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max H	lp .						Overload		Enclosure							
						Motor Circuit			General Purpose Catalog List		NEMA 4/4X Stainless® Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		NEMA 4X Fibergl Watertight, Dust-tight Corrosion Resistant		NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tight	
200 Volts	230 Volts		575 Volts	NEMA Size	1 1	Interruter		Frame Size			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
2	2	3	3	0	_	10	_	A or A1	32CU††92B1H*		32CU††92W1H*		32CU††92F1H*		32CU††92N1H*	
5	5	7½	7½	1	_	25	_	A or A1	32DU††92B1H*		32DU††92W1H*		32DU††92F1H*		32DU††92N1H*	
7½	7½	10	10	_	1¾	40	_	A1	32EU††92B1H*		32EU††92W1H*		32EU††92F1H*		32EU††92N1H*	
7½	10	20	20	2	<u> </u>	50	_	В	32FU††92B1H*		32FU††92W1H*		32FU††92F1H*		32FU††92N1H*	
10	15	25	25	_	2½	100	_	В	32GU††92B1H*		32GU††92W1H*		32GU††92F1H*		32GU††92N1H*	
20	25	40	40	3	_	100	_	В	32HU††92B1H*		32HU††92W1H*		32HU††92F1H*		32HU††92N1H*	
25	30	50	50	_	3½	125	_	В	32IU††92B1H*		32IU††92W1H*		32IU††92F1H*		32IU††92N1H*	
30	40	75	75	4	_	150	_	В	32JU††92B1H*		32JU††92W1H*		32JU††92F1H*		32JU††92N1H*	

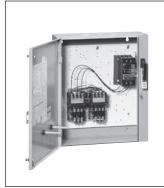
① Dual voltage coils not available in modified starters.

[©] For conduit hubs and conversion instructions, see page 9/106.

③ First † for high speed, second † for low speed. Use motor nameplate information to select FLA. If motor FLA are unknown, select overload on the basis that low speed FLA will be no greater than 50% of high speed FLA.

Combination Two Speed Heavy Duty Starters MCP Type, Constant or Variable Torque w/Ambient Compensated Bimetal Overload, Class 32

Selection



Ordering Information	Coil Table
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage Letter
► Heater elements see page 9/120. (6 Required)	24 J 120 F
► Field Modification Kits see page 9/100.	110-120/220-240 [®] A
► Factory Modifications see page 9/115.	200–208 D 220–240 G
► Dimensions see page 9/160.	277 L
► Wiring Diagrams see page 9/172.	220-240/440-480 [©] C 440-480 H
► Replacement Parts see page 9/127.	575–600 E
► For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact	For other voltages and frequencies, see Factory Modifications page 9/115.

One Winding Consequent Pole, 3-Phase (Constant or Variable Torque)

Max	Нр						Enclosure							
200	230	460	575	NEMA	Half	Motor Circuit	General Purpose		NEMA 4/4X Stainless ² Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fibergla Watertight, Dust-tig Corrosion Resistant		NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tig	
Volts	Volts				Size	Interrupter ETI Amps	Catalog Number ListPrice\$		Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
1/2	1/2	1	1	0	_	3	32CP92B2VA*81		32CP92W2VA*81		32CP92F2VA*81		32CP92N2VA*81	
1	1	3	3	0	—	10	32CP92B2VB*81		32CP92W2VB*81		32CP92F2VB*81		32CP92N2VB*81	
3	3	5	5	0	_	25	32CP92B2VC*81		32CP92W2VC*81		32CP92F2VC*81		32CP92N2VC*81	
1½	1½	1	1	1	—	3	32DP92B2VA*81	I	32DP92W2VA*81		32DP92F2VA*81		32DP92N2VA*81	
1	1	3	3	1	—	10	32DP92B2VB*81	I	32DP92W2VB*81		32DP92F2VB*81		32DP92N2VB*81	
3	3	7½	7½	1	—	25	32DP92B2VD*81		32DP92W2VD*81		32DP92F2VD*81		32DP92N2VD*81	
7½	7½	10	10	1	_	30	32DP92B2VE*81		32DP92W2VE*81		32DP92F2VE*81		32DP92N2VE*81	
_	—	15	15	—	13/4	40	32EP92B2VF*81		32EP92W2VF*81		32EP92F2VF*81		32EP92N2VF*81	
10	10	_	_	_	13/4	50	32EP92B2VG*81		32EP92W2VG*81		32EP92F2VG*81		32EP92N2VG*81	
<u> </u>	—	20	20	2	—	40	32FP92B2VH*81		32FP92W2VH*81		32FP92F2VH*81		32FP92N2VH*81	
10	15	25	25	2	_	50	32FP92B2VJ*81		32FP92W2VJ*81		32FP92F2VJ*81		32FP92N2VJ*81	
10	15	30	30	—	21/2	50	32GP92B2VK*81		32GP92W2VK*81		32GP92F2VK*81		32GP92N2VK*81	
15	20	_	_	_	21/2	100	32GP92B2VL*81		32GP92W2VL*81		32GP92F2VL*81		32GP92N2VL*81	
	_	30	30	3	_	50	32HP92B2VM*81	1	32HP92W2VM*81		32HP92F2VM*81		32HP92N2VM*81	
25	30	50	50	3	_	125	32HP92B2VN*81		32HP92W2VN*81		32HP92F2VN*81		32HP92N2VN*81	
30	40	75	75	_	31/2	125	32IP92B2VP*81		32IP92W2VP*81		32IP92F2VP*81		32IP92N2VP*81	
40	50	100	100	4	_	150	32JP92B2VR*81		32JP92W2VR*81		32JP92F2VR*81		32JP92N2VR*81	

Two Separate Windings, 3-Phase (Constant or Variable Torque)

IVIAX I	Нр						Enclosure							
							NEMA 1		NEMA 4/4X Stai	inless ²	NEMA 4X Fibergla	iss	NEMA 12, NEMA	3/3R ²
200	230	460	575	NEMA	Half	Motor Circuit			Watertight, Dust-t Corrosion Resista 304 Stainless Ste	nt	Watertight, Dust-tigl Corrosion Resistant	nt	NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tig	ht
Volts	Volts	Volts	Volts		Size	Interrupter ETI Amps	Catalog Number ListPrice\$ (Catalog Number	List Price\$	Catalog Number	List Price\$	CatalogNumber	List Price\$
1/2	1/2	1	1	0	_	3	32CP92B1VA*81		32CP92W1VA*81		32CP92F1VA*81		32CP92N1VA*81	
1	1	3	3	0	—	10	32CP92B1VB*81		32CP92W1VB*81		32CP92F1VB*81		32CP92N1VB*81	
3	3	5	5	0	_	25	32CP92B1VC*81		32CP92W1VC*81		32CP92F1VC*81		32CP92N1VC*81	
1/2	1/2	1	1	1	—	3	32DP92B1VA*81		32DP92W1VA*81		32DP92F1VA*81		32DP92N1VA*81	
1	1	3	3	1	—	10	32DP92B1VB*81		32DP92W1VB*81		32DP92F1VB*81		32DP92N1VB*81	
3	3	71/2	71/2	1	—	25	32DP92B1VD*81		32DP92W1VD*81		32DP92F1VD*81		32DP92N1VD*81	
7½	7½	10	10	1	_	30	32DP92B1VE*81		32DP92W1VE*81		32DP92F1VE*81		32DP92N1VE*81	
_	_	15	15	_	13/4	40	32EP92B1VF*81		32EP92W1VF*81		32EP92F1VF*81		32EP92N1VF*81	
10	10	_	—	_	13/4	50	32EP92B1VG*81		32EP92W1VG*81		32EP92F1VG*81		32EP92N1VG*81	
_	_	20	20	2	_	40	32FP92B1VH*81		32FP92W1VH*81		32FP92F1VH*81		32FP92N1VH*81	
10	15	25	25	2	_	50	32FP92B1VJ*81		32FP92W1VJ*81		32FP92F1VJ*81		32FP92N1VJ*81	
10	15	30	30	_	21/2	50	32GP92B1VK*81		32GP92W1VK*81		32GP92F1VK*81		32GP92N1VK*81	
15	20	—	_	—	21/2	100	32GP92B1VL*81		32GP92W1VL*81		32GP92F1VL*81		32GP92N1VL*81	
_		30	30	3	_	50	32HP92B1VM*81		32HP92W1VM*81		32HP92F1VM*81		32HP92N1VM*81	
25	30	50	50	3	_	125	32HP92B1VN*81		32HP92W1VN*81		32HP92F1VN*81		32HP92N1VN*81	
30	40	75	75	_	31/2	125	32IP92B1VP*81		32IP92W1VP*81		32IP92F1VP*81		32IP92N1VP*81	
40	50	100	100	4	_	150	32JP92B1VR*81		32JP92W1VR*81		32JP92F1VR*81		32JP92N1VR*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available in modified starters. ② For conduit hubs and conversion instructions, see

Combination Two Speed Heavy Duty Starters

MCP, Constant Horsepower w/ Ambient Compensated Bimetal Overload, Class 32

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage	Letter J
► Heater elements see page 9/120. (6 Required)	120 110–120/220–240 [©]	F
► Field Modification Kits see page 9/100.	200–208	A D
Factory Modifications see page 9/115.	220–240 277	G
Dimensions see page 9/160.Wiring Diagrams see page 9/172.	220-240/440-480 ^①	Č
► Replacement Parts see page 9/127.	440–480 575–600	H E
► For NO/NC SPDT contact on overload relay, replace "81" with "91". "81" indicates one NC contact	For other voltages and fre see Factory Modifications	

One Winding Consequent Pole, 3-Phase (Constant Horsepower)

Max	Нр						Enclosure							
200	230	460	575	NEMA	Half	Motor Circuit	NEMA 1 General Purpose			NEMA 4/4X Stainless ⁽²⁾ Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		ass ht	NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tig	
Volts	Volts	Volts	Volts	Size	Size	Interrupter ETI Amps	Catalog Number ListPrice\$		Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
1/2	1/2	1	1	0	_	3	32CP92B2HA*81		32CP92W2HA*81		32CP92F2HA*81		32CP92N2HA*81	
1½	1½	3	3	0	_	10	32CP92B2HB*81		32CP92W2HB*81		32CP92F2HB*81		32CP92N2HB*81	
2	2	_	_	0		25	32CP92B2HC*81		32CP92W2HC*81		32CP92F2HC*81		32CP92N2HC*81	
1/2	1/2	1	1	1	_	3	32DP92B2HA*81		32DP92W2HA*81		32DP92F2HA*81		32DP92N2HA*81	
11/2	1½	3	3	1	_	10	32DP92B2HB*81		32DP92W2HB*81		32DP92F2HB*81		32DP92N2HB*81	
3	3	71/2	71/2	1	_	25	32DP92B2HD*81		32DP92W2HD*81		32DP92F2HD*81		32DP92N2HD*81	
5	5	—	_	1	_	30	32DP92B2HE*81		32DP92W2HE*81		32DP92F2HE*81		32DP92N2HE*81	
_	_	10	10	_	13/4	40	32EP92B2HF*81		32EP92W2HF*81		32EP92F2HF*81		32EP92N2HF*81	
71/2	7½	_	_	_	13/4	50	32EP92B2HG*81		32EP92W2HG*81		32EP92F2HG*81		32EP92N2HG*81	
_	7½	15	20	2	_	40	32FP92B2HH*81		32FP92W2HH*81		32FP92F2HH*81		32FP92N2HH*81	
7½	10	20	_	2	_	50	32FP92B2HJ*81		32FP92W2HJ*81		32FP92F2HJ*81		32FP92N2HJ*81	
_	_	30	30	_	21/2	50	32GP92B2HK*81		32GP92W2HK*81		32GP92F2HK*81		32GP92N2HK*81	
10	15	30	40	3		50	32HP92B2HM*81		32HP92W2HM*81		32HP92F2HM*81		32HP92N2HM*81	
20	25	40	_	3	_	100	32HP92B2HN*81		32HP92W2HN*81		32HP92F2HN*81		32HP92N2HN*81	
25	30	50	50	_	31/2	125	32IP92B2HP*81		32IP92W2HP*81		32IP92F2HP*81		32IP92N2HP*81	
30	40	75	75	4	_	150	32JP92B2HR*81		32JP92W2HR*81		32JP92F2HR*81		32JP92N2HR*81	

Two Separate Windings, 3-Phase (Constant Horsepower)

Max I	Нр						Enclosure							
200	230	460	575	NEMA	Half	Motor Circuit	NEMA 1 General Purpose		NEMA 4/4X Stainless ² Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fibergla Watertight, Dust-tig Corrosion Resistant	ht	NEMA 12, NEMA NEMA 4 Painted Industrial Use Weatherproof Watertight, Dust-tig	
Volts	Volts	Volts	Volts	Size	Size	Interrupter ETI Amps	Catalog Number ListPrice\$		Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
1/2	1/2	1	1	0	_	3	32CP92B1HA*81		32CP92W1HA*81		32CP92F1HA*81		32CP92N1HA*81	
1½	1½	3	3	0	_	10	32CP92B1HB*81		32CP92W1HB*81		32CP92F1HB*81		32CP92N1HB*81	
2	2	_		0	_	25	32CP92B1HC*81		32CP92W1HC*81		32CP92F1HC*81		32CP92N1HC*81	
1/2	1/2	1	1	1	_	3	32DP92B1HA*81		32DP92W1HA*81		32DP92F1HA*81		32DP92N1HA*81	
1½	1½	3	3	1	_	10	32DP92B1HB*81		32DP92W1HB*81		32DP92F1HB*81		32DP92N1HB*81	
3	3	71/2	7½	1	_	25	32DP92B1HD*81		32DP92W1HD*81		32DP92F1HD*81		32DP92N1HD*81	
5	5			1		30	32DP92B1HE*81		32DP92W1HE*81		32DP92F1HE*81		32DP92N1HE*81	
—	-	10	10	-	13/4	40	32EP92B1HF*81		32EP92W1HF*81		32EP92F1HF*81		32EP92N1HF*81	
7½	7½	_	_	_	13/4	50	32EP92B1HG*81		32EP92W1HG*81		32EP92F1HG*81		32EP92N1HG*81	
—	71/2	15	20	2	_	40	32FP92B1HH*81		32FP92W1HH*81		32FP92F1HH*81		32FP92N1HH*81	
71/2	10	20	_	2	_	50	32FP92B1HJ*81		32FP92W1HJ*81		32FP92F1HJ*81		32FP92N1HJ*81	
		30	30	_	21/2	50	32GP92B1HK*81		32GP92W1HK*81		32GP92F1HK*81		32GP92N1HK*81	
10	15	30	40	3	_	50	32HP92B1HM*81		32HP92W1HM*81		32HP92F1HM*81		32HP92N1HM*81	
20	25	40	_	3	_	100	32HP92B1HN*81		32HP92W1HN*81		32HP92F1HN*81		32HP92N1HN*81	
25	30	50	50	_	31/2	125	32IP92B1HP*81		32IP92W1HP*81		32IP92F1HP*81		32IP92N1HP*81	
30	40	75	75	4	_	150	32JP92B1HR*81		32JP92W1HR*81		32JP92F1HR*81		32JP92N1HR*81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available in modified starters.

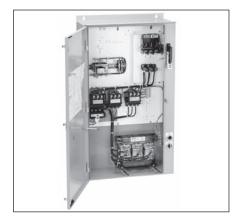
② For conduit hubs and conversion instructions, see page 9/106.

General

Siemens manufactures the three commonly used electromechanical reduced voltage starters. Each one is designed for specific application requirements and consists of auto transformer, wye-delta and partwinding starters. The reduced voltage starter:

- Reduces inrush current
- Provides smoother acceleration of the load
- Reduces starting torque
- Reduces stresses on mechanical linkages

Combination and non-combination reduced voltage starter sizes range from 0 to 6 including Siemens exclusive motormatched half-sizes. Enclosure types include 1, 3R/12, 4 painted and 4/4X stainless steel. UL listed file #E14900 (class 36); file #E185287 (class 37). CSA certified file #LR 6535 (class 36 & 37).



Auto Transformer Starter

- Maximum torque per amp
- Three coil auto transformer for balanced starting currents
- 50, 65 and 80% voltage taps
- Closed circuit transition
- Adjustable starting time
- Solid-state OLR overload as standard
- CPT supplied as standard
- Wide range of factory modifications



Wye-Delta Starter

- Lowest starting torque
- Closed or open circuit transition
- Adjustable starting time
- Solid-state OLR overload as standard
- CPT supplied as standard
- Wide range of factory modifications



Part-Winding Starter

- Simplest design most economical
- Adjustable starting time
- Solid-state OLR overload as standard
- CPT supplied as standard
- Wide range of factory modifications

Various Methods of Electro-Mechanical Reduced Voltage Motor Starting —A General Comparison

	Autotrar	nsformer		Part-Winding	Wye-Delta
Characteristic	50% Tap	65% Tap	80% Tap	2 step	
Starting current drawn from line as % of that which would be drawn upon full voltage starting	25%	42%	64%	65%	33%
Starting current drawn by the motor	50%	65%	80%	65%	58%
Starting torque developed as % of that which would be developed on full voltage starting	25% Increases with spee		64%	40%	33%
Smoothness of acceleration	First in ord Smoothne			Third in order of Smoothness	Second in order of Smoothness
Allowable accelerating times (typical)	max. or 30 200HP ba	edium duty	on	5 seconds max. Limited by motor design	5-60 seconds Limited by motor design
Starting current and torque and adjustments	Adjustable of various	e within lir taps	nits	Fixed	Fixed

ge of factory modifications

Siemens Industry, Inc. Industrial Controls Catalog 9/43

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Reduced Voltage Heavy Duty Starters

Auto Transformer with Solid State Overload, Class 36 & 37

Selection



Ordering Information

- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ► Dimensions see page 9/161.
- ▶ Wiring Diagrams see page 9/175.
- ► Replacement Parts see page 9/127.

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

Coil and Control Voltage

NEMA 1 General Purpose Enclosures

			Overload	Relay	Non-Combina	tion	Combin	ation Non-Fusib lect	le	Combinatio	on Fusible Disco	onnect	Combina	tion Circit Brea	ker
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
	10	(1¾)	10-40	A1	36EUET6BD		60	37EUET6BDD		60A/250V	37EUET6BDF		50	37EUET6BDP	
	10	2	13-52	В	36FUFT6BD		60	37FUFT6BDD		60A/250V	37FUFT6BDF		50	37FUFT6BDP	
	15	(21/2)	25-100	В	36GUGT6BD		100	37GUGT6BDD		100A/250V	37GUGT6BDF		100	37GUGT6BDP	
	25	3	25–100	В	36HUGT6BD		100	37HUGT6BDD		100A/250V	37HUGT6BDF		100	37HUGT6BDP	
200	30	(3½)	50-200	В	36IUHT6BD		200	37IUHT6BDD		200A/250V	37IUHT6BDF		125	37IUHT6BDP	
	40	4	50-200	В	36JUHT6BD		200	37JUHT6BDD		200A/250V	37JUHT6BDF		150	37JUHT6BDP	
	50	5	55-250	_	_		_	<u> </u>		_	_		250	37LPST6BDP	
	75	5	55-250	_	36LPUT6BD		400	37LPUT6BDD		400A/250V	37LPUT6BDF		400	37LPUT6BDP	
	150	6	160-630	_	36MPXT6BD		600	37MPXT6BDD		600A/250V	37MPXT6BDF		600	37MPXT6BDP	
	10	(1¾)	10-40	A1	36EUET2BG		60	37EUET2BGD		60A/250V	37EUET2BGF		50	37EUET2BGP	
	15	2	13-52	В	36FUFT2BG		60	37FUFT2BGD		60A/250V	37FUFT2BGF		50	37FUFT2BGP	
	20	(2½)	25-100	В	36GUGT2BG		100	37GUGT2BGD		100A/250V	37GUGT2BGF		100	37GUGT2BGP	
	30	3	25-100	В	36HUGT2BG		100	37HUGT2BGD		100A/250V	37HUGT2BGF		100	37HUGT2BGP	
230	40	(3½)	50-200	В	36IUHT2BG		200	37IUHT2BGD		200A/250V	37IUHT2BGF		125	37IUHT2BGP	
	50	4	50-200	В	36JUHT2BG		200	37JUHT2BGD		200A/250V	37JUHT2BGF		150	37JUHT2BGP	
	75	5	55-250	_						_	-		250	37LPST2BGP	
	100	5	55-250	_	36LPUT2BG		400	37LPUT2BGD		400A/250V	37LPUT2BGF		400	37LPUT2BGP	
	200	6	160-630	_	36MPXT2BG		600	37MPXT2BGD		600A/250V	37MPXT2BGF		600	37MPXT2BGP	
	15	(1¾)	10-40	A1	36EUET4BH		60	37EUET4BHD		60A/600V	37EUET4BHF		50	37EUET4BHP	
	25	2	13-52	В	36FUFT4BH		60	37FUFT4BHD		60A/600V	37FUFT4BHF		50	37FUFT4BHP	
	30	(21/2)	13–52	В	36GUGT4BH		100	37GUGT4BHD		100A/600V	37GUGT4BHF		100	37GUGT4BHP	
	50	3	25-100	В	36HUGT4BH		100	37HUGT4BHD		100A/600V	37HUGT4BHF		100	37HUGT4BHP	
460	75	(31/2)	50-200	В	36IUHT4BH		200	37IUHT4BHD		200A/600V	37IUHT4BHF		125	37IUHT4BHP	
	100	4	50-200	В	36JUHT4BH		200	37JUHT4BHD		200A/600V	37JUHT4BHF		150	37JUHT4BHP	
	150	5	55-250	_	_					_	_		250	37LPST4BHP	
	200	5	55-250	_	36LPUT4BH		400	37LPUT4BHD		400A/600V	37LPUT4BHF		400	37LPUT4BHP	
	400	6	160-630	_	36MPXT4BH		600	37MPXT4BHD		600A/600V	37MPXT4BHF		600	37MPXT4BHP	
	15	(1¾)	10-40	A1	36EUET5BE		60	37EUET5BED		60A/600V	37EUET5BEF		50	37EUET5BEP	
	25	2	13–52	В	36FUFT5BE		60	37FUFT5BED		60A/600V	37FUFT5BEF		50	37FUFT5BEP	
	30	(21/2)	13–52	В	36GUGT5BE		100	37GUGT5BED		100A/600V	37GUGT5BEF		100	37GUGT5BEP	
	50	3	25–100	В	36HUGT5BE		100	37HUGT5BED		100A/600V	37HUGT5BEF		100	37HUGT5BEP	
575	75	(3½)	50-200	В	36IUHT5BE		200	37IUHT5BED		200A/600V	37IUHT5BEF		125	37IUHT5BEP	
	100	4	50-200	В	36JUHT5BE		200	37JUHT5BED		200A/600V	37JUHT5BEF		150	37JUHT5BEP	
	150	5	55-250	-				-		-	-		250	37LPST5BEP	
	200	5	55-250	-	36LPUT5BE		400	37LPUT5BED		400A/600V	37LPUT5BEF		400	37LPUT5BEP	
	400	6	160-630		36MPXT5BE		600	37MPXT5BED		600A/600V	37MPXT5BEF		600	37MPXT5BEP	

Reduced Voltage Heavy Duty Starters Auto Transformer with Solid State Overload, Class 36 & 37

Selection



Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/175. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 4 Painted Enclosures

			Overload	Rolay	Non-Combination		Combin	ation Non-Fusib	le	Combinatio	on Fusible Disco	nnect	Combination Circit Breaker		
		NEMA	Overioau	liciay	Non-combina		Disc.			Fuse Clip	iii i usibie Discoi	IIIICCL	Circuit	lion Circit Break	
Motor Voltage	Max Hp	Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Amp Rating	Catalog Number	List Price \$	Amp/Volt Rating	Catalog Number	List Price \$	Breaker Amps	Catalog Number	List Price \$
	10	(1¾)	10-40	A1	36EUET6ED		60	37EUET6EDD		60A/250V	37EUET6EDF		50	37EUET6EDP	
	10	2	13-52	В	36FUFT6ED		60	37FUFT6EDD		60A/250V	37FUFT6EDF		50	37FUFT6EDP	
	15	(21/2)	25-100	В	36GUGT6ED		100	37GUGT6EDD		100A/250V	37GUGT6EDF		100	37GUGT6EDP	
	25	3	25–100	В	36HUGT6ED		100	37HUGT6EDD		100A/250V	37HUGT6EDF		100	37HUGT6EDP	
200	30	(3½)	50-200	В	36IUHT6ED		200	37IUHT6EDD		200A/250V	37IUHT6EDF		125	37IUHT6EDP	
	40	4	50-200	В	36JUHT6ED		200	37JUHT6EDD		200A/250V	37JUHT6EDF		150	37JUHT6EDP	
	50	5	55-250	_	_			<u> </u>		_	_		250	37LPST6EDP	
	75	5	55-250	_	36LPUT6ED		400	37LPUT6EDD		400A/250V	37LPUT6EDF		400	37LPUT6EDP	
	150	6	160-630	_	36MPXT6ED		600	37MPXT6EDD		600A/250V	37MPXT6EDF		600	37MPXT6EDP	
	10	(1¾)	10-40	A1	36EUET2EG		60	37EUET2EGD		60A/250V	37EUET2EGF		50	37EUET2EGP	
	15	2	13-52	В	36FUFT2EG		60	37FUFT2EGD		60A/250V	37FUFT2EGF		50	37FUFT2EGP	
	20	(21/2)	25-100	В	36GUGT2EG		100	37GUGT2EGD		100A/250V	37GUGT2EGF		100	37GUGT2EGP	
	30	3	25-100	В	36HUGT2EG		100	37HUGT2EGD		100A/250V	37HUGT2EGF		100	37HUGT2EGP	
230	40	(31/2)	50-200	В	36IUHT2EG		200	37IUHT2EGD		200A/250V	37IUHT2EGF		125	37IUHT2EGP	
	50	4	50-200	В	36JUHT2EG		200	37JUHT2EGD		200A/250V	37JUHT2EGF		150	37JUHT2EGP	
	75	5	55-250	_	_					_			250	37LPST2EGP	
	100	5	55-250	_	36LPUT2EG		400	37LPUT2EGD		400A/250V	37LPUT2EGF		400	37LPUT2EGP	
	200	6	160-630	_	36MPXT2EG		600	37MPXT2EGD		600A/250V	37MPXT2EGF		600	37MPXT2EGP	
	15	(1¾)	10-40	A1	36EUET4EH		60	37EUET4EHD		60A/600V	37EUET4EHF		50	37EUET4EHP	
	25	2	13–52	В	36FUFT4EH		60	37FUFT4EHD		60A/600V	37FUFT4EHF		50	37FUFT4EHP	
	30	(21/2)	13–52	В	36GUGT4EH		100	37GUGT4EHD		100A/600V	37GUGT4EHF		100	37GUGT4EHP	
	50	3	25-100	В	36HUGT4EH		100	37HUGT4EHD		100A/600V	37HUGT4EHF		100	37HUGT4EHP	
460	75	(31/2)	50-200	В	36IUHT4EH		200	37IUHT4EHD		200A/600V	37IUHT4EHF		125	37IUHT4EHP	
	100	4	50-200	В	36JUHT4EH		200	37JUHT4EHD		200A/600V	37JUHT4EHF		150	37JUHT4EHP	
	150	5	55-250	_	-					-	-		250	37LPST4EHP	
	200	5	55-250	_	36LPUT4EH		400	37LPUT4EHD		400A/600V	37LPUT4EHF		400	37LPUT4EHP	
	400	6	160–630	_	36MPXT4EH		600	37MPXT4EHD		600A/600V	37MPXT4EHF		600	37MPXT4EHP	
	15	(1¾)	10-40	A1	36EUET5EE		60	37EUET5EED		60A/600V	37EUET5EEF		50	37EUET5EEP	
	25	2	13–52	В	36FUFT5EE		60	37FUFT5EED		60A/600V	37FUFT5EEF		50	37FUFT5EEP	
	30	(21/2)	13–52	В	36GUGT5EE		100	37GUGT5EED		100A/600V	37GUGT5EEF		100	37GUGT5EEP	
	50	3	25–100	В	36HUGT5EE		100	37HUGT5EED		100A/600V	37HUGT5EEF		100	37HUGT5EEP	
575	75	(3½)	50-200	В	36IUHT5EE		200	37IUHT5EED		200A/600V	37IUHT5EEF		125	37IUHT5EEP	
	100	4	50-200	В	36JUHT5EE		200	37JUHT5EED		200A/600V	37JUHT5EEF		150	37JUHT5EEP	
	150	5	55-250	_	-		-	-		-	-		250	37LPST5EEP	
	200	5	55-250	_	36LPUT5EE		400	37LPUT5EED		400A/600V	37LPUT5EEF		400	37LPUT5EEP	
l	400	6	160–630		36MPXT5EE		600	37MPXT5EED		600A/600V	37MPXT5EEF		600	37MPXT5EEP	

Reduced Voltage Heavy Duty Starters Auto Transformer with Solid State Overload, Class 36 & 37

Selection



Ordering	Information
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- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ► Dimensions see page 9/161.
- ▶ Wiring Diagrams see page 9/175.
- Replacement Parts see page 9/127.

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

Coil and Control Voltage

NEMA 4/4X Stainless Steel Enclosures

			Overload	l Rolay	Non-Combina	tion	Combina	ation Non-Fusibl	е	Combinatio	n Fusible Discon	meet	Combinat	tion Circit Break	or
		NEMA	Overioau	liciay	Non-combina		Disc.	1601		Fuse Clip	ii i usibie biscoi	IIIGUL	Circuit	lion onch break	
Motor Voltage	Max Hp	Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Amp Rating	Catalog Number	List Price \$	Amp/Volt Rating	Catalog Number	List Price \$	Breaker Amps	Catalog Number	List Price \$
	10	(1¾)	10-40	A1	36EUET6WD		60	37EUET6WDD		60A/250V	37EUET6WDF		50	37EUET6WDP	
	10	2	13-52	В	36FUFT6WD		60	37FUFT6WDD		60A/250V	37FUFT6WDF		50	37FUFT6WDP	
	15	(21/2)	25-100	В	36GUGT6WD		100	37GUGT6WDD		100A/250V	37GUGT6WDF		100	37GUGT6WDP	
200	25	3	25–100	В	36HUGT6WD		100	37HUGT6WDD		100A/250V	37HUGT6WDF		100	37HUGT6WDP	
	30	(31/2)	50-200	В	36IUHT6WD		200	37IUHT6WDD		200A/250V	37IUHT6WDF		125	37IUHT6WDP	
	40	4	50-200	В	36JUHT6WD		200	37JUHT6WDD		200A/250V	37JUHT6WDF		150	37JUHT6WDP	
	10	(1¾)	10-40	A1	36EUET2WG		60	37EUET2WGD		60A/250V	37EUET2WGF		50	37EUET2WGP	
	15	2	13–52	В	36FUFT2WG		60	37FUFT2WGD		60A/250V	37FUFT2WGF		50	37FUFT2WGP	
230	20	(21/2)	25-100	В	36GUGT2WG		100	37GUGT2WGD		100A/250V	37GUGT2WGF		100	37GUGT2WGP	
230	30	3	25-100	В	36HUGT2WG		100	37HUGT2WGD		100A/250V	37HUGT2WGF		100	37HUGT2WGP	
	40	(3½)	50-200	В	36IUHT2WG		200	37IUHT2WGD		200A/250V	37IUHT2WGF		125	37IUHT2WGP	
	50	4	50-200	В	36JUHT2WG		200	37JUHT2WGD		200A/250V	37JUHT2WGF		150	37JUHT2WGP	
	15	(134)	10-40	A1	36EUET4WH		60	37EUET4WHD		60A/600V	37EUET4WHF		50	37EUET4WHP	
	25	2	13–52	В	36FUFT4WH		60	37FUFT4WHD		60A/600V	37FUFT4WHF		50	37FUFT4WHP	
460	30	(2½)	13–52	В	36GUGT4WH		100	37GUGT4WHD		100A/600V	37GUGT4WHF		100	37GUGT4WHP	
400	50	3	25–100	В	36HUGT4WH		100	37HUGT4WHD		100A/600V	37HUGT4WHF		100	37HUGT4WHP	
	75	(3½)	50-200	В	36IUHT4WH		200	37IUHT4WHD		200A/600V	37IUHT4WHF		125	37IUHT4WHP	
	100	4	50-200	В	36JUHT4WH		200	37JUHT4WHD		200A/600V	37JUHT4WHF		150	37JUHT4WHP	
	15	(1¾)	10-40	A1	36EUET5WE		60	37EUET5WED		60A/600V	37EUET5WEF		50	37EUET5WEP	
	25	2	13–52	В	36FUFT5WE		60	37FUFT5WED		60A/600V	37FUFT5WEF		50	37FUFT5WEP	
575	30	(21/2)	13–52	В	36GUGT5WE		100	37GUGT5WED		100A/600V	37GUGT5WEF		100	37GUGT5WEP	
3/3	50	3	25–100	В	36HUGT5WE		100	37HUGT5WED		100A/600V	37HUGT5WEF		100	37HUGT5WEP	
	75	(31/2)	50-200	В	36IUHT5WE		200	37IUHT5WED		200A/600V	37IUHT5WEF		125	37IUHT5WEP	
	100	4	50-200	В	36JUHT5WE		200	37JUHT5WED		200A/600V	37JUHT5WEF		150	37JUHT5WEP	

Reduced Voltage Heavy Duty Starters Auto Transformer with Solid State Overload, Class 36 & 37

Selection



Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/175. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R) $^{\odot}$

			Overload	Dolay	Non-Combina	tion	Combin	ation Non-Fusible	le	Combinatio	n Fusible Disco	noot	Combinat	tion Circit Break	0.5
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
	10	(1¾)	10-40	A1	36EUET6ND		60	37EUET6NDD		60A/250V	37EUET6NDF		50	37EUET6NDP	
	10	2	13-52	В	36FUFT6ND		60	37FUFT6NDD		60A/250V	37FUFT6NDF		50	37FUFT6NDP	
	15	(21/2)	25-100	В	36GUGT6ND		100	37GUGT6NDD		100A/250V	37GUGT6NDF		100	37GUGT6NDP	
	25	3	25–100	В	36HUGT6ND		100	37HUGT6NDD		100A/250V	37HUGT6NDF		100	37HUGT6NDP	
200	30	(31/2)	50-200	В	36IUHT6ND		200	37IUHT6NDD		200A/250V	37IUHT6NDF		125	37IUHT6NDP	
	40	4	50-200	В	36JUHT6ND		200	37JUHT6NDD		200A/250V	37JUHT6NDF		150	37JUHT6NDP	
	50	5	55-250	_	_		_	_			_		250	37LPST6NDP	
	75	5	55-250	_	36LPUT6ND		400	37LPUT6NDD		400A/250V	37LPUT6NDF		400	37LPUT6NDP	
	150	6	160–630	_	36MPXT6ND		600	37MPXT6NDD		600A/250V	37MPXT6NDF		600	37MPXT6NDP	
	10	(134)	10-40	A1	36EUET2NG		60	37EUET2NGD		60A/250V	37EUET2NGF		50	37EUET2NGP	
	15	2	13–52	В	36FUFT2NG		60	37FUFT2NGD		60A/250V	37FUFT2NGF		50	37FUFT2NGP	
	20	(21/2)	25-100	В	36GUGT2NG		100	37GUGT2NGD		100A/250V	37GUGT2NGF		100	37GUGT2NGP	
	30	3	25-100	В	36HUGT2NG		100	37HUGT2NGD		100A/250V	37HUGT2NGF		100	37HUGT2NGP	
230	40	(3½)	50-200	В	36IUHT2NG		200	37IUHT2NGD		200A/250V	37IUHT2NGF		125	37IUHT2NGP	
	50	4	50-200	В	36JUHT2NG		200	37JUHT2NGD		200A/250V	37JUHT2NGF		150	37JUHT2NGP	
	75	5	55-250	_	_		_	<u> </u>		_	_		250	37LPST2NGP	
	100	5	55-250	_	36LPUT2NG		400	37LPUT2NGD		400A/250V	37LPUT2NGF		400	37LPUT2NGP	
	200	6	160-630	_	36MPXT2NG		600	37MPXT2NGD		600A/250V	37MPXT2NGF		600	37MPXT2NGP	
	15	(1¾)	10-40	A1	36EUET4NH		60	37EUET4NHD		60A/600V	37EUET4NHF		50	37EUET4NHP	
	25	2	13-52	В	36FUFT4NH		60	37FUFT4NHD		60A/600V	37FUFT4NHF		50	37FUFT4NHP	
	30	(21/2)	13-52	В	36GUGT4NH		100	37GUGT4NHD		100A/600V	37GUGT4NHF		100	37GUGT4NHP	
	50	3	25-100	В	36HUGT4NH		100	37HUGT4NHD		100A/600V	37HUGT4NHF		100	37HUGT4NHP	
460	75	(31/2)	50-200	В	36IUHT4NH		200	37IUHT4NHD		200A/600V	37IUHT4NHF		125	37IUHT4NHP	
	100	4	50-200	В	36JUHT4NH		200	37JUHT4NHD		200A/600V	37JUHT4NHF		150	37JUHT4NHP	
	150	5	55-250	_			_	_		_	_		250	37LPST4NHP	
	200	5	55-250		36LPUT4NH		400	37LPUT4NHD		400A/600V	37LPUT4NHF		400	37LPUT4NHP	
	400	6	160–630		36MPXT4NH		600	37MPXT4NHD		600A/600V	37MPXT4NHF		600	37MPXT4NHP	
	15	(1¾)	10-40	A1	36EUET5NE		60	37EUET5NED		60A/600V	37EUET5NEF		50	37EUET5NEP	
	25	2	13–52	В	36FUFT5NE		60	37FUFT5NED		60A/600V	37FUFT5NEF		50	37FUFT5NEP	
	30	(21/2)	13–52	В	36GUGT5NE		100	37GUGT5NED		100A/600V	37GUGT5NEF		100	37GUGT5NEP	
	50	3	25-100	В	36HUGT5NE		100	37HUGT5NED		100A/600V	37HUGT5NEF		100	37HUGT5NEP	
575	75	(31/2)	50-200	В	36IUHT5NE		200	37IUHT5NED		200A/600V	37IUHT5NEF		125	37IUHT5NEP	
	100	4	50-200	В	36JUHT5NE		200	37JUHT5NED		200A/600V	37JUHT5NEF		150	37JUHT5NEP	
	150	5	55-250		-		_	_			_		250	37LPST5NEP	
	200	5	55-250	_	36LPUT5NE		400	37LPUT5NED		400A/600V	37LPUT5NEF		400	37LPUT5NEP	
	400	6	160-630	_	36MPXT5NE		600	37MPXT5NED		600A/600V	37MPXT5NEF		600	37MPXT5NEP	

① See page 9/106 for conduit hubs and conversion

Reduced Voltage Heavy Duty Starters

2 Step Part Winding with Solid State Overload, Class 36 & 37

Selection



Ordering Information

- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ► Dimensions see page page 9/161.
- ► Wiring Diagrams see page 9/174.
- ► Replacement Parts see page 9/127.

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

Coil and Control Voltage

NEMA 1 General Purpose Enclosures

								nation Non-Fusib	le							
			Overload	Relay	Non-Combina	tion	Discon	nect		+	Fusible Disconn	ect	Combination Circit Breaker			
		NEMA		_			Disc.			Fuse Clip			Circuit			
Motor	Max	Size (1/2 Size)	Amp	Frame Size	Catalog Number	List Price \$	Amp Rating	Catalog Number	List Price \$	Amp/Volt Rating	Catalog Number	List Price \$	Breaker Amps	Catalog Number	List Price \$	
oltage	Hp			_		Price \$			Price \$		+	Price \$			Price \$	
	7½	0	5.5–22	A1	36CUDP6BD		60	37CUDP6BDD		60A/250V	37CUDP6BDF		30	37CUDP6BDP		
	10	l '	5.5–22	A1	36DUDP6BD		60	37DUDP6BDD		60A/250V	37DUDP6BDF		50	37DUDP6BDP		
	15	(1¾)	10-40	A1	36EUEP6BD		100	37EUEP6BDD		100A/250V	37EUEP6BDF		100	37EUEP6BDP		
	20	2	13–52	В	36FUFP6BD		100	37FUFP6BDD		100A/250V	37FUFP6BDF		100	37FUFP6BDP		
00	30	(2½)	25-100	В	36GUGP6BD		200	37GUGP6BDD		200A/250V	37GUGP6BDF		125	37GUGP6BDP		
	40	3	25-100	В	36HUGP6BD		200	37HUGP6BDD		200A/250V	37HUGP6BDF		150	37HUGP6BDP		
	50	(3½)	50-200	В	36IUHP6BD		200	37IUHP6BDD		200A/250V	37IUHP6BDF		250	37IUHP6BDP		
	75	4	50-200	В	36JUHP6BD		400	37JUHP6BDD		400A/250V	37JUHP6BDF		400	37JUHP6BDP		
	100	5	55-250	_	_		_	-		_	-		600	37LPSP6BDP		
	150	5	55-250	_	36LPUP6BD		600	37LPUP6BDD		600A/250V	37LPUP6BDF		600	37LPUP6BDP		
	7½	0	5.5-22	A1	36CUDP2BG		60	37CUDP2BGD		60A/250V	37CUDP2BGF		30	37CUDP2BGP		
	10	1	5.5-22	A1	36DUDP2BG		60	37DUDP2BGD		60A/250V	37DUDP2BGF		50	37DUDP2BGP		
	20	(11/2)	10-40	A1	36EUEP2BG		100	37EUEP2BGD		100A/250V	37EUEP2BGF		100	37EUEP2BGP		
	25	2	13-52	В	36FUFP2BG		100	37FUFP2BGD		100A/250V	37FUFP2BGF		100	37FUFP2BGP		
	30	(21/2)	25-100	В	36GUGP2BG		200	37GUGP2BGD		200A/250V	37GUGP2BGF		100	37GUGP2BGP		
30	50	3	25-100	В	36HUGP2BG		200	37HUGP2BGD		200A/250V	37HUGP2BGF		150	37HUGP2BGP		
	60	(31/2)	50-200	В	36IUHP2BG		200	37IUHP2BGD		200A/250V	37IUHP2BGF		250	37IUHP2BGP		
	75	4	50-200	В	36JUHP2BG		400	37JUHP2BGD		400A/250V	37JUHP2BGF		250	37JUHP2BGP		
	125	5	55-250	_	_		_	_		_	_		400	37LPSP2BGP		
	150	5	55-250	_	36LPUP2BG		600	37LPUP2BGD		600A/250V	37LPUP2BGF		600	37LPUP2BGP		
	300	6	160-630	_	36MPXP2BG		1200	37MPXP2BGD		1200A/250V	37MPXP2BGF		1200	37MPXP2BGP		
	10	0	5.5-22	A1	36CUDP4BH		30	37CUDP4BHD		30A/600V	37CUDP4BHF		30	37CUDP4BHP		
	15	1	5.5–22	A1	36DUDP4BH		60	37DUDP4BHD		60A/600V	37DUDP4BHF		30	37DUDP4BHP		
	30	(13/4)	10-40	A1	36EUEP4BH		60	37EUEP4BHD		60A/600V	37EUEP4BHF		50	37EUEP4BHP		
	40	2	13–52	В	36FUFP4BH		100	37FUFP4BHD		100A/600V	37FUFP4BHF		100	37FUFP4BHP		
	60	(2½)	25–100	В	36GUGP4BH		200	37GUGP4BHD		200A/600V	37GUGP4BHF		100	37GUGP4BHP		
60	75	3	25–100	В	36HUGP4BH		200	37HUGP4BHD		200A/600V	37HUGP4BHF		125	37HUGP4BHP		
00	100	(3½)	50-200	В	36IUHP4BH		200	37IUHP4BHD		200A/600V	37IUHP4BHF		150	37IUHP4BHP		
	150	4	50-200	В	36JUHP4BH		400	37JUHP4BHD		400A/600V	37JUHP4BHF		250	37JUHP4BHP		
	250	5	55–250	_	3030111 4511		400	3730111 40110		400/4/0007	3700111 45111		400	37LPSP4BHP		
	350	5	55–250		36LPUP4BH		600	37LPUP4BHD		600A/600V	37LPUP4BHF		600	37LPUP4BHP		
	600	6	160–630	_	36MPXP4BH		1200	37MPXP4BHD			37MPXP4BHF		1200	37MPXP4BHP		
										1200A/600V			-	-	-	
	10	0	5.5–22	A1	36CUDP5BE		30	37CUDP5BED		30A/600V	37CUDP5BEF		30	37CUDP5BEP		
	15	1	5.5–22	A1	36DUDP5BE		60	37DUDP5BED		60A/600V	37DUDP5BEF		30	37DUDP5BEP		
	30	(1¾)	10-40	A1	36EUEP5BE		60	37EUEP5BED		60A/600V	37EUEP5BEF		50	37EUEP5BEP		
	40	2	13–52	В	36FUFP5BE		60	37FUFP5BED		60A/600V	37FUFP5BEF		50	37FUFP5BEP		
	60	(2½)	25-100	В	36GUGP5BE		100	37GUGP5BED		100A/600V	37GUGP5BEF		100	37GUGP5BEP		
75	75	3	25–100	В	36HUGP5BE		200	37HUGP5BED		200A/600V	37HUGP5BEF		125	37HUGP5BEP		
	100	(3½)	50-200	В	36IUHP5BE		400	37IUHP5BED		400A/600V	37IUHP5BEF		150	37IUHP5BEP		
	150	4	50-200	В	36JUHP5BE		400	37JUHP5BED		400A/600V	37JUHP5BEF		250	37JUHP5BEP		
	250	5	55-250	_	-			-		400A/600V	37LPSP5BEF					
	350	5	55-250	_	36LPUP5BE		600	37LPUP5BED		600A/600V	37LPUP5BEF		400	37LPUP5BEP		
	600	6	160-630	I—	36MPXP5BE		1200	37MPXP5BED		1200A/600V	37MPXP5BEF		1200	37MPXP5BEP	1	

Reduced Voltage Heavy Duty Starters 2 Step Part Winding with Solid State Overload, Class 36 & 37

Selection



Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page page 9/161. ► Wiring Diagrams see page 9/174. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 4 Painted Enclosures

			Overload	Relay	Non-Combina	tion		Combination Non-Fusible Disconnect			Fusible Disconn	iect	Combination Circit Breaker			
Motor	Max	NEMA Size	Amp	Frame Size	Catalog	List	Disc.	Catalog	List Price \$	Fuse Clip Amp/Volt	Catalog	List Price \$	Circuit Breaker	Catalog	List	
Voltage	Hp 7½	(1/2 Size)	Range 5.5–22	A1	Number 36CUDP6ED	Price \$	Rating 60	Number 37CUDP6EDD	Price \$	Rating 60A/250V	Number 37CUDP6EDF	Price \$	Amps 30	Number 37CUDP6EDP	Price \$	
	10	1	5.5–22	A1	36DUDP6ED		60	37CUDP6EDD		60A/250V	37DUDP6EDF		50	37CUDP6EDP		
	15	(1¾)	10–40	A1	36EUEP6ED		100	37EUEP6EDD		100A/250V	37EUEP6EDF		100	37EUEP6EDP		
	20	2	13–52	В	36FUFP6ED		100	37FUFP6EDD		100A/250V	37FUFP6EDF		100	37FUFP6EDP		
	30	(2½)	25–100	В	36GUGP6ED		200	37GUGP6EDD		200A/250V	37GUGP6EDF		125	37GUGP6EDP		
200	40	3	25–100	В	36HUGP6ED		200	37HUGP6EDD		200A/250V 200A/250V	37HUGP6EDF		150	37HUGP6EDP		
	50	(3½)	50-200	В	36IUHP6ED		200	37IUHP6EDD		200A/250V 200A/250V	37HUGFGEDF		250	37IUHP6EDP		
	75	4	50-200	В	36JUHP6ED		400	37JUHP6EDD		400A/250V	37JUHP6EDF		400	37JUHP6EDP		
	75 100	5		B	30JUHP0ED		400	3/3005000		400A/250V	3/30ПР0ЕП			37JUHPGEDP 37LPSP6EDP		
	150	5	55-250	-	36LPUP6ED		600	37LPUP6EDD		C00V (3E0/)	37LPUP6EDF		600	37LPSP6EDP		
	7½	0	55-250							600A/250V			+	-	-	
	10	1	5.5–22	A1 A1	36CUDP2EG 36DUDP2EG		60 60	37CUDP2EGD		60A/250V	37CUDP2EGF		30	37CUDP2EGP		
		(41/)	5.5–22					37DUDP2EGD		60A/250V	37DUDP2EGF		50	37DUDP2EGP		
	20	(1½)	10-40	A1	36EUEP2EG		100	37EUEP2EGD		100A/250V	37EUEP2EGF		100	37EUEP2EGP		
	25	2	13–52	В	36FUFP2EG		100	37FUFP2EGD		100A/250V	37FUFP2EGF		100	37FUFP2EGP		
	30	(2½)	25-100	В	36GUGP2EG		200	37GUGP2EGD		200A/250V	37GUGP2EGF		100	37GUGP2EGP		
230	50	3	25-100	В	36HUGP2EG		200	37HUGP2EGD		200A/250V	37HUGP2EGF		150	37HUGP2EGP		
	60	(3½)	50-200	В	36IUHP2EG		200	37IUHP2EGD		200A/250V	37IUHP2EGF		250	37IUHP2EGP		
	75	4	50-200	В	36JUHP2EG		400	37JUHP2EGD		400A/250V	37JUHP2EGF		250	37JUHP2EGP		
	125	5	55–250		_		_			<u> </u>	I		400	37LPSP2EGP		
	150	5	55–250	-	36LPUP2EG		600	37LPUP2EGD		600A/250V	37LPUP2EGF		600	37LPUP2EGP		
	300	6	160–630	_	36MPXP2EG		1200	37MPXP2EGD		1200A/250V	37MPXP2EGF		1200	37MPXP2EGP		
	10	0	5.5–22	A1	36CUDP4EH		30	37CUDP4EHD		30A/600V	37CUDP4EHF		30	37CUDP4EHP		
	15	1	5.5–22	A1	36DUDP4EH		60	37DUDP4EHD		60A/600V	37DUDP4EHF		30	37DUDP4EHP		
	30	(1¾)	10–40	A1	36EUEP4EH		60	37EUEP4EHD		60A/600V	37EUEP4EHF		50	37EUEP4EHP		
	40	2	13–52	В	36FUFP4EH		100	37FUFP4EHD		100A/600V	37FUFP4EHF		100	37FUFP4EHP		
	60	(21/2)	25-100	В	36GUGP4EH		200	37GUGP4EHD		200A/600V	37GUGP4EHF		100	37GUGP4EHP		
160	75	3	25-100	В	36HUGP4EH		200	37HUGP4EHD		200A/600V	37HUGP4EHF		125	37HUGP4EHP		
	100	(31/2)	50-200	В	36IUHP4EH		200	37IUHP4EHD		200A/600V	37IUHP4EHF		150	37IUHP4EHP		
	150	4	50-200	В	36JUHP4EH		400	37JUHP4EHD		400A/600V	37JUHP4EHF		250	37JUHP4EHP		
	250	5	55-250		_			_		_			400	37LPSP4EHP		
	350	5	55-250		36LPUP4EH		600	37LPUP4EHD		600A/600V	37LPUP4EHF		600	37LPUP4EHP		
	600	6	160-630	_	36MPXP4EH		1200	37MPXP4EHD		1200A/600V	37MPXP4EHF		1200	37MPXP4EHP		
	10	0	5.5-22	A1	36CUDP5EE		30	37CUDP5EED		30A/600V	37CUDP5EEF		30	37CUDP5EEP		
	15	1	5.5-22	A1	36DUDP5EE		60	37DUDP5EED		60A/600V	37DUDP5EEF		30	37DUDP5EEP		
	30	(1¾)	10-40	A1	36EUEP5EE		60	37EUEP5EED		60A/600V	37EUEP5EEF		50	37EUEP5EEP		
	40	2	13-52	В	36FUFP5EE		60	37FUFP5EED		60A/600V	37FUFP5EEF		50	37FUFP5EEP		
	60	(21/2)	25-100	В	36GUGP5EE		100	37GUGP5EED		100A/600V	37GUGP5EEF		100	37GUGP5EEP		
575	75	3	25-100	В	36HUGP5EE		200	37HUGP5EED		200A/600V	37HUGP5EEF		125	37HUGP5EEP		
	100	(3½)	50-200	В	36IUHP5EE		400	37IUHP5EED		400A/600V	37IUHP5EEF		150	37IUHP5EEP		
	150	4	50-200	В	36JUHP5EE		400	37JUHP5EED		400A/600V	37JUHP5EEF		250	37JUHP5EEP		
	250	5	55–250	<u> -</u>	_		_	_		400A/600V	37LPSP5EEF		_	_		
	350	5	55–250		36LPUP5EE		600	37LPUP5EED		600A/600V	37LPUP5EEF		400	37LPUP5EEP		
	600	6	160–630	<u> _</u>	36MPXP5EE		1200	37MPXP5EED		1200A/600V	37MPXP5EEF		1200	37MPXP5EEP		

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Siemens Industry, Inc. Industrial Controls Catalog

Reduced Voltage Heavy Duty Starters

2 Step Part Winding with Solid State Overload, Class 36 & 37

Selection



Ordering Information

- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ▶ Dimensions see page page 9/161.
- ► Wiring Diagrams see page 9/174.
- ► Replacement Parts see page 9/127.

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

Coil and Control Voltage

NEMA 4/4X Stainless Steel Enclosures

				D .	N 0 1: 4:		1	ation Non-Fusibl	е	Combination	Fusible		· • · · · · ·	
		NIERAA	Overload	Kelay	Non-Combinatio	n 	Discon	nect	1	Disconnect	1		tion Circit Breake	r
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	Circuit Breaker Amps	Catalog Number	List Price \$
	7½	0	5.5-22	A1	36CUDP6WD		60	37CUDP6WDD		60A/250V	37CUDP6WDF	30	37CUDP6WDP	
	10	1	5.5-22	A1	36DUDP6WD		60	37DUDP6WDD		60A/250V	37DUDP6WDF	50	37DUDP6WDP	
	15	(13/4)	10-40	A1	36EUEP6WD		100	37EUEP6WDD		100A/250V	37EUEP6WDF	100	37EUEP6WDP	
200	20	2	13-52	В	36FUFP6WD		100	37FUFP6WDD		100A/250V	37FUFP6WDF	100	37FUFP6WDP	
200	30	(21/2)	25-100	В	36GUGP6WD		200	37GUGP6WDD		200A/250V	37GUGP6WDF	125	37GUGP6WDP	
	40	3	25-100	В	36HUGP6WD		200	37HUGP6WDD		200A/250V	37HUGP6WDF	150	37HUGP6WDP	
	50	(31/2)	50-200	В	36IUHP6WD		200	37IUHP6WDD		200A/250V	37IUHP6WDF	250	37IUHP6WDP	
	75	4	50-200	В	36JUHP6WD		400	37JUHP6WDD		400A/250V	37JUHP6WDF	400	37JUHP6WDP	
	7½	0	5.5-22	A1	36CUDP2WG		60	37CUDP2WGD		60A/250V	37CUDP2WGF	30	37CUDP2WGP	
	10	1	5.5-22	A1	36DUDP2WG		60	37DUDP2WGD		60A/250V	37DUDP2WGF	50	37DUDP2WGP	
	20	(11/2)	10-40	A1	36EUEP2WG		100	37EUEP2WGD		100A/250V	37EUEP2WGF	100	37EUEP2WGP	
230	25	2	13-52	В	36FUFP2WG		100	37FUFP2WGD		100A/250V	37FUFP2WGF	100	37FUFP2WGP	
230	30	(21/2)	25-100	В	36GUGP2WG		200	37GUGP2WGD		200A/250V	37GUGP2WGF	100	37GUGP2WGP	
	50	3	25-100	В	36HUGP2WG		200	37HUGP2WGD		200A/250V	37HUGP2WGF	150	37HUGP2WGP	
	60	(31/2)	50-200	В	36IUHP2WG		200	37IUHP2WGD		200A/250V	37IUHP2WGF	250	37IUHP2WGP	
	75	4	50-200	В	36JUHP2WG		400	37JUHP2WGD		400A/250V	37JUHP2WGF	250	37JUHP2WGP	
	10	0	5.5-22	A1	36CUDP4WH		30	37CUDP4WHD		30A/600V	37CUDP4WHF	30	37CUDP4WHP	
	15	1	5.5-22	A1	36DUDP4WH		60	37DUDP4WHD		60A/600V	37DUDP4WHF	30	37DUDP4WHP	
	30	(1¾)	10-40	A1	36EUEP4WH		60	37EUEP4WHD		60A/600V	37EUEP4WHF	50	37EUEP4WHP	
460	40	2	13-52	В	36FUFP4WH		100	37FUFP4WHD		100A/600V	37FUFP4WHF	100	37FUFP4WHP	
400	60	(21/2)	25-100	В	36GUGP4WH		200	37GUGP4WHD		200A/600V	37GUGP4WHF	100	37GUGP4WHP	
	75	3	25-100	В	36HUGP4WH		200	37HUGP4WHD		200A/600V	37HUGP4WHF	125	37HUGP4WHP	
	100	(31/2)	50-200	В	36IUHP4WH		200	37IUHP4WHD		200A/600V	37IUHP4WHF	150	37IUHP4WHP	
	150	4	50-200	В	36JUHP4WH		400	37JUHP4WHD		400A/600V	37JUHP4WHF	250	37JUHP4WHP	
	10	0	5.5-22	A1	36CUDP5WE		30	37CUDP5WED		30A/600V	37CUDP5WEF	30	37CUDP5WEP	
	15	1	5.5-22	A1	36DUDP5WE		60	37DUDP5WED		60A/600V	37DUDP5WEF	30	37DUDP5WEP	
	30	(13/4)	10-40	A1	36EUEP5WE		60	37EUEP5WED		60A/600V	37EUEP5WEF	50	37EUEP5WEP	
575	40	2	13-52	В	36FUFP5WE		60	37FUFP5WED		60A/600V	37FUFP5WEF	50	37FUFP5WEP	
5/5	60	(21/2)	25-100	В	36GUGP5WE		100	37GUGP5WED		100A/600V	37GUGP5WEF	100	37GUGP5WEP	
	75	3	25-100	В	36HUGP5WE		200	37HUGP5WED		200A/600V	37HUGP5WEF	125	37HUGP5WEP	
	100	(31/2)	50-200	В	36IUHP5WE		400	37IUHP5WED		400A/600V	37IUHP5WEF	150	37IUHP5WEP	
	150	4	50-200	В	36JUHP5WE		400	37JUHP5WED		400A/600V	37JUHP5WEF	250	37JUHP5WEP	

Reduced Voltage Heavy Duty Starters 2 Step Part Winding with Solid State Overload, Class 36 & 37

Selection



Ordering Information	Coil and Control Voltage
 Field Modification Kits see page 9/100. Factory Modifications see page 9/115. Dimensions see page page 9/161. Wiring Diagrams see page 9/174. Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R) $^{\odot}$

							Combin	ation Non-Fusib	le	Call Combina	tion Fusible Dis	connect			
			Overload	Relay			Disconnect			Call			Combination Circit Breaker		
		NEMA					Disc.			Fuse Clip			Circuit		
Motor	Max	Size	Amp	Frame	Catalog	List	Amp	Catalog	List	Amp/Volt	Catalog	List	Breaker	Catalog	List
/oltage	Нр	(1/2 Size)		Size	Number	Price \$	Rating	Number	Price \$	Rating	Number	Price \$	Amps	Number	Price \$
	7½	0	5.5-22	A1	36CUDP6ND		60	37CUDP6NDD		60A/250V	37CUDP6NDF		30	37CUDP6NDP	
	10	1	5.5-22	A1	36DUDP6ND		60	37DUDP6NDD		60A/250V	37DUDP6NDF		50	37DUDP6NDP	
	15	(1¾)	10-40	A1	36EUEP6ND		100	37EUEP6NDD		100A/250V	37EUEP6NDF		100	37EUEP6NDP	
	20	2	13-52	В	36FUFP6ND		100	37FUFP6NDD		100A/250V	37FUFP6NDF		100	37FUFP6NDP	
:00	30	(21/2)	25-100	В	36GUGP6ND		200	37GUGP6NDD		200A/250V	37GUGP6NDF		125	37GUGP6NDP	
.00	40	3	25-100	В	36HUGP6ND		200	37HUGP6NDD		200A/250V	37HUGP6NDF		150	37HUGP6NDP	
	50	(31/2)	50-200	В	36IUHP6ND		200	37IUHP6NDD		200A/250V	37IUHP6NDF		250	37IUHP6NDP	
	75	4	50-200	В	36JUHP6ND		400	37JUHP6NDD		400A/250V	37JUHP6NDF		400	37JUHP6NDP	
	100	5	55-250										600	37LPSP6NDP	
	150	5	55-250		36LPUP6ND		600	37LPUP6NDD		600A/250V	37LPUP6NDF		600	37LPUP6NDP	
	7½	0	5.5-22	A1	36CUDP2NG		60	37CUDP2NGD		60A/250V	37CUDP2NGF		30	37CUDP2NGP	
	10	1	5.5-22	A1	36DUDP2NG		60	37DUDP2NGD		60A/250V	37DUDP2NGF		50	37DUDP2NGP	
	20	(11/2)	10-40	A1	36EUEP2NG		100	37EUEP2NGD		100A/250V	37EUEP2NGF		100	37EUEP2NGP	
	25	2	13-52	В	36FUFP2NG		100	37FUFP2NGD		100A/250V	37FUFP2NGF		100	37FUFP2NGP	
	30	(21/2)	25-100	В	36GUGP2NG		200	37GUGP2NGD		200A/250V	37GUGP2NGF		100	37GUGP2NGP	
30	50	3	25-100	В	36HUGP2NG		200	37HUGP2NGD		200A/250V	37HUGP2NGF		150	37HUGP2NGP	
	60	(31/2)	50-200	В	36IUHP2NG		200	37IUHP2NGD		200A/250V	37IUHP2NGF		250	37IUHP2NGP	
	75	4	50-200	В	36JUHP2NG		400	37JUHP2NGD		400A/250V	37JUHP2NGF		250	37JUHP2NGP	
	125	5	55-250	_	_		_	_		_	_		400	37LPSP2NGP	
	150	5	55-250	_	36LPUP2NG		600	37LPUP2NGD		600A/250V	37LPUP2NGF		600	37LPUP2NGP	
	300	6	160-630	<u> </u>	36MPXP2NG		1200	37MPXP2NGD		1200A/250V	37MPXP2NGF		1200	37MPXP2NGP	
	10	0	5.5-22	A1	36CUDP4NH		30	37CUDP4NHD		30A/600V	37CUDP4NHF		30	37CUDP4NHP	
	15	1	5.5-22	A1	36DUDP4NH		60	37DUDP4NHD		60A/600V	37DUDP4NHF		30	37DUDP4NHP	
	30	(1¾)	10-40	A1	36EUEP4NH		60	37EUEP4NHD		60A/600V	37EUEP4NHF		50	37EUEP4NHP	
	40	2	13-52	В	36FUFP4NH		100	37FUFP4NHD		100A/600V	37FUFP4NHF		100	37FUFP4NHP	
	60	(21/2)	25-100	В	36GUGP4NH		200	37GUGP4NHD		200A/600V	37GUGP4NHF		100	37GUGP4NHP	
60	75	3	25-100	В	36HUGP4NH		200	37HUGP4NHD		200A/600V	37HUGP4NHF		125	37HUGP4NHP	
	100	(31/2)	50-200	В	36IUHP4NH		200	37IUHP4NHD		200A/600V	37IUHP4NHF		150	37IUHP4NHP	
	150	4	50-200	В	36JUHP4NH		400	37JUHP4NHD		400A/600V	37JUHP4NHF		250	37JUHP4NHP	
	250	5	55-250	_	_		_			_	_		400	37LPSP4NHP	
	350	5	55-250	_	36LPUP4NH		600	37LPUP4NHD		600A/600V	37LPUP4NHF		600	37LPUP4NHP	
	600	6	160-630	_	36MPXP4NH		1200	37MPXP4NHD		1200A/600V	37MPXP4NHF		1200	37MPXP4NHP	
	10	0	5.5–22	A1	36CUDP5NE		30	37CUDP5NED		30A/600V	37CUDP5NEF		30	37CUDP5NEP	
	15	1	5.5–22	A1	36DUDP5NE		60	37DUDP5NED		60A/600V	37DUDP5NEF		30	37DUDP5NEP	
	30	(13/4)	10-40	A1	36EUEP5NE		60	37EUEP5NED		60A/600V	37EUEP5NEF		50	37EUEP5NEP	
	40	2	13–52	В	36FUFP5NE		60	37FUFP5NED		60A/600V	37FUFP5NEF		50	37FUFP5NEP	
	60	(2½)	25–100	В	36GUGP5NE		100	37GUGP5NED		100A/600V	37GUGP5NEF		100	37GUGP5NEP	
75	75	3	25–100	В	36HUGP5NE		200	37HUGP5NED		200A/600V	37HUGP5NEF		125	37HUGP5NEP	
	100	(3½)	50-200	В	36IUHP5NE		400	37IUHP5NED		400A/600V	37IUHP5NEF		150	37IUHP5NEP	
	150	4	50-200	В	36JUHP5NE		400	37JUHP5NED		400A/600V	37JUHP5NEF		250	37JUHP5NEP	
	250	5	55-250	_	_			_		400A/600V	37LPSP5NEF			_	
	350	5	55-250	_	36LPUP5NE		600	37LPUP5NED		600A/600V	37LPUP5NEF		400	37LPUP5NEP	
	600	6	160–630		36MPXP5NE		1200	37MPXP5NED		1200A/600V	37MPXP5NEF		1200	37MPXP5NEP	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Siemens Industry, Inc. Industrial Controls Catalog

 $^{^{\}scriptsize \textcircled{\tiny 1}}$ See page 9/106 for conduit hubs and conversion

Reduced Voltage Heavy Duty Starters

Wye Delta, Open Transition with Solid State Overload, Class 36 & 37

Selection



Ordering Information

- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ▶ Dimensions see page 9/161.
- ► Wiring Diagrams see page 9/176.
- ► Replacement Parts see page 9/127.

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

Coil and Control Voltage

NEMA 1 General Purpose Enclosures

		Jilerai i	•				Combin	ation Non-Fusib	le						
			Overload	Relay	Non-Combina	tion	Discon			Combination	r Fusible Discon	nect	Combina	tion Circit Break	cer
		NEMA					Disc.			Fuse Clip			Circuit		
Motor	Max	Size	Amp	Frame	Catalog	List	Amp	Catalog	List	Amp/Volt	Catalog	List	Breaker	Catalog	List
Voltage	Hp 10	(1/2 Size)	Range 10-40	Size A1	Number 36DUE06BD	Price \$	Rating 60	Number 37DUE06BDD	Price \$	Rating 60A/250V	Number 37DUE06BDF	Price \$	Amps 50	Number 37DUE06BDP	Price \$
	15	(12/)	10-40	A1	36EUE06BD		100						100		
	20	(1¾)		В	36FUF06BD		100	37EUE06BDD		100A/250V 100A/250V	37EUE06BDF			37EUE06BDP	
	30		13-52	В	36GUG06BD			37FUF06BDD			37FUF06BDF		100	37FUF06BDP 37GUG06BDP	
	40	(2½)	25-100	В	36HUG06BD		200	37GUG06BDD		200A/250V 200A/250V	37GUG06BDF		125 150		
200	50	(3½)	25–100 50–200	В	36IUH06BD		200	37HUG06BDD 37IUH06BDD		200A/250V 200A/250V	37HUG06BDF 37IUH06BDF		250	37HUG06BDP 37IUH06BDP	
				В											
	60	4	50-200	B	36JUH06BD		400	37JUH06BDD		400A/250V	37JUH06BDF		250	37JUH06BDP	
	75	5	55-250	_	36LPS06BD		400	37LPS06BDD		400A/250V	37LPS06BDF		400	37LPS06BDP	
	150	5	55-250		36LPU06BD		600	37LPU06BDD		600A/250V	37LPU06BDF		600	37LPU06BDP	
	300	6	160-630		36MPX06BD		1200	37MPX06BDD		1200A/250V	37MPX06BDF		1200	37MPX06BDP	
	10	1	10-40	A1	36DUE02BG		60	37DUE02BGD		60A/250V	37DUE02BGF		50	37DUE02BGP	
	15	(1¾)	10-40	A1	36EUE02BG		60	37EUE02BGD		60A/250V	37EUE02BGF		50	37EUE02BGP	
	25	2	13–52	В	36FUF02BG		100	37FUF02BGD		100A/250V	37FUF02BGF		100	37FUF02BGP	
	30	(2½)	25–100	В	36GUG02BG		200	37GUG02BGD		200A/250V	37GUG02BGF		100	37GUG02BGP	
230	50	3	25–100	В	36HUG02BG		200	37HUG02BGD		200A/250V	37HUG02BGF		150	37HUG02BGP	
	60	(3½)	50-200	В	36IUH02BG		200	37IUH02BGD		200A/250V	37IUH02BGF		250	37IUH02BGP	
	75	4	50-200	В	36JUH02BG		400	37JUH02BGD		400A/250V	37JUH02BGF		250	37JUH02BGP	
	100	5	55-250		36LPS02BG		400	37LPS02BGD		400A/250V	37LPS02BGF		400	37LPS02BGP	
	150	5	55–250		36LPU02BG		600	37LPU02BGD		600A/250V	37LPU02BGF		600	37LPU02BGP	
	350	6	160-630		36MPX02BG		1200	37MPX02BGD		1200A/250V	37MPX02BGF		1200	37MPX02BGP	
	15	1	5.5-22	A1	36DUD04BH		30	37DUD04BHD		30A/600V	37DUD04BHF		30	37DUD04BHP	
	30	(13/4)	10-40	A1	36EUE04BH		60	37EUE04BHD		60A/600V	37EUE04BHF		50	37EUE04BHP	
	40	2	13–52	В	36FUF04BH		100	37FUF04BHD		100A/600V	37FUF04BHF		100	37FUF04BHP	
	60	(2½)	25–100	В	36GUG04BH		200	37GUG04BHD		200A/600V	37GUG04BHF		100	37GUG04BHP	
460	75	3	25–100	В	36HUG04BH		200	37HUG04BHD		200A/600V	37HUG04BHF		125	37HUG04BHP	
	100	(3½)	50-200	В	36IUH04BH		200	37IUH04BHD		200A/600V	37IUH04BHF		150	37IUH04BHP	
	150	4	50-200	В	36JUH04BH		400	37JUH04BHD		400A/600V	37JUH04BHF		250	37JUH04BHP	
	200	5	55–250		36LPS04BH		400	37LPS04BHD		400A/600V	37LPS04BHF		400	37LPS04BHP	
	300	5	55–250		36LPU04BH		600	37LPU04BHD		600A/600V	37LPU04BHF		600	37LPU04BHP	
	700	6	160–630	_	36MPX04BH		1600	37MPX04BHD		1600A/600V	37MPX04BHF		1200	37MPX04BHP	
	15	1	5.5-22	A1	36DUD05BE		30	37DUD05BED		30A/600V	37DUD05BEF		30	37DUD05BEP	
	30	(1¾)	10-40	A1	36EUE05BE		60	37EUE05BED		60A/600V	37EUE05BEF		50	37EUE05BEP	
	40	2	13–52	В	36FUF05BE		100	37FUF05BED		100A/600V	37FUF05BEF		50	37FUF05BEP	
	60	(2½)	25–100	В	36GUG05BE		100	37GUG05BED		100A/600V	37GUG05BEF		100	37GUG05BEP	
575	75	3	25–100	В	36HUG05BE		200	37HUG05BED		200A/600V	37HUG05BEF		125	37HUG05BEP	
	100	(3½)	50-200	В	36IUH05BE		200	37IUH05BED		200A/600V	37IUH05BEF		150	37IUH05BEP	
	150	4	50-200	В	36JUH05BE		400	37JUH05BED		400A/600V	37JUH05BEF		250	37JUH05BEP	
	200	5	55–250		36LPS05BE		400	37LPS05BED		400A/600V	37LPS05BEF		250	37LPS05BEP	
	300	5	55–250		36LPU05BE		600	37LPU05BED		600A/600V	37LPU05BEF		400	37LPU05BEP	
	700	6	160–630		36MPX05BE		1600	37MPX05BED		1600A/600V	37MPX05BEF		1600	37MPX05BEP	

Selection



Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/176. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 4 Painted Enclosures

							Combin	ation Non-Fusib	le						
			Overload	Relay	Non-Combina	tion	Discon	nect		Combination	Fusible Discor	nect	Combina	tion Circit Breal	ker
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
	10	1	10-40	A1	36DUE06ED		60	37DUE06EDD		60A/250V	37DUE06EDF		50	37DUE06EDP	
	15	(134)	10-40	A1	36EUE06ED		100	37EUE06EDD		100A/250V	37EUE06EDF		100	37EUE06EDP	
	20	2	13-52	В	36FUF06ED		100	37FUF06EDD		100A/250V	37FUF06EDF		100	37FUF06EDP	
	30	(21/2)	25-100	В	36GUG06ED		200	37GUG06EDD		200A/250V	37GUG06EDF		125	37GUG06EDP	
200	40	3	25-100	В	36HUG06ED		200	37HUG06EDD		200A/250V	37HUG06EDF		150	37HUG06EDP	
200	50	(31/2)	50-200	В	36IUH06ED		200	37IUH06EDD		200A/250V	37IUH06EDF		250	37IUH06EDP	
	60	4	50-200	В	36JUH06ED		400	37JUH06EDD		400A/250V	37JUH06EDF		250	37JUH06EDP	
	75	5	55-250		36LPS06ED		400	37LPS06EDD		400A/250V	37LPS06EDF		400	37LPS06EDP	
	150	5	55-250		36LPU06ED		600	37LPU06EDD		600A/250V	37LPU06EDF		600	37LPU06EDP	
	300	6	160-630		36MPX06ED		1200	37MPX06EDD		1200A/250V	37MPX06EDF		1200	37MPX06EDP	
	10	1	10-40	A1	36DUE02EG		60	37DUE02EGD		60A/250V	37DUE02EGF		50	37DUE02EGP	
	15	(1¾)	10-40	A1	36EUE02EG		60	37EUE02EGD		60A/250V	37EUE02EGF		50	37EUE02EGP	
	25	2	13-52	В	36FUF02EG		100	37FUF02EGD		100A/250V	37FUF02EGF		100	37FUF02EGP	
	30	(2½)	25-100	В	36GUG02EG		200	37GUG02EGD		200A/250V	37GUG02EGF		100	37GUG02EGP	
200	50	3	25-100	В	36HUG02EG		200	37HUG02EGD		200A/250V	37HUG02EGF		150	37HUG02EGP	
230	60	(3½)	50-200	В	36IUH02EG		200	37IUH02EGD		200A/250V	37IUH02EGF		250	37IUH02EGP	
	75	4	50-200	В	36JUH02EG		400	37JUH02EGD		400A/250V	37JUH02EGF		250	37JUH02EGP	
	100	5	55-250	_	36LPS02EG		400	37LPS02EGD		400A/250V	37LPS02EGF		400	37LPS02EGP	
	150	5	55-250		36LPU02EG		600	37LPU02EGD		600A/250V	37LPU02EGF		600	37LPU02EGP	
	350	6	160-630	_	36MPX02EG		1200	37MPX02EGD		1200A/250V	37MPX02EGF		1200	37MPX02EGP	
	15	1	5.5-22	A1	36DUD04EH		30	37DUD04EHD		30A/600V	37DUD04EHF		30	37DUD04EHP	
	30	(134)	10-40	A1	36EUE04EH		60	37EUE04EHD		60A/600V	37EUE04EHF		50	37EUE04EHP	
	40	2	13-52	В	36FUF04EH		100	37FUF04EHD		100A/600V	37FUF04EHF		100	37FUF04EHP	
	60	(21/2)	25-100	В	36GUG04EH		200	37GUG04EHD		200A/600V	37GUG04EHF		100	37GUG04EHP	
100	75	3	25-100	В	36HUG04EH		200	37HUG04EHD		200A/600V	37HUG04EHF		125	37HUG04EHP	
160	100	(3½)	50-200	В	36IUH04EH		200	37IUH04EHD		200A/600V	37IUH04EHF		150	37IUH04EHP	
	150	4	50-200	В	36JUH04EH		400	37JUH04EHD		400A/600V	37JUH04EHF		250	37JUH04EHP	
	200	5	55-250		36LPS04EH		400	37LPS04EHD		400A/600V	37LPS04EHF		400	37LPS04EHP	
	300	5	55-250		36LPU04EH		600	37LPU04EHD		600A/600V	37LPU04EHF		600	37LPU04EHP	
	700	6	160-630	_	36MPX04EH		1600	37MPX04EHD		1600A/600V	37MPX04EHF		1200	37MPX04EHP	
	15	1	5.5-22	A1	36DUD05EE		30	37DUD05EED		30A/600V	37DUD05EEF		30	37DUD05EEP	
	30	(1¾)	10-40	A1	36EUE05EE		60	37EUE05EED		60A/600V	37EUE05EEF		50	37EUE05EEP	
	40	2	13-52	В	36FUF05EE		100	37FUF05EED		100A/600V	37FUF05EEF		50	37FUF05EEP	
	60	(2½)	25-100	В	36GUG05EE		100	37GUG05EED		100A/600V	37GUG05EEF		100	37GUG05EEP	
	75	3	25-100	В	36HUG05EE		200	37HUG05EED		200A/600V	37HUG05EEF		125	37HUG05EEP	
575	100	(3½)	50-200	В	36IUH05EE		200	37IUH05EED		200A/600V	37IUH05EEF		150	37IUH05EEP	
	150	4	50-200	В	36JUH05EE		400	37JUH05EED		400A/600V	37JUH05EEF		250	37JUH05EEP	
	200	5	55-250	_	36LPS05EE		400	37LPS05EED		400A/600V	37LPS05EEF		250	37LPS05EEP	
	300	5	55-250	_	36LPU05EE		600	37LPU05EED		600A/600V	37LPU05EEF		400	37LPU05EEP	
	700	6	160-630	_	37MPX05EF		1600	37MPX05EED		1600A/600V	37MPX05EEF		1600	37MPX05EEP	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Siemens Industry, Inc. Industrial Controls Catalog

Reduced Voltage Heavy Duty Starters

Wye Delta, Open Transition with Solid State Overload, Class 36 & 37

Selection



Ordering Information

- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ▶ Dimensions see page 9/161.
- ► Wiring Diagrams see page 9/176.
- ► Replacement Parts see page 9/127.

The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

Coil and Control Voltage

NEMA 4/4X Stainless Steel Enclosures

			Overload	Relav	Non-Combina	tion	Combin	ation Non-Fusibl	le	Combination	r Fusible Discon	nect	Combina	tion Circit Break	cer
Motor Voltage	Max Hp	NEMA Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Disc. Amp Rating	Catalog Number	List Price \$	Fuse Clip Amp/Volt Rating	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
	10	1	10-40	A1	36DUE06WD		60	37DUE06WDD		60A/250V	37DUE06WDF		50	37DUE06WDP	
	15	(1¾)	10-40	A1	36EUE06WD		100	37EUE06WDD		100A/250V	37EUE06WDF		100	37EUE06WDP	
	20	2	13-52	В	36FUF06WD		100	37FUF06WDD		100A/250V	37FUF06WDF		100	37FUF06WDP	
200	30	(21/2)	25-100	В	36GUG06WD		200	37GUG06WDD		200A/250V	37GUG06WDF		125	37GUG06WDP	
	40	3	25-100	В	36HUG06WD		200	37HUG06WDD		200A/250V	37HUG06WDF		150	37HUG06WDP	
	50	(3½)	50-200	В	36IUH06WD		200	37IUH06WDD		200A/250V	37IUH06WDF		250	37IUH06WDP	
	60	4	50-200	В	36JUH06WD		400	37JUH06WDD		400A/250V	37JUH06WDF		250	37JUH06WDP	
	10	1	10-40	A1	36DUE02WG		60	37DUE02WGD		60A/250V	37DUE02WGF		50	37DUE02WGP	
	15	(1¾)	10-40	A1	36EUE02WG		60	37EUE02WGD		60A/250V	37EUE02WGF		50	37EUE02WGP	
	25	2	13–52	В	36FUF02WG		100	37FUF02WGD		100A/250V	37FUF02WGF		100	37FUF02WGP	
230	30	(21/2)	25-100	В	36GUG02WG		200	37GUG02WGD		200A/250V	37GUG02WGF		100	37GUG02WGP	
	50	3	25-100	В	36HUG02WG		200	37HUG02WGD		200A/250V	37HUG02WGF		150	37HUG02WGP	
	60	(31/2)	50-200	В	361UH02WG		200	37IUH02WGD		200A/250V	37IUH02WGF		250	37IUH02WGP	
	75	4	50-200	В	36JUH02WG		400	37JUH02WGD		400A/250V	37JUH02WGF		250	37JUH02WGP	
	15	1	5.5-22	A1	36DUD04WH		30	37DUD04WHD		30A/600V	37DUD04WHF		30	37DUD04WHP	
	30	(1¾)	10-40	A1	36EUE04WH		60	37EUE04WHD		60A/600V	37EUE04WHF		50	37EUE04WHP	
	40	2	13-52	В	36FUF04WH		100	37FUF04WHD		100A/600V	37FUF04WHF		100	37FUF04WHP	
460	60	(21/2)	25-100	В	36GUG04WH		200	37GUG04WHD		200A/600V	37GUG04WHF		100	37GUG04WHP	
	75	3	25-100	В	36HUG04WH		200	37HUG04WHD		200A/600V	37HUG04WHF		125	37HUG04WHP	
	100	(31/2)	50-200	В	36IUH04WH		200	37IUH04WHD		200A/600V	37IUH04WHF		150	37IUH04WHP	
	150	4	50-200	В	36JUH04WH		400	37JUH04WHD		400A/600V	37JUH04WHF		250	37JUH04WHP	
	15	1	5.5-22	A1	36DUD05WE		30	37DUD05WED		30A/600V	37DUD05WEF		30	37DUD05WEP	
	30	(1¾)	10-40	A1	36EUE05WE		60	37EUE05WED		60A/600V	37EUE05WEF		50	37EUE05WEP	
	40	2	13-52	В	36FUF05WE		100	37FUF05WED		100A/600V	37FUF05WEF		50	37FUF05WEP	
575	60	(21/2)	25-100	В	36GUG05WE		100	37GUG05WED		100A/600V	37GUG05WEF		100	37GUG05WEP	
	75	3	25-100	В	36HUG05WE		200	37HUG05WED		200A/600V	37HUG05WEF		125	37HUG05WEP	
	100	(3½)	50-200	В	36IUH05WE		200	37IUH05WED		200A/600V	37IUH05WEF		150	37IUH05WEP	
	150	4	50-200	В	36JUH05WE		400	37JUH05WED		400A/600V	37JUH05WEF		250	37JUH05WEP	

Selection



Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/176. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to 3/3R) $^{\odot}$

							Combination Non-Fusible								
			Overload	Relay	Non-Combina	tion	Discon	nect		Combination	Fusible Discon	nect	-	tion Circit Breal	cer
Motor	Max	NEMA Size	Amp	Frame	Catalog	List	Disc. Amp	Catalog	List	Fuse Clip Amp/Volt	Catalog	List	Circuit Breaker	Catalog	List
Voltage	Нр	(1/2 Size)	Range	Size	Number	Price \$	Rating	Number	Price \$	Rating	Number	Price \$	Amps	Number	Price \$
	10	1	10-40	A1	36DUE06ND		60	37DUE06NDD		60A/250V	37DUE06NDF		50	37DUE06NDP	
	15	(1¾)	10-40	A1	36EUE06ND		100	37EUE06NDD		100A/250V	37EUE06NDF		100	37EUE06NDP	
	20	2	13–52	В	36FUF06ND		100	37FUF06NDD		100A/250V	37FUF06NDF		100	37FUF06NDP	
	30	(21/2)	25-100	В	36GUG06ND		200	37GUG06NDD		200A/250V	37GUG06NDF		125	37GUG06NDP	
200	40	3	25-100	В	36HUG06ND		200	37HUG06NDD		200A/250V	37HUG06NDF		150	37HUG06NDP	
	50	(3½)	50-200	В	36IUH06ND		200	37IUH06NDD		200A/250V	37IUH06NDF		250	37IUH06NDP	
	60	4	50-200	В	36JUH06ND		400	37JUH06NDD		400A/250V	37JUH06NDF		250	37JUH06NDP	
	75	5	55-250	_	36LPS06ND		400	37LPS06NDD		400A/250V	37LPS06NDF		400	37LPS06NDP	
	150	5	55-250	_	36LPU06ND		600	37LPU06NDD		600A/250V	37LPU06NDF		600	37LPU06NDP	
	300	6	160-630		36MPX06ND		1200	37MPX06NDD		1200A/250V	37MPX06NDF		1200	37MPX06NDP	
	10	1	10-40	A1	36DUE02NG		60	37DUE02NGD		60A/250V	37DUE02NGF		50	37DUE02NGP	
	15	(1¾)	10-40	A1	36EUE02NG		60	37EUE02NGD		60A/250V	37EUE02NGF		50	37EUE02NGP	
	25	2	13–52	В	36FUF02NG		100	37FUF02NGD		100A/250V	37FUF02NGF		100	37FUF02NGP	
	30	(2½)	25-100	В	36GUG02NG		200	37GUG02NGD		200A/250V	37GUG02NGF		100	37GUG02NGP	
230	50	3	25–100	В	36HUG02NG		200	37HUG02NGD		200A/250V	37HUG02NGF		150	37HUG02NGP	
	60	(3½)	50-200	В	36IUH02NG		200	37IUH02NGD		200A/250V	37IUH02NGF		250	37IUH02NGP	
	75	4	50-200	В	36JUH02NG		400	37JUH02NGD		400A/250V	37JUH02NGF		250	37JUH02NGP	
	100	5	55-250	_	36LPS02NG		400	37LPS02NGD		400A/250V	37LPS02NGF		400	37LPS02NGP	
	150	5	55–250	_	36LPU02NG		600	37LPU02NGD		600A/250V	37LPU02NGF		600	37LPU02NGP	
	350	6	160–630	_	36MPX02NG		1200	37MPX02NGD		1200A/250V	37MPX02NGF		1200	37MPX02NGP	
	15	1	5.5-22	A1	36DUD04NH		30	37DUD04NHD		30A/600V	37DUD04NHF		30	37DUD04NHP	
	30	(1¾)	10-40	A1	36EUE04NH		60	37EUE04NHD		60A/600V	37EUE04NHF		50	37EUE04NHP	
	40	2	13–52	В	36FUF04NH		100	37FUF04NHD		100A/600V	37FUF04NHF		100	37FUF04NHP	
	60	(2½)	25-100	В	36GUG04NH		200	37GUG04NHD		200A/600V	37GUG04NHF		100	37GUG04NHP	
460	75	3	25-100	В	36HUG04NH		200	37HUG04NHD		200A/600V	37HUG04NHF		125	37HUG04NHP	
+00	100	(3½)	50-200	В	36IUH04NH		200	37IUH04NHD		200A/600V	37IUH04NHF		150	37IUH04NHP	
	150	4	50-200	В	36JUH04NH		400	37JUH04NHD		400A/600V	37JUH04NHF		250	37JUH04NHP	
	200	5	55-250	_	36LPS04NH		400	37LPS04NHD		400A/600V	37LPS04NHF		400	37LPS04NHP	
	300	5	55-250	_	36LPU04NH		600	37LPU04NHD		600A/600V	37LPU04NHF		600	37LPU04NHP	
	700	6	160-630	_	36MPX04NH		1600	37MPX04NHD		1600A/600V	37MPX04NHF		1200	37MPX04NHP	
	15	1	5.5-22	A1	36DUD05NE		30	37DUD05NED		30A/600V	37DUD05NEF		30	37DUD05NEP	
	30	(1¾)	10-40	A1	36EUE05NE		60	37EUE05NED		60A/600V	37EUE05NEF		50	37EUE05NEP	
	40	2	13-52	В	36FUF05NE		100	37FUF05NED		100A/600V	37FUF05NEF		50	37FUF05NEP	
	60	(21/2)	25-100	В	36GUG05NE		100	37GUG05NED		100A/600V	37GUG05NEF		100	37GUG05NEP	
575	75	3	25-100	В	36HUG05NE		200	37HUG05NED		200A/600V	37HUG05NEF		125	37HUG05NEP	
υ/ ɔ	100	(3½)	50-200	В	36IUH05NE		200	37IUH05NED		200A/600V	37IUH05NEF		150	37IUH05NEP	
	150	4	50-200	В	36JUH05NE		400	37JUH05NED		400A/600V	37JUH05NEF		250	37JUH05NEP	
	200	5	55-250		36LPS05NE		400	37LPS05NED		400A/600V	37LPS05NEF		250	37LPS05NEP	
	300	5	55-250		36LPU05NE		600	37LPU05NED		600A/600V	37LPU05NEF		400	37LPU05NEP	
	700	6	160-630	_	37MPX05NF		1600	37MPX05NED		1600A/600V	37MPX05NEF		1600	37MPX05NEP	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Product Category: NEMA

Siemens Industry, Inc.

Industrial Controls Catalog

① See page 9/106 for conduit hubs and conversion

Selection

Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/177. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 1 General Purpose Enclosures

							Combin	ation Non-Fusib	le						
			Overload	Relay	Non-Combina	tion	Discon	nect			Fusible Disconn	ect	Combina	tion Circit Break	er
		NEMA					Disc.			Fuse Clip			Circuit		
Motor Voltage	Max Hp	Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Amp Rating	Catalog Number	List Price \$	Amp/Volt Rating	Catalog Number	List Price \$	Breaker Amps	Catalog Number	List Price \$
Voltage	10	1	10-40	A1	36DUEC6BD	111000	60	37DUEC6BDD	I IICE 9	60A/250V	37DUEC6BDF	I IICC Ø	50	37DUEC6BDP	I IICC Q
	15	(134)	10-40	A1	36EUEC6BD		100	37EUEC6BDD		100A/250V	37EUEC6BDF		100	37EUEC6BDP	
	20	2	13–52	В	36FUFC6BD		100	37FUFC6BDD		100A/250V	37FUFC6BDF		100	37FUFC6BDP	
	30	(2½)	25–100	В	36GUGC6BD		200	37GUGC6BDD		200A/250V	37GUGC6BDF		125	37GUGC6BDP	
	40	3	25–100	В	36HUGC6BD		200	37HUGC6BDD		200A/250V	37HUGC6BDF		150	37HUGC6BDP	
200	50	(3½)	50-200	В	36IUHC6BD		200	37IUHC6BDD		200A/250V	37IUHC6BDF		250	37IUHC6BDP	
	60	4	50-200	В	36JUHC6BD		400	37JUHC6BDD		400A/250V	37JUHC6BDF		250	37JUHC6BDP	
	75	5	55-250	_	36LPSC6BD		400	37LPSC6BDD		400A/250V	37LPSC6BDF		400	37LPSC6BDP	
	150	5	55-250	_	36LPUC6BD		600	37LPUC6BDD		600A/250V	37LPUC6BDF		600	37LPUC6BDP	
	300	6	160-630	_	36MPXC6BD		1200	37MPXC6BDD		1200A/250V	37MPXC6BDF		1200	37MPXC6BDP	
	10	1	10-40	A1	36DUEC2BG		60	37DUEC2BGD		60A/250V	37DUEC2BGF		50	37DUEC2BGP	
	15	(13/4)	10-40	A1	36EUEC2BG		60	37EUEC2BGD		60A/250V	37EUEC2BGF		50	37EUEC2BGP	
	25	2	13-52	В	36FUFC2BG		100	37FUFC2BGD		100A/250V	37FUFC2BGF		100	37FUFC2BGP	
	30	(21/2)	25-100	В	36GUGC2BG		200	37GUGC2BGD		200A/250V	37GUGC2BGF		100	37GUGC2BGP	
000	50	3	25-100	В	36HUGC2BG		200	37HUGC2BGD		200A/250V	37HUGC2BGF		150	37HUGC2BGP	
230	60	(31/2)	50-200	В	36IUHC2BG		200	37IUHC2BGD		200A/250V	37IUHC2BGF		250	37IUHC2BGP	
	75	4	50-200	В	36JUHC2BG		400	37JUHC2BGD		400A/250V	37JUHC2BGF		250	37JUHC2BGP	
	100	5	55-250	_	36LPSC2BG		400	37LPSC2BGD		400A/250V	37LPSC2BGF		400	37LPSC2BGP	
	150	5	55-250	_	36LPUC2BG		600	37LPUC2BGD		600A/250V	37LPUC2BGF		600	37LPUC2BGP	
	350	6	160-630	_	36MPXC2BG		1200	37MPXC2BGD		1200A/250V	37MPXC2BGF		1200	37MPXC2BGP	
	15	1	5.5-22	A1	36DUDC4BH		30	37DUDC4BHD		30A/600V	37DUDC4BHF		30	37DUDC4BHP	
	30	(1¾)	10-40	A1	36EUEC4BH		60	37EUEC4BHD		60A/600V	37EUEC4BHF		50	37EUEC4BHP	
	40	2	13-52	В	36FUFC4BH		100	37FUFC4BHD		100A/600V	37FUFC4BHF		100	37FUFC4BHP	
	60	(21/2)	25-100	В	36GUGC4BH		200	37GUGC4BHD		200A/600V	37GUGC4BHF		100	37GUGC4BHP	
460	75	3	25-100	В	36HUGC4BH		200	37HUGC4BHD		200A/600V	37HUGC4BHF		125	37HUGC4BHP	
400	100	(31/2)	50-200	В	36IUHC4BH		200	37IUHC4BHD		200A/600V	37IUHC4BHF		150	37IUHC4BHP	
	150	4	50-200	В	36JUHC4BH		400	37JUHC4BHD		400A/600V	37JUHC4BHF		250	37JUHC4BHP	
	200	5	55-250	_	36LPSC4BH		400	37LPSC4BHD		400A/600V	37LPSC4BHF		400	37LPSC4BHP	
	300	5	55-250	_	36LPUC4BH		600	37LPUC4BHD		600A/600V	37LPUC4BHF		600	37LPUC4BHP	
	700	6	160-630	_	36MPXC4BH		1600	37MPXC4BHD		1600A/600V	37MPXC4BHF		1200	37MPXC4BHP	
	15	1	5.5-22	A1	36DUDC5BE		30	37DUDC5BED		30A/600V	37DUDC5BEF		30	37DUDC5BEP	
	30	(1¾)	10-40	A1	36EUEC5BE		60	37EUEC5BED		60A/600V	37EUEC5BEF		50	37EUEC5BEP	
	40	2	13–52	В	36FUFC5BE		100	37FUFC5BED		100A/600V	37FUFC5BEF		50	37FUFC5BEP	
	60	(2½)	25-100	В	36GUGC5BE		100	37GUGC5BED		100A/600V	37GUGC5BEF		100	37GUGC5BEP	
575	75	3	25-100	В	36HUGC5BE		200	37HUGC5BED		200A/600V	37HUGC5BEF		125	37HUGC5BEP	
3,3	100	(3½)	50-200	В	36IUHC5BE		200	37IUHC5BED		200A/600V	37IUHC5BEF		150	37IUHC5BEP	
	150	4	50-200	В	36JUHC5BE		400	37JUHC5BED		400A/600V	37JUHC5BEF		250	37JUHC5BEP	
	200	5	55-250	_	36LPSC5BE		400	37LPSC5BED		400A/600V	37LPSC5BEF		250	37LPSC5BEP	
	300	5	55-250	_	36LPUC5BE		600	37LPUC5BED		600A/600V	37LPUC5BEF		400	37LPUC5BEP	
	700	6	160-630	-	37MPXC5BF		1600	37MPXC5BED		1600A/600V	37MPXC5BEF		1600	37MPXC5BEP	

Selection

Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/177. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 4 Painted Enclosures

							Combin	ation Non-Fusib	ile						
			Overload	Relay	Non-Combina	tion	Discon			Combination	Fusible Disconr	ect	Combinat	tion Circit Break	er
		NEMA		<u> </u>			Disc.			Fuse Clip			Circuit		
Motor	Max	Size	Amp	Frame	Catalog	List	Amp	Catalog	List	Amp/Volt	Catalog	List	Breaker	Catalog	List
Voltage	Нр	(1/2 Size)	Range	Size	Number	Price \$	Rating	Number	Price \$	Rating	Number	Price \$	Amps	Number	Price \$
	10	1	10-40	A1	36DUEC6ED		60	37DUEC6EDD		60A/250V	37DUEC6EDF		50	37DUEC6EDP	
	15	(1¾)	10-40	A1	36EUEC6ED		100	37EUEC6EDD		100A/250V	37EUEC6EDF		100	37EUEC6EDP	
	20	2	13–52	В	36FUFC6ED		100	37FUFC6EDD		100A/250V	37FUFC6EDF		100	37FUFC6EDP	┼
	30	(2½)	25-100	В	36GUGC6ED		200	37GUGC6EDD		200A/250V	37GUGC6EDF		125	37GUGC6EDP	
200	40	3	25–100	В	36HUGC6ED		200	37HUGC6EDD		200A/250V	37HUGC6EDF		150	37HUGC6EDP	
	50	(3½)	50-200	В	36IUHC6ED		200	37IUHC6EDD		200A/250V	37IUHC6EDF		250	37IUHC6EDP	
	60	4	50-200	В	36JUHC6ED		400	37JUHC6EDD		400A/250V	37JUHC6EDF		250	37JUHC6EDP	₩
	75	5	55-250		36LPSC6ED		400	37LPSC6EDD		400A/250V	37LPSC6EDF		400	37LPSC6EDP	₩
	150	5	55-250		36LPUC6ED		600	37LPUC6EDD		600A/250V	37LPUC6EDF		600	37LPUC6EDP	
	300	6	160–630	_	36MPXC6ED		1200	37MPXC6EDD		1200A/250V	37MPXC6EDF		1200	37MPXC6EDP	—
	10	1	10-40	A1	36DUEC2EG		60	37DUEC2EGD		60A/250V	37DUEC2EGF		50	37DUEC2EGP	—
	15	(1¾)	10-40	A1	36EUEC2EG		60	37EUEC2EGD		60A/250V	37EUEC2EGF		50	37EUEC2EGP	
	25	2	13–52	В	36FUFC2EG		100	37FUFC2EGD		100A/250V	37FUFC2EGF		100	37FUFC2EGP	
	30	(2½)	25–100	В	36GUGC2EG		200	37GUGC2EGD		200A/250V	37GUGC2EGF		100	37GUGC2EGP	
230	50	3	25–100	В	36HUGC2EG		200	37HUGC2EGD		200A/250V	37HUGC2EGF		150	37HUGC2EGP	
200	60	(3½)	50-200	В	36IUHC2EG		200	37IUHC2EGD		200A/250V	37IUHC2EGF		250	37IUHC2EGP	
	75	4	50-200	В	36JUHC2EG		400	37JUHC2EGD		400A/250V	37JUHC2EGF		250	37JUHC2EGP	
	100	5	55-250	_	36LPSC2EG		400	37LPSC2EGD		400A/250V	37LPSC2EGF		400	37LPSC2EGP	
	150	5	55-250	_	36LPUC2EG		600	37LPUC2EGD		600A/250V	37LPUC2EGF		600	37LPUC2EGP	
	350	6	160-630	_	36MPXC2EG		1200	37MPXC2EGD		1200A/250V	37MPXC2EGF		1200	37MPXC2EGP	
	15	1	5.5-22	A1	36DUDC4EH		30	37DUDC4EHD		30A/600V	37DUDC4EHF		30	37DUDC4EHP	
	30	(1¾)	10-40	A1	36EUEC4EH		60	37EUEC4EHD		60A/600V	37EUEC4EHF		50	37EUEC4EHP	
	40	2	13-52	В	36FUFC4EH		100	37FUFC4EHD		100A/600V	37FUFC4EHF		100	37FUFC4EHP	
	60	(21/2)	25-100	В	36GUGC4EH		200	37GUGC4EHD		200A/600V	37GUGC4EHF		100	37GUGC4EHP	
400	75	3	25-100	В	36HUGC4EH		200	37HUGC4EHD		200A/600V	37HUGC4EHF		125	37HUGC4EHP	
460	100	(31/2)	50-200	В	36IUHC4EH		200	37IUHC4EHD		200A/600V	37IUHC4EHF		150	37IUHC4EHP	
	150	4	50-200	В	36JUHC4EH		400	37JUHC4EHD		400A/600V	37JUHC4EHF		250	37JUHC4EHP	
	200	5	55-250	_	36LPSC4EH		400	37LPSC4EHD		400A/600V	37LPSC4EHF		400	37LPSC4EHP	
	300	5	55-250	_	36LPUC4EH		600	37LPUC4EHD		600A/600V	37LPUC4EHF		600	37LPUC4EHP	
	700	6	160-630	_	36MPXC4EH		1600	37MPXC4EHD		1600A/600V	37MPXC4EHF		1200	37MPXC4EHP	
	15	1	5.5-22	A1	36DUDC5EE		30	37DUDC5EED		30A/600V	37DUDC5EEF		30	37DUDC5EEP	
	30	(1¾)	10-40	A1	36EUEC5EE		60	37EUEC5EED		60A/600V	37EUEC5EEF		50	37EUEC5EEP	<u> </u>
	40	2	13–52	В	36FUFC5EE		100	37FUFC5EED		100A/600V	37FUFC5EEF		50	37FUFC5EEP	
	60	(2½)	25–100	В	36GUGC5EE		100	37GUGC5EED		100A/600V	37GUGC5EEF		100	37GUGC5EEP	
	75	3	25–100	В	36HUGC5EE		200	37HUGC5EED		200A/600V	37HUGC5EEF		125	37HUGC5EEP	
575	100	(3½)	50-200	В	36IUHC5EE		200	37IUHC5EED		200A/600V	37IUHC5EEF		150	37IUHC5EEP	
	150	4	50-200	В	36JUHC5EE		400	37JUHC5EED		400A/600V	37JUHC5EEF		250	37JUHC5EEP	
	200	5	55–250	_	36LPSC5EE		400	37LPSC5EED		400A/600V	37LPSC5EEF		250	37LPSC5EEP	
	300	5	55–250	_	36LPUC5EE		600	37LPUC5EED		600A/600V	37LPUC5EEF		400	37LPUC5EEP	
	700	6	160–630	_	37MPXC5EF		1600	37MPXC5EED		1600A/600V	37MPXC5EEF		1600	37MPXC5EEP	

Selection

Ordering Information	Coil and Control Voltage
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NEMA 4/4X Stainless Steel Enclosures

							Combin	ation Non-Fusib	le						
			Overload	Relay	Non-Combina	tion	Discon	nect		Combination	Fusible Disconn	ect	Combinat	tion Circit Break	er
		NEMA					Disc.			Fuse Clip			Circuit		
Motor Voltage	Max Hp	Size (1/2 Size)	Amp Range	Frame Size	Catalog Number	List Price \$	Amp Rating	Catalog Number	List Price \$	Amp/Volt Rating	Catalog Number	List Price \$	Breaker Amps	Catalog Number	List Price \$
	10	1	10-40	A1	36DUEC6WD		60	37DUEC6WDD		60A/250V	37DUEC6WDF		50	37DUEC6WDP	
	15	(1¾)	10-40	A1	36EUEC6WD		100	37EUEC6WDD		100A/250V	37EUEC6WDF		100	37EUEC6WDP	
	20	2	13-52	В	36FUFC6WD		100	37FUFC6WDD		100A/250V	37FUFC6WDF		100	37FUFC6WDP	
.00	30	(21/2)	25-100	В	36GUGC6WD		200	37GUGC6WDD		200A/250V	37GUGC6WDF		125	37GUGC6WDP	
	40	3	25-100	В	36HUGC6WD		200	37HUGC6WDD		200A/250V	37HUGC6WDF		150	37HUGC6WDP	
	50	(31/2)	50-200	В	36IUHC6WD		200	37IUHC6WDD		200A/250V	37IUHC6WDF		250	37IUHC6WDP	
	60	4	50-200	В	36JUHC6WD		400	37JUHC6WDD		400A/250V	37JUHC6WDF		250	37JUHC6WDP	
	10	1	10-40	A1	36DUEC2WG		60	37DUEC2WGD		60A/250V	37DUEC2WGF		50	37DUEC2WGP	
	15	(1¾)	10-40	A1	36EUEC2WG		60	37EUEC2WGD		60A/250V	37EUEC2WGF		50	37EUEC2WGP	
	25	2	13-52	В	36FUFC2WG		100	37FUFC2WGD		100A/250V	37FUFC2WGF		100	37FUFC2WGP	
30	30	(21/2)	25-100	В	36GUGC2WG		200	37GUGC2WGD		200A/250V	37GUGC2WGF		100	37GUGC2WGP	
	50	3	25-100	В	36HUGC2WG		200	37HUGC2WGD		200A/250V	37HUGC2WGF		150	37HUGC2WGP	
	60	(31/2)	50-200	В	36IUHC2WG		200	37IUHC2WGD		200A/250V	37IUHC2WGF		250	37IUHC2WGP	
	75	4	50-200	В	36JUHC2WG		400	37JUHC2WGD		400A/250V	37JUHC2WGF		250	37JUHC2WGP	
	15	1	5.5-22	A1	36DUDC4WH		30	37DUDC4WHD		30A/600V	37DUDC4WHF		30	37DUDC4WHP	
	30	(1¾)	10-40	A1	36EUEC4WH		60	37EUEC4WHD		60A/600V	37EUEC4WHF		50	37EUEC4WHP	
	40	2	13-52	В	36FUFC4WH		100	37FUFC4WHD		100A/600V	37FUFC4WHF		100	37FUFC4WHP	
160	60	(21/2)	25-100	В	36GUGC4WH		200	37GUGC4WHD		200A/600V	37GUGC4WHF		100	37GUGC4WHP	
	75	3	25-100	В	36HUGC4WH		200	37HUGC4WHD		200A/600V	37HUGC4WHF		125	37HUGC4WHP	
	100	(31/2)	50-200	В	36IUHC4WH		200	37IUHC4WHD		200A/600V	37IUHC4WHF		150	37IUHC4WHP	
	150	4	50-200	В	36JUHC4WH		400	37JUHC4WHD		400A/600V	37JUHC4WHF		250	37JUHC4WHP	
	15	1	5.5-22	A1	36DUDC5WE		30	37DUDC5WED		30A/600V	37DUDC5WEF		30	37DUDC5WEP	
	30	(1¾)	10-40	A1	36EUEC5WE		60	37EUEC5WED		60A/600V	37EUEC5WEF		50	37EUEC5WEP	
	40	2	13-52	В	36FUFC5WE		100	37FUFC5WED		100A/600V	37FUFC5WEF		50	37FUFC5WEP	
75	60	(21/2)	25-100	В	36GUGC5WE		100	37GUGC5WED		100A/600V	37GUGC5WEF		100	37GUGC5WEP	
	75	3	25-100	В	36HUGC5WE		200	37HUGC5WED		200A/600V	37HUGC5WEF		125	37HUGC5WEP	
	100	(31/2)	50-200	В	36IUHC5WE		200	37IUHC5WED		200A/600V	37IUHC5WEF		150	37IUHC5WEP	
	150	4	50-200	В	36JUHC5WE		400	37JUHC5WED		400A/600V	37JUHC5WEF		250	37JUHC5WEP	

Selection

Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/161. ► Wiring Diagrams see page 9/177. ► Replacement Parts see page 9/127. 	The coil voltage will always match the motor voltage. As standard, a CPT is supplied and 120V control voltage is utilized. To change to 120V voltage (CPT not supplied), change the 9th character to "F". To change to 24VAC voltage (CPT not supplied), change the 9th character to "J".

NEMA 12 Enclosures (Supplied as NEMA 12, field convertible to $3/3R)^{\scriptsize \textcircled{\tiny 1}}$

						Combin	ation Non-Fusib	le						
		Overload	Relay	Non-Combina	tion	Discon	nect			Fusible Disconn	ect	Combina	tion Circit Break	er
	NEMA					Disc.			Fuse Clip			Circuit		
														List
-	(1/2 SIZe)				Price \$			Price \$		+	Price \$			Price \$
_	(42/)								<u> </u>					
	, ,								<u> </u>			-	l	
_												-	l	
	-													
	-												-	
	' '								<u> </u>					
			В	l		-			1					
	-													
	6		_	+		-			+	-			+	
	1								_	-		+	-	
						60			60A/250V			_		
		13-52		36FUFC2NG		100	37FUFC2NGD		100A/250V	37FUFC2NGF		100	37FUFC2NGP	
30	(21/2)	25-100	В	36GUGC2NG		200	37GUGC2NGD		200A/250V	37GUGC2NGF		100	37GUGC2NGP	
50	3	25-100	В	36HUGC2NG		200	37HUGC2NGD		200A/250V	37HUGC2NGF		150	37HUGC2NGP	
60	(31/2)	50-200	В	36IUHC2NG		200	37IUHC2NGD		200A/250V	37IUHC2NGF		250	37IUHC2NGP	
75	4	50-200	В	36JUHC2NG		400	37JUHC2NGD		400A/250V	37JUHC2NGF		250	37JUHC2NGP	
100	5	55-250	_	36LPSC2NG		400	37LPSC2NGD		400A/250V	37LPSC2NGF		400	37LPSC2NGP	
150	5	55-250	_	36LPUC2NG		600	37LPUC2NGD		600A/250V	37LPUC2NGF		600	37LPUC2NGP	
350	6	160-630	_	36MPXC2NG		1200	37MPXC2NGD		1200A/250V	37MPXC2NGF		1200	37MPXC2NGP	
15	1	5.5-22	A1	36DUDC4NH		30	37DUDC4NHD		30A/600V	37DUDC4NHF		30	37DUDC4NHP	
30	(1¾)	10-40	A1	36EUEC4NH		60	37EUEC4NHD		60A/600V	37EUEC4NHF		50	37EUEC4NHP	
40	2	13-52	В	36FUFC4NH		100	37FUFC4NHD		100A/600V	37FUFC4NHF		100	37FUFC4NHP	
60	(21/2)	25-100	В	36GUGC4NH		200	37GUGC4NHD		200A/600V	37GUGC4NHF		100	37GUGC4NHP	
75	3	25-100	В	36HUGC4NH		200	37HUGC4NHD		200A/600V	37HUGC4NHF		125	37HUGC4NHP	
100	(31/2)	50-200	В	36IUHC4NH		200	37IUHC4NHD		200A/600V	37IUHC4NHF		150	37IUHC4NHP	
150	4	50-200	В	36JUHC4NH		400	37JUHC4NHD		400A/600V	37JUHC4NHF		250	37JUHC4NHP	
_	5		_			400						400	37LPSC4NHP	
300	5	55-250	_	36LPUC4NH		600	37LPUC4NHD		600A/600V	37LPUC4NHF		600	37LPUC4NHP	
700	6	160–630	_	36MPXC4NH		1600	37MPXC4NHD		1600A/600V	37MPXC4NHF		1200	37MPXC4NHP	
15	1		A1	36DUDC5NE		30	37DUDC5NED		 			_	37DUDC5NEP	
_	(13/4)									1				
	2	13–52	В			100								
						100			-					
	3								-				37HUGC5NEP	
	_					-			-			-		
													l	
			_			-								
			_											
	_								-					
	60 75 100 150 350 15 30 40 60 75 100 150 200 300 700	Max Hp Size (1/2 Size) 10 1 15 (1¾) 20 2 30 (2½) 40 3 50 (3½) 60 4 75 5 150 5 300 6 10 1 15 (1¾) 25 2 30 (2½) 50 3 60 (3½) 75 4 100 5 150 5 350 6 15 1 30 (1¾) 40 2 60 (2½) 75 3 100 (3½) 150 4 200 5 300 5 700 6 15 1 30 (1¾) 40 2	Max Hp NEMA Size (1/2 Size) Amp Range 10 1 10-40 15 (1¾) 10-40 20 2 13-52 30 (2½) 25-100 40 3 25-100 50 (3½) 50-200 60 4 50-200 75 5 55-250 150 5 55-250 300 6 160-630 10 1 10-40 15 (1¾) 10-40 25 2 13-52 30 (2½) 25-100 50 3 25-100 60 (3½) 50-200 75 4 50-200 75 4 50-200 150 5 55-250 300 6 160-630 15 1 5.5-22 30 (1¾) 10-40 40 2 13-52 60	May Phy NEMA Size (1/2 Size) (1/2 Size) Amp Range Range (1/2 Size) Frame Size Range (1/2 Size) 10 1 10-40 A1 15 (1¾) 10-40 A1 20 2 13-52 B 30 (2½) 25-100 B 40 3 25-100 B 60 4 50-200 B 60 4 50-200 B 75 5 55-250 150 5 55-250 150 5 55-250 300 6 160-630 10 1 10-40 A1 15 (1¾) 10-40 A1 25 2 13-52 B 30 (2½) 25-100 B 60 (3½) 50-200 B 75 4 50-200 B 150 5 55-250	May Py NEMA Size (1/2 Size) Amp Range Range Size Catalog Number 10 1 10–40 A1 36DUEC6ND 15 (1¾) 10–40 A1 36EUEC6ND 20 2 13–52 B 36FUFC6ND 30 (2½) 25–100 B 36GUGC6ND 40 3 25–100 B 36HUGC6ND 50 (3½) 50–200 B 36JUHC6ND 60 4 50–200 B 36JUHC6ND 75 5 55–250 — 36LPSC6ND 150 5 55–250 — 36LPC6ND 300 6 160–630 — 36MPXC6ND 10 1 10–40 A1 36DUEC2NG 15 2 13–52 B 36FUFC2NG 30 (2½) 25–100 B 36HUGC2NG 50 3 25–100 B 36JUHC2NG 55 55–250 — 36LP	Max Hp (1/2 Size) Amp (1/2 Size) Frame Range Range Range Catalog Number List Price \$ 10 1 10−40 A1 36DUEC6ND 36UEC6ND 15 (1¾) 10−40 A1 36EUEC6ND 36UEC6ND 20 2 13−52 B 36FUFC6ND 36UEC6ND 30 (2½) 25−100 B 36HUGC6ND 36UEC6ND 50 (3½) 50−200 B 36IUEC6ND 36UEC6ND 60 4 50−200 B 36IUEC6ND 36EPSC6ND 150 5 55−250 — 36LPVC6ND 36EPSC6ND 150 5 55−250 — 36LPVC6ND 36EPSC6ND 10 1 10−40 A1 36DUEC2NG 36EPSC6ND 15 (1¾) 10−40 A1 36EUEC2NG 36EUEC2NG 25 2 13−52 B 36FUEC2NG 36EUEC2NG 30 (2½) 25−100 B 36IUEC2NG 36EUEC2NG	Max Hph NEMA Size l (1/2 Size) Amp Range Range Frame Size Size Catalog Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Amp Rating Number Price Size Add On Color Col	May Map (1/2 Size) Kama Size (1/2 Size) Range (1/2 Size) Frame Size Number (1/2 Size) Catalog Number Price Size (1/2 Size) List Rating Number (2/2 Size) Catalog Number (2/2 Size) Catalog Number (2/2 Size) Catalog Number (2/2 Size) Catalog Number (2/2 Size) Catalog Number (2/2 Size) Catalog Number (2/2 Size) Amp (2/2 Size) Catalog Number (2/2 Size) Amp (2/2 Size) Catalog Number (2/2 Size) Amp (2/2 Size) Catalog Number (2/2 Size) Amp (2/2 Size)	NEMA Nema	NEMA NEMA	NEMA Size Pange Frame Catalog List Amp Catalog Rating Value Price Amp Value Price Amp Value Price Amp Value Price Amp Value Price Amp Value Price Amp Value Price Amp Value Price Amp Value Price Amp Value Amp Value Amp Value Price Amp Value Price Amp Value	Nemark N	May Name Part P	May May

 $[\]odot$ See page 9/106 for conduit hubs and conversion instructions.

Selection



► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order	

- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.
- ▶ Dimensions see pages 9/139 open and 9/151 enclosed.
- ► Wiring Diagrams see page 9/178.

Ordering Information

► Replacement Parts see page 9/127.

Coil Table	
60Hz Voltage	Letter
24	J
120	F
110-120/220-240 [®]	Α
200–208	D
220-240	G
277	L
220-240/440-480 ^①	С
440-480	Н
575–600	Е
For other veltages and freque	onoioo

For other voltages and frequencies, see Factory Modifications page 9/115.

Open Type & Standard Width Enclosure, 3-Phase, 3-Pole

Max	Нр						Enclosure											
				Cont-			- F - 7 F -		NEMA 1 General Purpose		NEMA 4/4X Stainless® Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel				NEMA 3 & 4		NEMA 12 [®] NEMA 3/3F Industrial Us Weatherprod	R se
200 Volts	230 Volts	460 Volts	575 Volts	Amp Rating	NEMA Size	Half Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$	Catalog Number	List Price\$
1½	1½	2	2	9	00	_	40BP32A*		40BP32B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_
3	3	5	5	18	0	_	40CP32A*		40CP32B*		40CP32W*		40CP32F*		40CP32H*		40CP320*	
7½	7½	10	10	27	1	_	40DP32A*		40DP32B*		40DP32W*		40DP32F*		40DP32H*		40DP320*	
10	10	15	15	40	_	13/4	40EP32A*		40EP32B*		40EP32W*		40EP32F*		40EP32H*		40EP320*	
10	15	25	25	45	2	_	40FP32A*		40FP32B*		40FP32W*		40FP32F*		40FP32H*		40FP320*	
15	20	30	30	60	_	2½	40GP32A*		40GP32B*		40GP32W*		40GP32F*		40GP32H*		40GP320*	
25	30	50	50	90	3	_	40HP32A*		40HP32B*		40HP32W*		40HP32F*		40HP32H*		40HP320*	
30	40	75	75	115	_	3½	40IP32A*		40IP32B*		40IP32W*		40IP32F*		40IP32H*		401P320*	
40	50	100	100	135	4	_	40JG32A*		40JG32B*		40JG32W*		40JG32F*		40JG32H*		40JG320*	
75	100	200	200	270	5	_	40LP32A*		40LP32B*		40LP32E*3		_	_	40LP32H*		40LP320*	
150	200	400	400	540	6	_	40MP32A*		40MP32B*		40MP32E*3		_	_	_	_	40MP320*	
_	300	600	600	810	740	_	40NH32A*		40NH32B*		40NH32E*3		_	_	-	_	40NH320*	
	450	900	900	1215	8©⑦	_	40PH32A*		40PH32B*		40PH32E*3		_	_		_	40PH320*	

Extra Wide Enclosure, 3-Phase, 3-Pole

				-	_									
Max H	łp						Enclosure							
				1			NEMA 1 [®]		NEMA 4/4X Stainle	ss ^②	NEMA 7 & 9		NEMA 12 ²	
200	230	460	575	Contactor Amp	NEMA	Half	General Purpose		Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		t NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 3/3R Industrial Use Weatherproof	
Volts	Volts	Volts	Volts	Range	Size	Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1½	1½	2	2	9	00	_	40BP82B*		Use Size 0	_	Use Size 0	_	Use Size 0	_
3	3	5	5	18	0	_	40CP82B*		40CP82W*		40CP82H*		40CP820*	
7 ½	7½	10	10	27	1	_	40DP82B*		40DP82W*		40DP82H*		40DP820*	
10	10	15	15	40	_	13/4	40EP82B*		40EP82W*		40EP82H*		40EP820*	
10	15	25	25	45	2	_	40FP82B*		40FP82W*		40FP82H*		40FP820*	
15	20	30	30	60	_	21/2	40GP82B*		40GP82W*		40GP82H*		40GP820*	
25	30	50	50	90	3	_	40HP82B*		40HP82W*		40HP82H*		40HP820*	
30	40	75	75	115	_	31/2	40IP82B*		40IP82W*		40IP82H*		40IP820*	
40	50	100	100	135	4	_	40JG82B*		40JG82W*		40JG82H*		40JG820*	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

- ① Dual voltage coils not available in size 5-8 starters. ② For conduit hubs and conversion instructions, see page 9/106.
- ③ Enclosure is NEMA Type 4 (painted steel).
- Only available
 F coil 150-500V AC 50/60Hz, or DC
 H coil 150-500V AC 50/60Hz, or DC
 Only available
- F coil100-250V AC 50/60Hz, or DC

6				
٥		Standard Aux	iliary Contacts	
	Туре	Size (3rd Character)	Configuration	Internal / External
		B Thru E	1N.O.	Internal
	All FVNR	F Thru J	1N.O.	External
	Starters & Contactors	L Thru M	2N.O., 2N.C.	External
		N Thru P	1N.O., 1N.C.	External

① Lugs are not included, refer to page 9/104.

Heavy Duty ContactorsSingle Phase, 4-Pole & Vacuum, Class 40

Selection



Ordering Information	Coil Table	Coil Table				
 Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless 	60Hz Voltage	Letter J				
specified on order.	120	F				
► Field Modification Kits see page 9/100.	110–120/220–240 ^① 200–208	A D				
► Factory Modifications see page 9/115.	220–200	G				
► Dimensions see pages 9/139 open and 9/151 enclosed.	277 220–240/440–480 ^①	L C				
➤ Wiring Diagrams see page 9/178.	440–480	Н				
	575–600	Е				
► Replacement Parts see page 9/127.	For other voltages and fre see Factory Modifications					

Open Type & Standard Width Enclosure, Single Phase, 2-Pole 34

Max	Нр				Enclosure													
115	208/ 230	Cont- actor Amp	NEMA	Half			Open Type [®]		Open Type [®] NEMA 1 General Purposes		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class III Groups E, F & G Class III Bolted Enclosure Indoor/Outdoor Use		NEMA 12 NEMA 3/3R ^② Industrial Use Weatherproof	
Volts	Volts		Size	Size	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$		
1/3	1	9	00	_	40BP12A*		40BP12B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_		
1	2	18	0	_	40CP12A*		40CP12B*		40CP12W*		40CP12F*		40CP12H*		40CP120*			
2	3	27	1	_	40DP12A*		40DP12B*		40DP12W*		40DP12F*		40DP12H*		40DP120*			
3	5	35	1P	_	40EP12A*		40EP12B*		40EP12W*		40EP12F*		40EP12H*		40EP120*			
3	7½	45	2	_	40FP12A*		40FP12B*		40FP12W*		40FP12F*		40FP12H*		40FP120*			
5	10	60	_	21/2	40GP12A*		40GP12B*	·	40GP12W*		40GP12F*	·	40GP12H*		40GP120*			
7½	15	90	3	_	40HP12A*		40HP12B*		40HP12W*		40HP12F*		40HP12H*		40HP120*			
_	_	115	_	3½	40IP12A*		40IP12B*		40IP12W*		40IP12F*		40IP12H*		40IP120*			

Open Type & Standard Width Enclosure, 4-Pole

Max	Нр						Enclosure											
				Cont- actor			Ореп Туре	-		General Purpose		NEMA 4/4X Stainless ^② Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class III Bolted Enclosure Indoor/Outdoor Use		RQ lse pof
200 Volts	230 Volts	460 Volts	575 Volts	Amp Rating	NEMA Size		Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$
1/3	1½	2	2	9	00	_	40BP22A*		40BP22B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_
2	3	5	5	18	0	_	40CP22A*		40CP22B*		40CP22W*		40CP22F*		40CP22H*		40CP220*	
3	7½	10	10	27	1	_	40DP22A*		40DP22B*		40DP22W*		40DP22F*		40DP22H*		40DP220*	
5	10	15	15	40	_	13/4	40EP22A*		40EP22B*		40EP22W*		40EP22F*		40EP22H*		40EP220*	

Vacuum Contactors, 3-Phase, 3-Pole[®]



Max Hp				Contactor Amp	NEMA	Open Type	
200V	230V	460V	575V	Rating	Size	Catalog Number	List Price \$
40	50	100	100	135	4	40JV32A*	
75	100	200	200	270	5	40LV32A*	
150	200	400	400	540	6	40MV32A*	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

- ① Dual voltage coils not available for vacuum contactors. Refer to Page 9/115 for a complete list of available coil voltages.
- @ For conduit hubs and conversion instructions, see page 9/106.
- © To order single phase contactor in an extra wide enclo-sure, order the enclosure kit from Page 9/109 and the open style contactor as separate items.
- 4 Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters. § 1 NO Auxiliary.

Reversing Heavy Duty Contactors

Class 43

Selection



Ordering Information	Coil Table				
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage	Letter			
	24	J			
► Field Modification Kits see page 9/100.	120	F			
► Factory Modifications see page 9/115.	110-120/220-240 ^①	Α			
,	200–208	D			
▶ Dimensions see pages 9/140 open and 9/156 enclosed.	220–240	G			
► Wiring Diagrams see page 9/178.	277	L			
► Replacement Parts see page 9/127.	220-240/440-480 ^①	С			
Heplacement I alto see page 3/127.	440–480	Н			
	575–600	E			
	For other voltages and fre see Factory Modifications				

Ope	n Ty	pe &	<u> Տե</u>	<u>andaı</u>	rd Wi	dth	Enclos	ure, 3-	Phase, 🤄	3-Pole								
Max	Max Hp						Enclosure											
					Open Type®		NEMA 1		NEMA 4/4X S	Stainless ^②	NEMA 4X F	iberglass	NEMA 7 & 9		NEMA 12 ²)		
				Cont-					General Purpose		Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		Watertight, Dust-tight Corrosion Resistant		Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures		NEMA 3/3R Industrial Use Weatherproof	
				actor											Indoor/Outdoor Use			
			575 Volts	Amp Rating			Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	1/2	2	2	9	00	_	43BP32A*		43BP32B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	_
3	3	5	5	18	0	_	43CP32A*		43CP32B*		43CP32W*		43CP32F*		43CP32H*		43CP320*	
71/2	71/2	10	10	27	1	_	43DP32A*		43DP32B*		43DP32W*		43DP32F*		43DP32H*		43DP320*	
10	10	15	15	40	_	13/4	43EP32A*		43EP32B*		43EP32W*		43EP32F*		43EP32H*		43EP320*	
10	15	25	25	45	2	_	43FP32A*		43FP32B*		43FP32W*		43FP32F*		43FP32H*		43FP320*	
15	20	30	30	60	_	21/2	43GP32A*		43GP32B*		43GP32W*		43GP32F*		43GP32H*		43GP320*	
25	30	50	50	90	3	_	43HP32A*		43HP32B*		43HP32W*		43HP32F*		43HP32H*		43HP320*	
30	40	75	75	115	_	3½	43IP32A*		43IP32B*		43IP32W*		43IP32F*		43IP32H*		43IP320*	
40	50	100	100	135	4	_	43JG32A*		43JG32B*		43JG32W*		43JG32F*		43JG32H*		43JG320*	
75	100	200	200	270	5	_	43LP32A*		43LP32B*		43LP32E*3		_	_	_	_	43LP320*	
100	200	400	400	540	6	_	43MP32A*		43MP32B*		43MP32E*3		_	_	_	_	43MP320*	
_	300	600	600	810	7⑤	_	43NH32A*		43NH32B*		43NH32E*3		_	_	_	_	43NH320*	
_	450	900	900	1215	86	_	43PH32A*		_	_	_	_	 	_	_	_	_	_

Open Type & Standard Width Enclosure, Single Phase, 3-Wire, 2-Pole®

Max	Нр			Enclosure											
115	208/ 230	Cont- actor Amp	NEMA	Open Type		NEMA 1 General Purpose		NEMA 4/4X Stainless® Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4X Fiberglass Watertight, Dust-tight Corrosion Resistant		NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class III Bolted Enclosures Indoor/Outdoor Use		NEMA 12 [®] NEMA 3/3R Industrial Use Weatherproof	
Volts		Rating			List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price \$
11/3	1	9	00	43BP12A*		43BP12B*		Use Size 0	_	Use Size 0	_	Use Size 0	_	Use Size 0	
1	2	18	0	43CP12A*		43CP12B*		43CP12W*		43CP12F*		43CP12H*		43CP120*	
2	3	27	1	43DP12A*		43DP12B*		43DP12W*		43DP12F*		43DP12H*		43DP120*	
3	5	35	1P	43EP12A*		43EP12B*		43EP12W*		43EP12F*		43EP12H*		43EP120*	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

① Dual voltage coils not available in size 5-8 starters. © For conduit hubs and conversion instructions, see page 9/106.

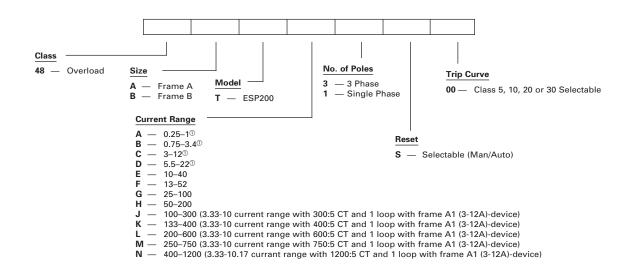
Enclosure is NEMA Type 4 (painted steel).
 Coils D, F, or G will be wired for incoming voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

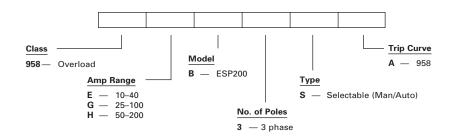
⁽a) Only available

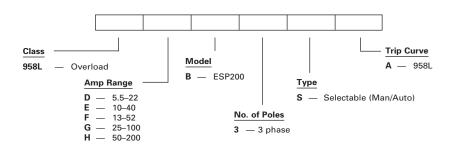
F coil 100-250V AC 50/60Hz, or DC H coil 150-500V AC 50/60Hz, or DC

⑥ Only available F coil 100-250V AC 50/60Hz, or DC

② Auxiliary contacts 43B-43E 4th pole built-in 43F-43J 2 NO & 2 NC







 $[\]ensuremath{\textcircled{1}}$ Ranges available in Single or 3-phase.

Overload Relays Solid State ESP200, Class 48, 958 and 958L

General





Features	Benefits
■ Trip Classes - 5, 10, 20, or 30 Selectable by DIP-switches	Field changeable reduces time and inventory. Suitable for light, normal and heavy starting conditions
Phase Loss Protection - Trips in less than 3 Seconds	Protects motor burn out and minimizes motor heating up
■ Phase Unbalance - Trips based on Trip Class selected	Minimizes temperature rise of the motor on a asymmetrical three-phase-system
■ Ground Fault - Trips 60% of Motor Current	 Provides optimum system protection of motors against high-resistance short-circuits or ground faults due to moisture condensation, damage of insulation or any other reason
Trip Indicator - Visible	Save time, faster to identify overload Trip
Ambient Insensitive	Prevents nuisance tripping
No Heaters Required	Saves cost and eliminates time for installation of heaters
Self-Powered - No outside source required	Reduce cost for external power supply
FLA dial with wide Adjustment - 4:1 ratio	Provides wide range, reduces inventory
 Self Protected in short circuit condition (when used with proper fuses or motor starter protector) 	Unlike bimetal overloads, this eliminates replacement of the overload heaters after short circuit
■ Test Button - Tests Electronics	Tests the complete electronic functions including the trip mechanism. Increases up time
Thermal Memory	Prevents re-starting motor when it is still hot
Conformally coated circuit board	Resists against environmental conditions
■ 1 NO and 1NC Contacts Standard. B600, R300	Makes it easier for user to wire local contacts
■ Operating Temperature: -25 °C - 65 °C	Wide operating temperature range prevents nuisance tripping with temperature changes
Repeat Accuracy <1%.	For more precise settings and reduced nuisance tripping
Removable Terminal Block	Terminal Block can be removed without removing wires. Saves time for replacements
 Automatic reset 	 Auto. Reset is 3 minutes after tripping, allowing motor to cool down before re-start. If Manual Reset is selected, overload can be reset immediately
Remote reset	 As an alternative to the mechanical RESET options, an electrical remote RESET can be used by applying 24 V DC to terminals A3 and A4
DIN Rail Mounted	Reduces installation time
Touch - Safe Terminals	Protects against accidental touching of live circuits
■ UL listed CSA certified	Third party approval standard

General







Applications

ESP200 Solid State Overloads

Designed for a wide variety of applications. The field selectable Trip Class 5, 10, 20 or 30 can easily be set by 2 DIP switches. This eliminates the guess factor of an application requirements and provides reduced inventory for multiple applications. The inherent benefits of the ESP200 ultimately results in cost savings for the user.

ESP200 has a 4:1 current adjustment range with a fine adjustment dial labeled in full load amps. The heaterless overload minimizes the heat trapped in the enclosures, reduces cost for ventilation or cooling. Easily accessible Reset button, provides visible and audible indications to ensure the tripped overload is ready to re-start.

Designed to replace thermal, or ESP100 overload relays for any application. It has the same dimensions and footprint of the ESP100 overload relays. It can be directly coupled to the contactors or remotely mounted. In addition to the NEMA contactor applications, it also can be used with other types of controllers for applications requiring DP or IEC contactors. As a retrofit for other brands, it is used with a plate available for retrofitting competitive products.

958 ESP200 Special Use Solid State Overloads

This overload is specifically designed for special applications, to provide excellent protection of hermetically sealed and artificially cooled motors that require ambient insensitive and quick trip response times. Combined with a series lockout relay, it provides unsurpassed protection for hermetically sealed compressor motors in air conditioning applications. The combination of high trip speed, current adjustment, and ease of installation makes it suitable for these applications. The trip curves are customized to provide proper overload protection for these loads without causing nuisance tripping.

It has selectable manual or automatic reset mode, and provides ground fault selection to protect equipment from damage in case of a fault.

958L ESP200 Oil Field Solid State Overloads

Specifically designed for the oil market and the cycling loads experienced with these types of pumping applications. These overload relays provide protection for standard motors, oil well pump motors, multi-torque connections, and ultra-high slip motors.

Rotors can be damaged in less than 15 seconds during motor stall conditions if electrical power is not removed. To prevent damage during motor stall, the 958L solid state overload removes the power in 7 seconds at 250% lock rotor current. Therefore, the motor casing and the rotor will be protected from being damage saving the user money and time.

Ambient Compensated Bimetal Overloads

- —Automatic or manual reset adjustment
- —A manual test button is provided to test the operation of the 3-pole overload relay control contacts
- —±15% nominal trip current adjustment
- Accept either standard Class 20 or Quick Trip (NEMA Class 10) heater elements without any other changes or adjustments
- —Available with a normally open contact for an alarm circuit (SPDT) up to 60A
- Compensated bimetal overload relays provide a constant trip time in ambient temperatures from -20°F to +170°F for a given heater rating
- UL Listed File #E22655 or Component Recognized
- CSA Certified File #LR6535

Ambient Compensated Bimetal Overloads

These thermal type overload relays are used to protect motors from excessive heat resulting from sustained motor overloads, rapid motor cycling and stalled rotor conditions. Although these devices function based on thermal principles they are designed to compensate for the ambient air temperature surrounding the overload. This helps prevent the occurrence of nuisance tripping when there are high surrounding ambient temperatures. The percentage of overload determines the length of time required to open the circuit.

2

3

4

5

9

Overload Relays

Solid State Class 48, ESP200 and 3RB20

Selection



3-Phase, 48ATC3S00

Ordering Information

- ► For CT's see Accessories page 9/67.
- ▶ Dimensions see page 9/141.
- To retrofit or direct mount to a contactor, order 49ASMP1, 2, or 3 separately. See Retrofit Plates below.
- ► For remote mounting of frame size A order 49ASMS1 terminals separately, see page 9/104.

Solid State—Class 48

Current Adjustment Range	Phase	Frame Size	Catalog Number	MRPD/MLFB	List Price \$
0.25–1	3	"A"	48ATA3S00	3UB81134AB2	
0.75–3.4	3	"A"	48ATB3S00	3UB81134BB2	
3–12	3	"A1"	48ATC3S00	3UB81234CW2	
5.5–22	3	"A1"	48ATD3S00	3UB81234DW2	
10–40	3	"A1"	48ATE3S00	3UB81234EW2	
13–52	3	"B"	48BTF3S00	3UB81334FW2	
25–100	3	"B"	48BTG3S00	3UB81334GW2	
50–200	3	"B"	48BTH3S00	3UB81334HW2	
100–300	3	"A1" ^②	48ATJ3S00	3UB81234JW2	
133–400	3	"A1" ®	48ATK3S00	3UB81234KW2	
200–600	3	"A1" ④	48ATL3S00	3UB81234LW2	
250–750	3	"A1" ⑦	48ATM3S00	3UB81234MW2	
400–1220	3	"A1" ^⑤	48ATN3S00	3UB81234NW2	
0.25–1	1	"A"	48ATA1S00	3UB88134AB2	
0.75–3.4	1	"A"	48ATB1S00	3UB88134BB2	
3–12	1	"A1"	48ATC1S00	3UB88234CW2	
5.5–22	1	"A1"	48ATD1S00	3UB88234DW2	
25-100	1	"B"	48BTG1S00	3UB88334GW2	

Solid State—3RB20636, 3-Phase, Manual/Auto Reset

For Contactor Size	Setting Range Amps	Class 10 Catalog Number	List Price \$	Class 20 Catalog Number	List Price \$
5	55 - 250	3RB2066-1GC2		3RB2066-2GC2	
6	160 - 630	3RB2066-1MC2		3RB2066-2MC2	

Retrofit Plates for Contactors, Class 48

Replacement for Starter Sizes	ESP200 Overload Frame Size ^①	Retrofit Plate Suffix	Plate Kit Separate	Price Adder \$
Size 00–1¾	A or A1	1P	49ASMP1	
Size 2, 2½	В	2P	49ASMP2	
Size 3, 3½	В	3P	49ASMP3	
Size 4	В	4P	49ASMP3	

Ambient Compensated Bimetal—Open Type Class 48 Single Phase, 3-Phase (Panel Mount Only)

Poles	Amp Rating	Auxiliary Contacts	Contact Rating	Catalog Number	List Price \$
1	25 60 100 180	1 NC 1 NC 1 NC 1 NC	5A (B600) & 5A (P300)	48DA18AA4 48GA18AA4 48HA18AA4 48JA18AA4	
3	30 30 60 60	1 NC 1 NO/NC 1 NC 1 NO/NC	10A (A600) & 5A (P300)	48DC38AA4 48DC39AA4 48GC38AA4 48GC39AA4	
	100 180	3 NC 3 NC	5A (B600) & 5A (P300)	48HA38AA4 48JA38AA4	

① To determine frame size of replacement solid state overload, refer to retrofit plates table above.

② Requires use of 300:5 Current Transformers–3 of 97CT005.

③ Product Category: IEC.

Requires use of 600:5 Current Transformers–3 of 97CT008.

⑤ Requires use of 1200:5 Current Transformers-3 of

Overload has busbar connections.

② Requires use of 750:5 Current Transformers–3 of 97CT009.

[®] Requires use of 400:5 Current Transformers-3 of 97CT006.

Overload Relays Special Use Solid State Overloads, Class 958 and 958L

Selection



Ordering Information

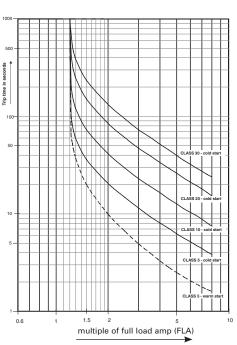
Dimensions see page 9/141.

Rating	Catalog No.	List Price \$
150:5	97CT002	
200:5	97CT003	
250:5	97CT004	
300:5	97CT005	
400:5	97CT006	
600:5	97CT008	
750:5	97CT009	
1200:5	97CT012	

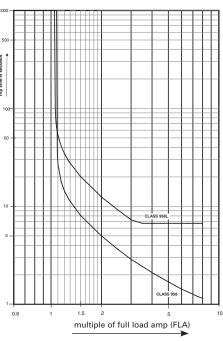
Solid State—Class 958 and 958L

Current Adjustment Range	Phase	Frame Size	Catalog Number	MRPD/MLFB	List Price \$
10-40	3	"A1"	958EB3SA	3UB85235EW2	
25–100	3	"B"	958GB3SA	3UB85335GW2	
50–200	3	"B"	958HB3SA	3UB85335HW2	
5.5–22	3	"A1"	958LDB3SA	3UB85236DW2	
10–40	3	"A1"	958LEB3SA	3UB85236EW2	
13–52	3	"B"	958LFB3SA	3UB85336FW2	
25–100	3	"B"	958LGB3SA	3UB85336GW2	
50–200	3	"B"	958LHB3SA	3UB85336HW2	



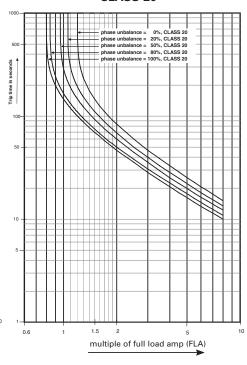


Time - Current - Characteristics CLASS 958, 958L



Product Category: NEMA

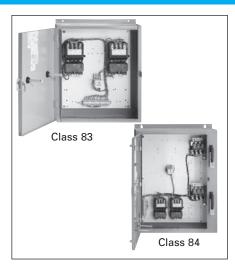
Trip - curve depending on unbalance CLASS 20



① Temperature rating -25° to +60°C.

Duplex Heavy Duty Controllers

General



Features

- Heavy Duty NEMA Starters
- Solid State or Thermal Overload Relays
- Fusible or MCP
- Heavy Duty Disconnect Handle
- Flexibility with Field Modifications
- Alternator Transfer on De-energization
- UL Listed for Outdoor Use and Service Equipment
- UL Listed file #E14900 (class 83); file #E185287 (class 84)
- CSA certified file #LR 6535 (class 83 & 84)

Application

Duplex pump controls are designed to perform one or both of two distinct functions: duplexing and alternation. The duplexing function provides capacity for system peaking or above normal demand without having the full motor capacity spinning at all times. It also provides standby capacity for use when one of the motors or pumps is disabled. The duplexing function is also referred to as lead/lag or main/standby. When two pumps or compressors are controlled by a duplex controller, they are started in sequence as necessary to attain preset values of pressure, flow or liquid level.

Two field devices such as pressure switches or float switches provide electrical signals to the duplex controller. One remote device is set to initiate the starting of the lead motor. This motor is rated to handle normal system demand. The second motor is usually the same rating and is referred to as the lag motor. It is only energized when the system demand is greater than the capacity of the lead motor. The lag motor is started when the second remote device is signalling for more output than the lead motor can produce.

The alternation function reverses the lead and lag mode for the two motors in a duplex system. Upon alternation the first motor as described above becomes the lag motor and the second motor assumes the lead function. The alternation is usually programmed to occur at any time both pumps come to rest. The alternation function equalizes wear on the two machines and extends the life of seals and bearings.

Enclosure Types

Duplex controllers are available in NEMA 1, 12/3/3R, 4 (painted) and 4/4X (stainless) enclosures. Enclosures protect personnel from contact with live parts and depending upon the construction, protect the control in varying degrees from physical damage and harmful atmospheres. All enclosures are supplied with corrosion resistant finishes.

Heavy Duty Starters

These Duplex controllers use the same starters described in the heavy duty starter section of this catalog.

Siemens Type ETI Circuit Breaker

The ETI circuit breaker is a device designed specifically for application in motor circuits. The ETI is a magnetic only protective device designed to provide protection against short circuit current.

The instantaneous-only type ETI circuit breaker employs adjustable magnetic trip settings to allow broader application ranges and a higher degree of motor short circuit protection.

Features

Two control transformers may be provided for low voltage control to safeguard personnel from high voltage. One transformer is required for each starter to provide independent control circuits

A Hand-Off-Auto selector switch for each starter may be mounted in the enclosure door or furnished separately for remote control. Test push buttons or pilot lights may also be installed on the enclosure.

Solid-state or Ambient Compensated Bimetal Overload Relays are supplied as standard.

Heavy Duty Disconnect Switches

The disconnect switch that goes the distance in durability, performance and reliability has the following advantages:

- Visible blades for the highest level of safety
- Double break switching action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- More rugged positive action switch
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts
- Higher horsepower rating for design E high efficiency motors
- UL listed for IIsco, Burndy and T&B crimp type lugs
- The 200A switch accepts up to 300 MCM versus 250 MCM wire size

Its rugged construction - with a high fault withstand rating of 100kA at 600 VAC when fused with class R rated fuses - meets the most stringent industry standards set forth by the automotive, petro-chemical, and pulp and paper industries. UL recognized and CSA certified, our disconnect switches are available either non-fusible or fusible with class R and class J fuse clips.

Selection

Ordering Information	Coil Table	
Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard call voltage gupplied with the alternator in 120V generate control	60Hz Voltage	Letter
log number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator. ► To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers. ► To change the coil voltage for non-alternator controllers with a solid-state OLR, change the 9th character in the catalog number with a letter shown in the coil table. To change the coil voltage for non-alternator controllers with a bimetal OLR, change the 8th character in the catalog number with a letter shown in the coil table.	24 ³ 120 200–208 ² 220–240 ³ 277 ³ 440–480 ² 550–600 ³	J F D G L H E
► Heater elements for bimetal overloads see page 9/120 (6-Required).		
► Field Modification Kits see page 9/100. ► Wiring Diagrams see page 9/179.		
► Factory Modifications see page 9/115.		
▶ Dimensions see page 9/162.		

Non-Combination (with Solid-State Overload)

Max H	р					Overload		Enclosure							
								NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		NEMA 4 Painte Watertight, Dust-tig		NEMA 12 NEMA 3/3R ^① Industrial Use Weatherproof (Field Convertible to 3/3R)	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	0	_	0.25-1	А	83CUA92BF		83CUA92WF		83CUA92EF		83CUA920F	
1/2	3/4	1½	2	0	_	0.75-3.4	А	83CUB92BF		83CUB92WF		83CUB92EF		83CUB920F	
2	2	5	5	0		3–12	A1	83CUC92BF		83CUC92WF		83CUC92EF		83CUC920F	
3	3	_	_	0	_	5.5-22	A1	83CUD92BF		83CUD92WF		83CUD92EF		83CUD920F	
1/6	1/6	1/3	1/2	1		0.25-1	А	83DUA92BF		83DUA92WF		83DUA92EF		83DUA920F	
1/2	3/4	1½	2	1		0.75-3.4	А	83DUB92BF		83DUB92WF		83DUB92EF		83DUB920F	
2	2	5	5	1	_	3–12	A1	83DUC92BF		83DUC92WF		83DUC92EF		83DUC920F	
3	3	10	10	1	-	5.5-22	A1	83DUD92BF		83DUD92WF		83DUD92EF		83DUD920F	
7½	7½	_	_	1		10-40	A1	83DUE92BF		83DUE92WF		83DUE92EF		83DUE920F	
10	10	15	15		1¾	10-40	A1	83EUE92BF		83EUE92WF		83EUE92EF		83EUE920F	
10	15	25	25	2		13-52	В	83FUF92BF		83FUF92WF		83FUF92EF		83FUF920F	
15	20	30	30	_	2½	25-100	В	83GUG92BF		83GUG92WF		83GUG92EF		83GUG920F	
25	30	50	50	3		25-100	В	83HUG92BF		83HUG92WF		83HUG92EF		83HUG920F	
30	40	75	75		3½	50-200	В	83IUH92BF		83IUH92WF		83IUH92EF		83IUH920F	
40	50	100	100	4	_	50-200	В	83JUH92BF		83JUH92WF		83JUH92EF		83JUH920F	

Non-Combination (with Ambient Compensated Bimetal Overload)

Max H	lp					Enclosure								
200	230	460	575	NEMA	Half	NEMA 1 General Purpose		NEMA 4/4X Stair Watertight, Dust-tig Corrosion Resistan 304 Stainless Stee	ght t	NEMA 4 Painted Watertight Dust-tight		NEMA 12/3R® Industrial Use Weatherproof		
Volts	Volts	Volts	Volts	Size	Size	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
3	3	5	5	0		83CP92BF81		83CP92WF81		83CP92EF81		83CP920F81		
71/2	71/2	10	10	1	_	83DP92BF81		83DP92WF81		83DP92EF81		83DP920F81		
10	10	15	15	_	13/4	83EP92BF81		83EP92WF81		83EP92EF81		83EP920F81		
10	15	25	25	2	_	83FP92BF81		83FP92WF81		83FP92EF81		83FP920F81		
15	20	30	30	_	21/2	83GP92BF81		83GP92WF81		83GP92EF81		83GP920F81		
25	30	50	50	3	—	83HP92BF81		83HP92WF81		83HP92EF81		83HP920F81		
30	40	75	75	_	31/2	83IP92BF81		83IP92WF81		83IP92EF81		83IP920F81		
40	50	100	100	4	—	83JP92BF81		83JP92WF81		83JP92EF81		83JP920F81		

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

9/69

① NEMA 12 is field convertible to NEMA 3/3R. For conduit hubs and conversion instructions, see page 9/106.

Not available on standard alternator style ('92' in the catalog number).

³ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

Duplex Heavy Duty Controllers

Combination Disconnect (Fusible & Non-Fusible), Class 84

Selection

Ordering Information	Coil Table	
► Standard duplex controllers include an alternator indicated by characters "92" within the catalog number. The standard coil voltage supplied with the alternator is 120V separate control.	60Hz Voltage	Letter
This is the only control voltage available with the alternator.	24 ^② 120	J F
► To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.	200–208 ² 220–240 ² 277 ²	D G
► To change the coil voltage for non-alternator controllers with a solid-state OLR, change the 10th character in the catalog number with a letter shown in the coil table. To change the coil voltage for non-alternator controllers with a bimetal OLR, change the 9th character in the cata-	440–480 [©] 550–600 [©]	H E
log number with a letter shown in the coil table.		

- ► Heater elements for bimetal overloads see page 9/120 (6-Required).
- ► For factory installed fusible disconnect, see page 9/116.
- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.

- ▶ Dimensions see page 9/162.
- ▶ Wiring Diagrams see page 9/179.
- ▶ Replacement Parts see page 9/127.

Two Disconnect Switches with Solid-State Overload

Max H	lp .					Overload			Enclosure							
								Disc.	NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight, Corrosion Resistant 304 Stainless Steel		NEMA 4 Painter Watertight, Dust-tig	-	NEMA 12 NEMA 3/3R① Industrial Use Weatherproof (Field Convertible to 3/3R)	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Range	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	0	_	0.25-1	А	30	84CUA92BDF		84CUA92WDF		84CUA92EDF		84CUA920DF	
1/2	3/4	1½	2	0	_	0.75-3.4	А	30	84CUB92BDF		84CUB92WDF		84CUB92EDF		84CUB920DF	
2	2	5	5	0	_	3-12	A1	30	84CUC92BDF		84CUC92WDF		84CUC92EDF		84CUC920DF	
3	3	_	_	0	_	5.5-22	A1	30	84CUD92BDF		84CUD92WDF		84CUD92EDF		84CUD920DF	
1/6	1/6	1/3	1/2	1	_	0.25-1	А	30	84DUA92BDF		84DUA92WDF		84DUA92EDF		84DUA920DF	
1/2	3/4	1½	2	1	_	0.75-3.4	А	30	84DUB92BDF		84DUB92WDF		84DUB92EDF		84DUB920DF	
2	2	5	5	1	_	3-12	A1	30	84DUC92BDF		84DUC92WDF		84DUC92EDF		84DUC920DF	
3	3	10	10	1	_	5.5-22	A1	30	84DUD92BDF		84DUD92WDF		84DUD92EDF		84DUD920DF	
7½	7½	_	_	1	_	10-40	A1	30	84DUE92BDF		84DUE92WDF		84DUE92EDF		84DUE920DF	
10	10	15	15	_	1¾	10-40	A1	60	84EUE92BDF		84EUE92WDF		84EUE92EDF		84EUE920DF	
10	15	25	25	2	_	13-52	В	60	84FUF92BDF		84FUF92WDF		84FUF92EDF		84FUF920DF	
15	20	30	30	_	2½	25-100	В	100	84GUG92BDF		84GUG92WDF		84GUG92EDF		84GUG920DF	
20	25	50	50	3	_	25-100	В	100	84HUG92BDF		84HUG92WDF		84HUG92EDF		84HUG920DF	
30	40	75	75	_	3½	50-200	В	200	84IUH92BDF		84IUH92WDF		84IUH92EDF		84IUH920DF	
40	50	100	100	4	_	50-200	В	200	84JUH92BDF		84JUH92WDF		84JUH92EDF		84JUH920DF	

Two Disconnect Switches with Ambient Compensated Bimetal Overload

Max H	łp						Enclosure							
200	230	460	575	NEMA	Half	Disc Amp	NEMA 1 General Purpose		NEMA 4/4X Stainless Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel		NEMA 4 Painted Watertight Dust-tight		NEMA 12/3R① Industrial Use Weatherproof	
Volts	Volts	Volts	Volts	Size	Size	Range	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
3	3	5	5	0	_	30	84CP92BDF81		84CP92WDF81		84CP92EDF81		84CP920DF81	
71/2	71/2	10	10	1	_	30	84DP92BDF81		84DP92WDF81		84DP92EDF81		84DP920DF81	
10	10	15	15	_	13/4	60	84EP92BDF81		84EP92WDF81		84EP92EDF81		84EP920DF81	
10	15	25	25	2	_	60	84FP92BDF81		84FP92WDF81		84FP92EDF81		84FP920DF81	
15	20	30	30	_	21/2	100	84GP92BDF81		84GP92WDF81		84GP92EDF81		84GP920DF81	
20	25	50	50	3	_	100	84HP92BDF81		84HP92WDF81		84HP92EDF81		84HP920DF81	
30	40	75	75	_	31/2	200	84IP92BDF81		84IP92WDF81		84IP92EDF81		84IP920DF81	
40	50	100	100	4	_	200	84JP92BDF81		84JP92WDF81		84JP92EDF81		84JP920DF81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

NEMA 12 is field convertible to NEMA 3/3R. For conduit hubs and conversion instructions, see page 9/106.
 Not available on standard alternator style

② Not available on standard alternator style ('92' in the catalog number).

③ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

Duplex Heavy Duty Controllers Combination Circuit Breaker, Class 84

Selection

Ordering Information	Coil Table	
► Standard duplex controllers include an alternator indicated by characters "92" within the cata-	60Hz Voltage	Letter
log number. The standard coil voltage supplied with the alternator is 120V separate control. This is the only control voltage available with the alternator.	24 ^② 120	J
·	200-208 ^②	D
► To omit the alternator, change the character string within the catalog number from "92" to "95". All coil voltages listed in the coil table are valid with non-alternator controllers.	220–240 ^② 277 ^②	G
► To change the coil voltage for non-alternator controllers, change the 10th character in the cata-	440-480 ^②	H
log number with a letter shown in the coil table.	550-600 ^②	E

- ► Heater elements for bimetal overloads see page 9/120 (6-Required).
- ► Field Modification Kits see page 9/100.
- ► Factory Modifications see page 9/115.

- ▶ Dimensions see page 9/162.
- ► Wiring Diagrams see page 9/179.
- ► Replacement Parts see page 9/127.

2 Motor Circuit Protectors (with Solid-State Overload)

Max H	lp					Overload			Enclosure							
								Motor Circuit	NEMA 1 General Purpose		NEMA 4/4X Stair Watertight, Dust-tigh Resistant , 304 Stain	t, Corrosion	NEMA 4 Painte Watertight, Dust-tig		NEMA 12 NEMA 3/3R ^① Industrial Use, Weatherproof (Field Convertible to 3/3R)	
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Interrupter ETI	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/6	1/6	1/3	1/2	0	_	0.25-1	А	3	84CUA92BMF		84CUA92WMF		84CUA92EMF		84CUA920MF	
1/2	3/4	1½	2	0	_	0.75-3.4	А	3	84CUB92BMF		84CUB92WMF		84CUB92EMF		84CUB920MF	
2	2	5	5	0	_	3-12	A1	10	84CUC92BMF		84CUC92WMF		84CUC92EMF		84CUC920MF	
3	3	_	_	0	_	5.5-22	A1	25	84CUD92BMF		84CUD92WMF		84CUD92EMF		84CUD920MF	
1/6	1/6	1/3	1/2	1		0.25-1	А	3	84DUA92BMF		84DUA92WMF		84DUA92EMF		84DUA920MF	
1/2	3/4	1½	2	1	_	0.75-3.4	А	3	84DUB92BMF		84DUB92WMF		84DUB92EMF		84DUB920MF	
2	2	5	5	1	_	3–12	A1	10	84DUC92BMF		84DUC92WMF		84DUC92EMF		84DUC920MF	
3	3	10	10	1	_	5.5-22	A1	25	84DUD92BMF		84DUD92WMF		84DUD92EMF		84DUD920MF	
7½	7½	_	_	1	_	10-40	A1	30	84DUE92BMF		84DUE92WMF		84DUE92EMF		84DUE920MF	
_	_	15	15	_	1¾	10-40	A1	40	84EUE92BMF		84EUE92WMF		84EUE92EMF		84EUE920MF	
10	15	25	25	2	_	13-52	В	50	84FUF92BMF		84FUF92WMF		84FUF92EMF		84FUF920MF	
15	20	30	30	_	2½	25-100	В	100	84GUG92BMF		84GUG92WMF		84GUG92EMF		84GUG920MF	
20	25	50	50	3	_	25-100	В	100	84HUG92BMF		84HUG92WMF		84HUG92EMF		84HUG920MF	
30	40	75	75	_	3½	50-200	В	125	84IUH92BMF		84IUH92WMF		84IUH92EMF		84IUH920MF	
40	50	100	100	4		50-200	В	150	84JUH92BMF		84JUH92WMF		84JUH92EMF		84JUH920MF	

2 Motor Circuit Protectors (with Ambient Compensated Bimetal Overload)

Max	Нр						Enclosure							
						Motor Circuit	NEMA 1 General Purpose		NEMA 4/4X StainI Watertight, Dust-tight Corrosion Resistant 304 Stainless Steel	ust-tight Watertight istant Dust-tight			NEMA 12/3R ^① Industrial Use Weatherproof	
200 Volts	230 Volts	460 Volts		NEMA Size	Half Size	Interrupter ETI	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
1/2	3/4	11/2	2	0	_	3	84CPB92BMF81		84CPB92WMF81		84CPB92EMF81		84CPB920MF81	
2	2	5	5	0	_	10	84CPD92BMF81		84CPD92WMF81		84CPD92EMF81		84CPD920MF81	
3	3	—	—	0	—	25	84CPE92BMF81		84CPE92WMF81		84CPE92EMF81		84CPE920MF81	
1/2	3/4	11/2	2	1	_	3	84DPB92BMF81		84DPB92WMF81		84DPB92EMF81		84DPB920MF81	
2	2	5	5	1	l —	10	84DPD92BMF81		84DPD92WMF81		84DPD92EMF81		84DPD920MF81	
3	3	10	10	1	l —	25	84DPE92BMF81		84DPE92WMF81		84DPE92EMF81		84DPE920MF81	
71/2	71/2	_	_	1	_	30	84DPF92BMF81		84DPF92WMF81		84DPF92EMF81		84DPF920MF81	
_	—	15	15	—	13/4	40	84EPF92BMF81		84EPF92WMF81		84EPF92EMF81		84EPF920MF81	
10	10	_	_		13/4	50	84EPG92BMF81		84EPG92WMF81		84EPG92EMF81		84EPG920MF81	
_	<u> </u>	15	20	2	l —	40	84FPF92BMF81		84FPF92WMF81		84FPF92EMF81		84FPF920MF81	
10	15	25	25	2		50	84FPH92BMF81		84FPH92WMF81		84FPH92EMF81		84FPH920MF81	
	—	30	30	—	21/2	50	84GPH92BMF81		84GPH92WMF81		84GPH92EMF81		84GPH920MF81	
15	20			<u> </u>	21/2	100	84GPJ92BMF81		84GPJ92WMF81		84GPJ92EMF81		84GPJ920MF81	
	—	30	40	3	—	50	84HPJ92BMF81		84HPJ92WMF81		84HPJ92EMF81		84HPJ920MF81	
20	25	50	50	3	_	100	84HPK92BMF81		84HPK92WMF81		84HPK92EMF81		84HPK920MF81	
30	40	75	75	_	3½	125	84IPL92BMF81		84IPL92WMF81		84IPL92EMF81		84IPL920MF81	
40	50	100	100	4	—	150	84JPM92BMF81		84JPM92WMF81		84JPM92EMF81		84JPM920MF81	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

③ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

Siemens Industry, Inc. Industrial Controls Catalog

Product Category: NEMA

9/71

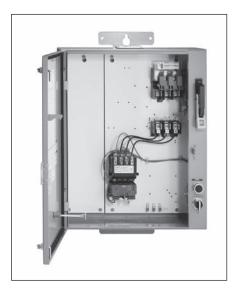
① NEMA 12 is field convertible to NEMA 3/3R. For conduit hubs and conversion instructions, see page 9/106.

② Not available on standard alternator style ('92' in the catalog number).

General

Features

- Fully Gasketed NEMA 3R Rainproof Enclosures
- 100,000 Amp Interrupting Capacity with Class R Fuses
- Heavy Duty NEMA Starters
- Solid State or Ambient Compensated Bimetal Overload Relays
- Heavy Duty Disconnect Handle
- Available in Reduced Voltage Versions
- Bold Pilot Legend on Front
- Generous Accessory Space
- Copper Grounding Lug For Three #6 Wires
- UL Listed for Outdoor Use and Service Equipment File #E185287





Application

Heavy duty pump control panels are designed to withstand the most demanding environments. Typical applications include irrigation, agriculture, petrochemical, wastewater treatment and wherever motor control is challenged by harsh elements.

Rugged pump control panels utilized cold forming "tox" process. They are more rainproof, sleet and ice resistant than in the past.

Installation is easy. Panels are factory wired to provide flexible control and protect against short circuits and overloads. Ample space is provided for field modifications and installation of accessories.

The pump control panels feature a full sized removable auxiliary panel for the mounting of accessories. The fusible version features fuse clips for full sized RK5 or compact class J fuses and accessory mounting space for the most commonly used accessories.

Class 87 pump panels become jockey pump panels with the addition of a pressure switch. The jockey pump's primary function is to maintain water pressure at a preset level and thus compensate for possible shortage of water in the pumping system. When the water pressure drops below the preset level, the pressure switch energizes the starter which in turn activates the jockey pump. The water pressure is then brought back up to the desired level. This insures the maintenance of proper water pressure at all times.

Features

Specified by Fortune 500 companies, Siemens NEMA starters offer prolonged service under severe duty conditions. NEMA rated, these starters utilize large silver cadmium oxide contacts and wide copper heat sinks to ensure rapid heat dissipation and maximum electrical life.

ESP200 solid state overload relay

Refer to the section on Class 48 overload relays for features and benefits. Pump panels are factory set at trip Class 10

The ambient compensated bimetal overload relays are designed to parallel thermal characteristics of typical pump motors. They prevent nuisance trips that may result from operation of the control in a higher ambient temperature than that at the pump. These relays are trip-free, tamperproof and can be set to reset automatically or manually.

HOA and Start Pushbutton

Every pump panel comes with an HOA and a start pushbutton.

Half Size Starters

Siemens motor matched starters feature all the rugged performance characteristics of our NEMA rated starter sizes, but are fractionally sized to more closely match your exact motor rating. As a result, significant economic savings are made possible without sacrificing the reliability you expect from a heavy duty starter.

These additional starter sizes have the reserve capacity to handle occasional plugging and jogging without de-rating the device.

Siemens motor matched can save hundreds, even thousands of dollars per project

Siemens motor matched starters comply with NEMA, UL and CSA standards.

General

Panels are predrilled for easy repositioning of the fuse trailer block to accommodate 250 and 600 volt fuses and full sized RK or compact J fuses. Circuit breakers are also available.

Heavy Duty Fusible Disconnect Switch

The disconnect switch has the following advantages:

- Visible blades for the highest level of safety
- Double Break Switching Action to reduce arcing, increase lifetime and eliminate the "electric hinge"
- Oversized lugs are standard
- Line side shield to help guard personnel from contact with live parts

Motor Circuit Protector

The motor circuit protector provides fast, accurate fault clearing that will minimize damage to the motor and control apparatus and protect branch circuit conductors. Continuous current ratings and adjustable trip ranges meet NEC requirements for full load and locked rotor currents. The adjustable instantaneous trip point can be set precisely to assure fault protection and eliminate nuisance tripping.

Removable Door

Enclosure door may be lifted off to make wiring easier.

Mounting Flanges

Convenient flanges at top and bottom of the enclosure provide easy mounting. They fit pole or flat surfaces using keyhole slots.

Quarter Turn Latches

Quarter turns are utilized to secure the door

Wind Catches

A wind catch is provided to prevent the door from slamming shut (or open) due to high wind conditions.

Safety Disconnect Handle

Up to three padlocks can be used to lock the disconnect in the OFF position. Maintenance work can be performed without hazard to personnel.

External Reset

The overload relay may be quickly reset by means of a button on the front of the enclosure.

Bold Pilot Legend

Provides positive indication of the selector switch position for use to stop the pump motor.

Ground Lugs

Insures proper connecting of ground wires and lightning arresters.

UL Listed

Assures proper construction throughout control panel.

Reduced Voltage

Available in part winding, wye delta and auto transformer types, these controls may be necessary where the power company limits the amount of current drawn from its lines, or where starting torque must be reduced.

Fully gasketed NEMA 3/12 weatherproof enclosures are supplied with Class 88 reduced voltage starters.

Part Winding Starters apply starting current in timed steps to minimize voltage fluctuations.

Auto Transformer Starters maintain a closed circuit during transition and eliminate voltage or current surges. They draw less current than part winding starters and are well suited for starting motors over 20 Hp.

Wye Delta starters and motors are used in areas where the power supply is inadequate to supply full starting current without objectionable voltage drop or for applications where low starting torque is required. Centrifugal pumps and similar apparatus requiring a low starting torque are typical applications. Both ends of all three windings of the wye delta motor are brought out so that they may be accessible for reconnecting from wye to delta.

Auxiliary Equipment

Pilot Lights are easily installed on the enclosure. Oil Tight and Heavy Duty, they meet NEMA A600 requirements.

Lightning Arresters protect the control panel from lightning induced surges.

Undervoltage and Phase Sensing Relays protect the pump against low voltage, voltage imbalance, loss of phase and phase reversal.

Anti-Backspin Timers prevent the motor from starting during motor/shaft backspin.

The TOX Box

Siemens uses the TOX process to manufacture the enclosures for the pump panels.

Advantages of the TOX process:

- Joints are 50-70% stronger
- Since the TOX process compresses the metal at the joint, it does not leave the high stresses in the metal
- Increased corrosion resistance.
 The protective layer on the metal is not damaged in the process, but instead flows with the material

Class 87 NEMA Vacuum Starter Pump Control Panels

The Siemens vacuum starter pump controllers are designed for the harshest environments. Typical environments include chemical, petrochemical, waste water treatment and mining. Contaminations present in these severe environments are detrimental to conventional air-break contacts decreasing their life expectancy and reliability. The Siemens vacuum starter pump controllers are well suited for these environments because the contacts are contained in hermetically sealed contact tubes. This prevents contaminates in the atmosphere from affecting the operation of the contacts. Additionally, neither arcs nor arcing gases are produced which dramatically increases the electrical endurance of the contacts.

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Pump Control Panels

Standard Pump Panel with Solid State Overload, Class 87

Selection



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	Ordering Information	Coil Table	
	► Field Modification Kits see page 9/100.	60Hz Voltage	Letter
	► Factory Modifications see page 9/115.	24	J
	▶ Dimensions see page 9/163.	120	F
	► Wiring Diagrams see page 9/181.	110–120/220–240	A [®]
	► Replacement Parts see page 9/127.	200–208 220–240	G
	► Sizes 1-4 will be supplied standard with a 240/480 volt coil. To	220-240/440-480	C
	change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table.	277 440–480	L H
		550–600	Е
	➤ Sizes 5 & 6 will be supplied standard with a 480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table.		

Fusible Disconnect

Max Hp						Overload		Disc.	Fuse		
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Amp Range	Frame Size	Amp Range	Clip Amp / Volts	Catalog Number	List Price \$
_	<u> </u>	1	1	1	_	0.75-3.42	А	30	30A/600V	87DUB6FC	
_	_	5	5	1	_	3–12	A1	30	30A/600V	87DUC6FC	
_	_	10	10	1	_	5.5-22	A1	30	30A/600V	87DUD6FC	
_	-	10	10	1		5.5-22	A1	60	60A/600V	87DUD60C	
_	T-	15	15	<u> </u>	1¾	10-40	A1	30	30A/600V	87EUE6FC	
_	-	15	15		1¾	10-40	A1	60	60A/600V	87EUE60C	
_	_	25	25	2		13-52	В	60	60A/600V	87FUF6FC	
_		25	25	2	-	13-52	В	100	100A/600V	87FUF60C	
_	T-	30	30		2½	25-100	В	60	60A/600V	87GUG6FC	
_	-	30	30		2½	25-100	В	100	100A/600V	87GUG60C	
_	T—	50	50	3	<u> </u>	25-100	В	100	100A/600V	87HUG6FC	
_	-	50	50	3		25-100	В	200	200A/600V	87HUG60C	
_	T-	75	75	<u> </u>	3½	50-200	В	200	200A/600V	87IUH6FC	
_	_	100	100	4		50-200	В	200	200A/600V	87JUH6FC	
_	_	200	200	5		55-250	<u> </u>	400	400A/600V	87LPU6FH	
_	<u> </u>	250	_	6	<u> </u>	160-630	<u> </u>	600	600A/600V	87MSW6FH	
2	2	_	_	1	_	3-12	A1	30	30A/250V	87DUC6LC	
3	3	_	_	1		5.5-22	A1	30	30A/250V	87DUD6LC	
7½	7½			1	-	10-40	A1	30	30A/250V	87DUE6LC	
7½	7½			1		10-40	A1	60	60A/250V	87DUE6PC	
10	10				1¾	10-40	A1	60	60A/250V	87EUE6LC	
10	15	<u> </u>	_	2	_	13-52	В	60	60A/250V	87FUF6LC	
10	15		_	2		13-52	В	100	100A/250V	87FUF6PC	
15	20	-	_	_	2½	25-100	В	60	60A/250V	87GUG6LC	
15	20				2½	25-100	В	100	100A/250V	87GUG6PC	
20	30	<u> </u>	_	3	_	25-100	В	100	100A/250V	87HUG6LC	
25	30			3		25-100	В	200	200A/250V	87HUG6PC	
30	40		_		3½	50-200	В	200	200A/250V	87IUH6LC	
40	50			4		50-200	В	200	200A/250V	87JUH6LC	
75	100			5		55_250	1_	400	400A /250V	871 PH61 G	

Circuit Broaker

Max Hp						Overload				
	Lana	Lane	1	—l	l			Motor Circuit		l
200	230	460	575	NEMA	Half	Amp	Frame	Interrupter	Catalog	List
Volts	Volts	Volts	Volts	Size	Size	Range	Size	ETI Amps	Number	Price \$
1/2	1/2	1	1	1	<u> </u>	0.75-3.4@	А	3	87DUB6MC	
2	2	5	5	1	_	3-12	A1	10	87DUC6MC	
3	3	10	10	1		5.5-22	A1	25	87DUD6MC	
7½	7½	10	_	1	_	10-40	A1	30	87DUE6MC	
_	-	15	15	_	1¾	10-40	A1	40	87EUE6MC	
10	15	25	25	2	<u> </u>	13-52	В	50	87FUF6MC	
15	20	30	30		2½	25-100	В	100	87GUG6MC	
25	30	50	50	3	<u> </u>	25-100	В	100	87HUG6MC	
30	40	75	75		3½	50-200	В	125	87IUH6MC	
40	50	100	100	4	<u> </u>	50-200	В	150	87JUH6MC	
50	75	150	200	5	_	55-250	<u> </u>	250	87LPT6MH	
75	100	200	200	5		55-250	_	400	87LPU6MH	
100	125	250	300	6		160-630	_	400	87MSW6MH	
150	200	400	400	6	<u> </u>	160-630		600	87MSX6MH	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Not available on Size 5 and larger.
 For an overload amp range of 0.25-1A, change the 5th character from a 'B' to an 'A'.

③ A version with coil code A is also stocked via

Pump Panel with Ambient Compensated Bimetal Overload, Class 87

Selection

Ordering Information	Coil Table	
 ▶ Heater elements for bimetal overloads see page 9/120 (3-Required). ▶ Field Modification Kits see page 9/100. ▶ Factory Modifications see page 9/115. ▶ Dimensions see page 9/163. ▶ Wiring Diagrams see page 9/181. ▶ Replacement Parts see page 9/127. ▶ Sizes 1-4 will be supplied standard with a 230/480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table. ▶ Sizes 5 & 6 will be supplied standard with a 480 volt coil. To change the coil voltage, change the 8th character in the catalog number to the letter shown in the coil table. 	60Hz Voltage 24 120 110–120/220–240 200–208 220–240 220–240/440–480 277 440–480 550–600	Letter J F A® D G C® L H E

Fusible Disconnect

Max HP						Disc	Fuse Clip		
200V	230V	460V	575V	NEMA Size	Half Size	Amp Rating	Amps/Volts	Catalog Number	List Price \$
_	I —	10	10	1	_	30	30A/600V	87DAE6FC	
		10	10	1	_	60	60A/600V	87DAE60C	
_	l —	15	15	_	13/4	30	30A/600V	87EAF6FC	
		15	15	_	13/4	60	60A/600V	87EAF60C	
_	l —	25	25	2	 —	60	60A/600V	87FAJ6FC	
_	_	25	25	2	_	100	100A/600V	87FAJ60C	
_	l —	30	30	_	21/2	60	60A/600V	87GAK6FC	
_		30	30	_	21/2	100	100A/600V	87GAK60C	
_	l —	50	50	3	 —	100	100A/600V	87HAN6FC	
	_	50	50	3	_	200	200A/600V	87HAN60C	
_		75	75	_	31/2	200	200A/600V	87IAP6FC	
_	l —	100	100	4	_	200	200A/600V	87JAR6FC	
71/2	71/2	I —	I —	1	_	30	30A/250V	87DAE6LC	
71/2	71/2		_	1	_	60	60A/250V	87DAE6PC	
10	10	_	_	_	13/4	60	60A/250V	87EAG6LC	
10	15	I —	_	2	_	60	60A/250V	87FAJ6LC	
10	15		_	2	_	100	100A/250V	87FAJ6PC	
15	20	_	_	_	21/2	100	100A/250V	87GAL6LC	
25	30	_	_	3	_	100	100A/250V	87HAN6LC	
25	30		<u> </u>	3	_	200	200A/250V	87HAN6PC	
30	40	_	_	_	31/2	200	200A/250V	87IAP6LC	
40	50	_	_	4	_	200	200A/250V	87JAR6LC	

Circuit Breaker

Max HP						Motor Circuit		
200V	230V	460V	575V	NEMA Size	Half Size	Interrupter ETI Amps	Catalog Number	List Price \$
1/2	1/2	1	1	1	_	3	87DAA6MC	
1	1	3	3	1	l —	10	87DAB6MC	
3	3	71/2	71/2	1	l —	25	87DAD6MC	
71/2	71/2	10	10	1	l —	30	87DAE6MC	
71/2	71/2	15	15	_	13/4	40	87EAF6MC	
10	10		_	_	13/4	50	87EAG6MC	
_	l —	15	20	2	l —	40	87FAH6MC	
10	15	25	25	2	l —	50	87FAJ6MC	
_	l —	30	30	_	21/2	50	87GAK6MC	
15	20		_	_	21/2	100	87GAL6MC	
25	30	50	50	3	—	100	87HAN6MC	
30	40	75	75	_	3½	125	87IAP6MC	
40	50	100	100	4	—	150	87JAR6MC	

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All starter sizes carry one maximum Hp rating.

Siemens Industry, Inc.

Industrial Controls Catalog

① Not available on Size 5 or above.

Product Category: NEMA

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Vacuum Break and Oil Well Pump Control Panels, Class 87

Selection

Ordering Information	Coil Table	
► Field Modification Kits see page 9/100.	60Hz Voltage	Letter
Factory Modifications see page 9/115.	24	J
▶ Dimensions see page 9/163.	120 200–208	F
➤ Wiring Diagrams see page 9/181.	200–208	D G
▶ Replacement Parts see page 9/127.	277 440–480	L H
▶ Replace the (*) in the catalog number with a letter from the coil table.	550–600	Ë
▶ Refer to page 17-49 for information on the 958L OLR		

Vacuum Break Pump Control Panels (Vacuum Contactor with Trip Class 10 Solid-State Overload Relay)

		•				•			•
Max Hp				Fusible Disconne	ct		Circuit Breaker	•	
480 Volts	575 Volts	NEMA Size	Overload Relay Range	Fuse Clip Amps/Volts	Catalog Number	List Price \$	MCI Amps	Catalog Number	List Price \$
100	100	4	55-250A	200A/600V	87JCM4F*		250A	87JCM4M*	
200	200	5	55-250A	400A/600V	87LCU4F*		400A	87LCT4M*	
250	300	6	160-630A	_	_		400A	87MCW4M*	
400	400	6	160-630A	_	_		600A	87MCX4M*	

Oil Well Pump Control Panels (Open Air Contactor with 958L Solid-State Overload Relay)

Мах Нр				Fusible Disconnec	ct		Circuit Breaker	•	
480 Volts	575 Volts	NEMA Size	Overload Relay Range	Fuse Clip Amps/Volts	Catalog Number	List Price \$	MCI Amps	Catalog Number	List Price \$
25	25	2	13-52	60A/600V	87FPI6F*		50	87FPI6M*	
50	50	3	25-100	100A/600V	87HPK6F*		100	87HPK6M*	
100	100	4	50-200	200A/600V	87JPM6F*		150	87JPM6M*	

Reduced Voltage Pump Panels Auto Transformer & Part winding (2 Step) with Solid State Overload, Class 88

Selection

Ordering Information	Coil and Control Voltage
 ► Field Modification Kits see page 9/100. ► Factory Modifications see page 9/115. ► Dimensions see page 9/163. ► Wiring Diagrams see pages 9/174 and 9/175. ► Replacement Parts see page 9/127. 	The coil voltage on the contactors will be the motor voltage. A CPT will be supplied to provide the control voltage. The control voltage will be 120V. To change the control voltage to customer supplied (no CPT included), change the 9th character to the following: for 24V, use "J" for 120V, use "F"

Auto Transformer Type

		Overload				Fusible Disconnec	t		Circuit Breaker			
Motor Voltage	Max Hp	Amp Range	Frame Size	NEMA Size	Half Size	Fuse Clip Size Amps/Volts	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$	
	15	13–52	В	2	_	60A/250V	88FUFT2FG		50	88FUFT2MG		
	20	25–100	В	-	2½	100A/250V	88GUGT2FG		100	88GUGT2MG		
	30	25–100	В	3	_	100A/250V	88HUGT2FG		100	88HUGT2MG		
230	40	50-200	В	-	3½	200A/250V	88IUHT2FG		125	88IUHT2MG		
230	50	50-200	В	4	_	200A/250V	88JUHT2FG		150	88JUHT2MG		
	75	55-250	_	5	_	_	-		250	88LPST2MG		
	100	55-250	_	5	_	400A/250V	88LPUT2FG		400	88LPUT2MG		
	200	160-630	_	6	_	_	-		600	88MSXT2MG		
	25	13–52	В	2	_	60A/600V	88FUFT4FH		50	88FUFT4MH		
	30	25-100	В	_	2½	60A/600V	88GUGT4FH		50	88GUGT4MH		
	50	25-100	В	3	_	100A/600V	88HUGT4FH		100	88HUGT4MH		
	75	50-200	В	_	3½	200A/600V	88IUHT4FH		125	88IUHT4MH		
460	100	50-200	В	4	_	200A/600V	88JUHT4FH		150	88JUHT4MH		
	150	55-250	_	5	_	_	-		250	88LPST4MH		
	200	55-250	_	5	_	400A/600V	88LPST4FH		400	88LPUT4MH		
	250	160-630	_	6	_	_	_		400	88MSVT4MH		
	400	160-630	_	6	_	600A/600V	88MSXT4FH		600	88MSXT4MH		

Part Winding 2 Step

		Overload				Fusible Disconne	ct		Circuit Breaker		
Motor Voltage	Max Hp	Amp Range	Frame Size	NEMA Size	Half Size	Fuse Clip Size Amps/Volts	Catalog Number	List Price \$	Circuit Breaker Amps	Catalog Number	List Price \$
	20	10–40	A1	<u> </u>	1¾	100A/250V	88EUEP2FG		100	88EUEP2MG	
	25	13–52	В	2	_	100A/250V	88FUFP2FG		100	88FUFP2MG	
	40	25-100	В		2½	200A/250V	88GUGP2FG		100	88GUGP2MG	
220	50	25-100	В	3	_	200A/250V	88HUGP2FG		150	88HUGP2MG	
230	60	50-200	В		3½	200A/250V	88IUHP2FG		250	88IUHP2MG	
	75	50-200	В	4	-	400A/250V	88JUHP2FG		250	88JUHP2MG	
	125	55-250		5	_	_	-		400	88LPSP2MG	
	150	55-250	-	5	_	600A/250V	88LPUP2FG		600	88LPUP2MG	
	30	10-40	A1	_	1¾	100A/600V	88EUEP4FH		100	88EUEP4MH	
	40	13–52	В	2	_	100A/600V	88FUFP4FH		100	88FUFP4MH	
	60	25-100	В	_	2½	200A/600V	88GUGP4FH		100	88GUGP4MH	
400	75	25-100	В	3	_	200A/600V	88HUGP4FH		150	88HUGP4MH	
460	100	50-200	В	_	3½	200A/600V	88IUHP4FH		250	88IUHP4MH	
	150	50-200	В	4	_	400A/600V	88JUHP4FH		250	88JUHP4MH	
	250	55-250	_	5	_	_	_		400	88LPSP4MH	
	350	55-250	_	5	_	600A/600V	88LPUP4FH		600	88LPUP4MH	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Reduced Voltage Pump Panels Wye Delta with Solid State Overload, Class 88

Selection

Ordering Information	Coil and Control Voltage
 ▶ Field Modification Kits see page 9/100. ▶ Factory Modifications see page 9/115. ▶ Dimensions see page 9/163. ▶ Wiring Diagrams see pages 9/176 and 9/177. ▶ Replacement Parts see page 9/127. 	The coil voltage on the contactors will be the motor voltage. A CPT will be supplied to provide the control voltage. The control voltage will be 120V. To change the control voltage to customer supplied (no CPT included), change the 9th character to the following: for 24V, use "J" for 120V, use "F"

Wye Delta

		Overload	ı					Open Transiti	on			Closed Transition			
							Motor Circuit	Fusible Disco	nnect	Circuit Breake	r	Fusible Disco	nnect	Circuit Breake	er
Motor Voltage	Max Hp	Amp Range	Frame Size	NEMA Size	Half Size	Fuse Clip Size Amps/Volts	Interruter ETI Amps	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
	10	10-40	A1	1	_	60A/250V	50	88DUE06FD		88DUE06MD		88DUEC6FD		88DUEC6MD	
	15	10-40	A1	_	1¾	100A/250V	100	88EUE06FD		88EUE06MD		88EUEC6FD		88EUEC6MD	
	20	13-52	В	2	_	100A/250V	100	88FUF06FD		88FUF06MD		88FUFC6FD		88FUFC6MD	
	30	25-100	В	_	2½	200A/250V	125	88GUG06FD		88GUG06MD		88GUGC6FD		88GUGC6MD	
200	40	25-100	В	3	_	200A/250V	150	88HUG06FD		88HUG06MD		88HUGC6FD		88HUGC6MD	
200	50	50-200	В	_	3½	200A/250V	250	88IUH06FD		88IUH06MD		88IUHC6FD		88IUHC6MD	
	60	50-200	В	4	_	400A/250V	250	88JUH06FD		88JUH06MD		88JUHC6FD		88JUHC6MD	
	75	55-250	_	5	_	400A/250V	400	88LPS06FD		88LPS06MD		88LPSC6FD		88LPSC6MD	
	150	55-250	_	5	_	600A/250V	600	88LPU06FD		88LPU06MD		88LPUC6FD		88LPUC6MD	
	300	160-630	_	6	_	_	800	_		88MSX06MD		_		88MSXC6MD	
	10	10-40	A1	1	_	60A/250V	50	88DUE02FG		88DUE02MG		88DUEC2FG		88DUEC2MG	
	15	10-40	A1	_	1¾	60A/250V	50	88EUE02FG		88EUE02MG		88EUEC2FG		88EUEC2MG	
	25	13-52	В	2	_	100A/250V	100	88FUF02FG		88FUF02MG		88FUFC2FG		88FUFC2MG	
	30	25-100	В	_	2½	200A/250V	100	88GUG02FG		88GUG02MG		88GUGC2FG		88GUGC2MG	
220	50	25-100	В	3	_	200A/250V	150	88HUG02FG		88HUG02MG		88HUGC2FG		88HUGC2MG	
230	60	50-200	В	_	3½	200A/250V	250	88IUH02FG		88IUH02MG		88IUHC2FG		88IUHC2MG	
	75	50-200	В	4	_	400A/250V	250	88JUH02FG		88JUH02MG		88JUHC2FG		88JUHC2MG	
	100	55-250	_	5	_	400A/250V	400	88LPS02FG		88LPS02MG		88LPSC2FG		88LPSC2MG	
	150	55-250	_	5	_	600A/250V	600	88LPU02FG		88LPU02MG		88LPUC2FG		88LPUC2MG	
	350	160-630	_	6	_	_	1200	_		88MSX02MG		_		88MSXC2MG	
	15	5.5-22	A1	1	_	30A/600V	30	88DUD04FH		88DUD04MH		88DUDC4FH		88DUDC4MH	
	30	10-40	A1	_	1¾	60A/600V	50	88EUE04FH		88EUE04MH		88EUEC4FH		88EUEC4MH	
	40	13-52	В	2	_	100A/600V	100	88FUF04FH		88FUF04MH		88FUFC4FH		88FUFC4MH	
	60	25-100	В	_	2½	200A/600V	100	88GUG04FH		88GUG04MH		88GUGC4FH		88GUGC4MH	
460	75	25-100	В	3	_	200A/600V	125	88HUG04FH		88HUG04MH		88HUGC4FH		88HUGC4MH	
400	100	50-200	В	_	3½	200A/600V	150	88IUH04FH		88IUH04MH		88IUHC4FH		88IUHC4MH	
	150	50-200	В	4	_	400A/600V	250	88JUH04FH		88JUH04MH		88JUHC4FH		88JUHC4MH	
	200	55-250	_	5	_	400A/600V	400	88LPS04FH		88LPS04MH		88LPSC4FH		88LPSC4MH	
	300	55-250	_	5	_	600A/600V	600	88LPU04FH		88LPU04MH		88LPUC4FH		88LPUC4MH	
	700	160-630	_	6	_	_	1200	_		88MSX04MH		_		88MSXC4MH	
	15	5.5-22	A1	1		30A/600V	30	88DUD05FE		88DUD05ME		88DUDC5FE		88DUDC5ME	
	30	10-40	A1	_	1¾	60A/600V	50	88EUE05FE		88EUE05ME		88EUEC5FE		88EUEC5ME	
	40	13–52	В	2		100A/600V	50	88FUF05FE		88FUF05ME		88FUFC5FE		88FUFC5ME	
	60	25-100	В	_	2½	200A/600V	100	88GUG05FE		88GUG05ME		88GUGC5FE		88GUGC5ME	
E7E	75	25-100	В	3	_	200A/600V	125	88HUG05FE		88HUG05ME		88HUGC5FE		88HUGC5ME	
575	100	50-200	В		3½	200A/600V	150	88IUH05FE		88IUH05ME		88IUHC5FE		88IUHC5ME	
	150	50-200	В	4	_	400A/600V	250	88JUH05FE		88JUH05ME		88JUHC5FE		88JUHC5ME	
	200	55-250		5		400A/600V	400	88LPS05FE		88LPU05ME		88LPSC5FE		88LPSC5ME	
	300	55-250	_	5	_	600A/600V	400	88LPU05FE		88LPU05ME		88LPUC5FE		88LPUC5ME	
	700	160-630	_	6	_	_	1200	_		88MSX05ME		_		88MSXC5ME	

Note: All starter sizes carry one maximum Hp rating (per the National Electric Code).

Features

Simplicity and compact lightweight design makes Class LE lighting contactors an attractive solution to your budgeting challenges.



- Used in applications where it is not critical that contacts remain closed if control power is lost
- Rated for tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are rated 20 400 amps at 600 volts
- 3 and 4 pole (up to 12 pole for 30 and 60 amp contactors)
- Most contactors have built-in auxiliary contacts for convenient 3-wire control

- Wide range of coil voltages from 24 to 600 VAC 50/60Hz
- Compact design allows for smaller panels and more wiring room
- Finger and back-of-hand safe terminals
- Panel and DIN rail mounting
- Full line of enclosures including NEMA 1, 3/3R, 4, 4/4X stainless steel and 12
- Available in combination form with choice of non-fusible disconnect, fusible disconnect or circuit breaker
- Full line of factory and field modifications

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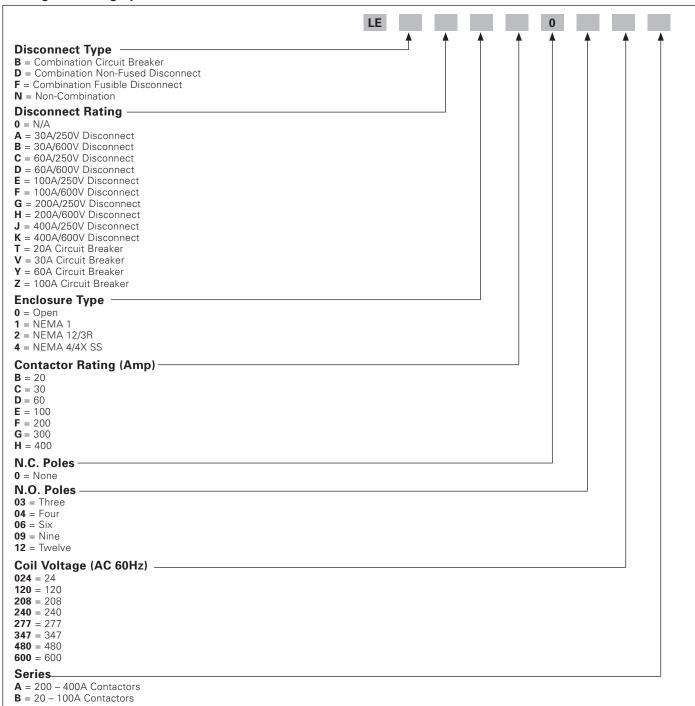
9

Lighting and Heating Control

Electrically Held Lighting Contactors, Class LE

Features

Catalog Numbering System



Lighting and Heating Control Electrically Held Lighting Contactors, Class LE

Selection



Coil Table

Oon labic	
VAC 60Hz	***
24	024
120	120
208	208
240	240
277	277
347 ¹⁾	347
480	480
600	600

Replace the (***) with a number from the coil table.

Non-Combination Contactor

MOII-COIIID				Fralescus Torre			
Max. Amp	Number	Normally Closed	Normally Open	Open	1	3/3R/12 ²⁾	4/4X 304 S.S.
Rating	of Poles	Contacts	Contacts	Catalog Number			
00	3	0	3	LEN00B003***B	LEN01B003***B	LEN02B003***B	LEN04B003***B
20	4	0	4	LEN00B004***B	LEN01B004***B	LEN02B004***B	LEN04B004***B
	3	0	3	LEN00C003***B	LEN01C003***B	LEN02C003***B	LEN04C003***B
	4	0	4	LEN00C004***B	LEN01C004***B	LEN02C004***B	LEN04C004***B
30	6	0	6	LEN00C006***B	LEN01C006***B	LEN02C006***B	LEN04C006***B
	9	0	9	LEN00C009***B	LEN01C009***B	LEN02C009***B	LEN04C009***B
	12	0	12	LEN00C012***B	LEN01C012***B	LEN02C012***B	LEN04C012***B
	3	0	3	LEN00D003***B	LEN01D003***B	LEN02D003***B	LEN04D003***B
00	6	0	6	LEN00D006***B	LEN01D006***B	LEN02D006***B	LEN04D006***B
60	9	0	9	LEN00D009***B	LEN01D009***B	LEN02D009***B	LEN04D009***B
	12	0	12	LEN00D012***B	LEN01D012***B	LEN02D012***B	LEN04D012***B
100	3	0	3	LEN00E003***B	LEN01E003***B	LEN02E003***B	LEN04E003***B
200	3	0	3	LEN00F003***A	LEN01F003***A	LEN02F003***A	LEN04F003***A
300	3	0	3	LEN00G003***A	LEN01G003***A	LEN02G003***A	LEN04G003***A
400	3	0	3	LEN00H003***A	LEN01H003***A	LEN02H003***A	LEN04H003***A

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¹⁾ Not available on 200 - 400A contactors.

²⁾ Type 12 field convertible to type 3/3R.

Lighting and Heating Control Electrically Held Lighting Contactors, Class LE

Technical Data

Contactor	LEN00B003	LEN00B004	LEN00C003	LEN00C004
General technical data:				
Finger-safe (main circuit / control circuit)	yes / yes	yes / yes	yes / yes	yes / yes
Degree of pollution	3	3	3	3
Altitude (m)	2,000	2,000	2,000	2,000
Ambient storage temperature (°C)	-55 to 80	-55 to 80	-55 to 80	-55 to 80
Ambient operating temperature (°C)	0 to 40	0 to 40	0 to 40	0 to 40
Humidity (% non-condensing)	10 to 95	10 to 95	10 to 95	10 to 95
Shock resistance at rectangular impulse (g/ms)	6.7 / 5, 4.2 / 10	6.7 / 5, 4.2 / 10	7.5 / 5, 4.7 / 10	7.5 / 5, 4.7 / 10
Shock resistance at sine pulse (q/ms)	10.5 / 5, 6.6 / 10	10.5 / 5, 6.6 / 10	11.8 / 5, 7.4 / 10	11.8 / 5, 7.4 / 10
Rated impulse voltage resistance (kV)	no data	no data	no data	no data
Rated insulation voltage (V)	no data	no data	no data	no data
Mechanical operating cycles as operating time:				
of contactor	30,000,000	30,000,000	10,000,000	10,000,000
of contactor with additional aux contacts	10.000.000	10.000.000	10.000.000	10.000.000
Main circuit:	1.0,000,000	15,555,555	10,000,000	,,
Number of NC / NO main contacts	ONC / 3NO	ONC / 4NO	ONC / 3NO	ONC / 4NO
Typical power loss per conductor (W)	0.7	0.7	0.9	0.9
Off-load operating frequency (cycles per hour)	10,000	10,000	5,000	5,000
Current ratings:	10,000	10,000	0,000	0,000
- Carron rannigor	20A @277V 1p 1ph	20A @277V 1p 1ph	30A @277V 1p 1ph	30A @277V 1p 1ph
Tungsten (poles per phase)	20A @480V 2p 1ph 20A @480V 3p 3ph	20A @480V 2p 1ph 20A @480V 3p 3ph	30A @480V 2p 1ph 30A @480V 3p 3ph	30A @480V 2p 1ph 30A @480V 3p 3ph
Ballast (poles per phase)	20A @347V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph	20A @347V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph	30A @347V 1p 1ph 30A @600V 2p 1ph 30A @660V 3p 3ph	30A @347V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph
General and resistive (poles per phase)	20A @600V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph	20A @600V 1p 1ph 20A @600V 2p 1ph 20A @600V 3p 3ph	30A @600V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph	30A @600V 1p 1ph 30A @600V 2p 1ph 30A @600V 3p 3ph
Coil ratings:				
Nominal voltage	2)	2)	2)	2)
Inrush / sealed power (VA)	31.7 / 4.8	31.7 / 4.8	87 / 9.4	87 / 9.4
Coil voltage tolerance factor	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1
Internal/standard auxiliary contact:				
Number of NC / NO auxiliary contacts	ONC / 1NO	NA®	1NC / 1NO	1NC / 1NO
Rating	A600 / Q600	NA	A600 / Q600	A600 / Q600
Installation/mounting/dimensions:				
Mounting orientation	vertical	vertical	vertical	vertical
Type of mounting: screw / DIN rail	yes / yes	yes / yes	yes / yes	yes / yes
Height x Width x Depth (mm)	57.5 x 45 x 73	57.5 x 45 x 73	85 x 45 x 97	85 x 60 x 97
Minimum clearance to sides (mm)	0	0	0	0
Minimum clearance to earthed parts (mm)	6	6	6	6
Connection type / torque for main circuit terminals	screw / 7-10 lb in	screw / 7-10 lb in	screw / 18-22 lb in	screw / 18-22 lb in
Connection type / torque for control circuit terminals	screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in
Solid and stranded conductors for main contacts (AWG)	2x(20-16), 2x(18-14), 2x(12)	2x(20-16), 2x(18-14), 2x(12)	2x(6-12), 2x(14-8)	2x(6-12), 2x(14-8)
Solid and stranded conductors for control circuit (AWG)	2x(20-16), 2x(18-14)	2x(20-16), 2x(18-14)	2x(20-16), 2x(18-14)	2x(20-16), 2x(18-14)
Conductor type for main and control circuits	75°C CU	75°C CU	75°C CU	75°C CU
Short circuit current rating of main circuit:				
Short circuit current rating	5kA @ 600V	5kA @ 600V	5kA @ 600V	5kA @ 600V
Max fuse / circuit breaker (Amp)	30 / 25	30 / 25	60 / 40	60 / 40

 $^{^{\}scriptsize \textcircled{\tiny 1}}$ Must use an external (optional) auxiliary contact. $^{\scriptsize \textcircled{\tiny 2}}$ Refer to catalog selection tables for coil voltages.

Lighting and Heating Control Electrically Held Lighting Contactors, Class LE

Technical Data

LEN00D003	LEN00E003	LEN00F003	LEN00G003	LEN00H003
no / yes	no / yes	no / yes	no / yes	no / yes
3	3	3	3	3
2,000	2,000	2,000	2,000	2,000
-55 to 80	-55 to 80	-55 to 80	-55 to 80	-55 to 80
0 to 40	0 to 40	0 to 40	0 to 40	0 to 40
10 to 95	10 to 95	10 to 95	10 to 95	10 to 95
10 / 5, 5 / 10	6.8 / 5, 4 / 10	8.5 / 5, 4.2 / 10	8.5 / 5, 4.2 / 10	8.5 / 5, 4.2 / 10
15 / 5, 8 / 10	10.6 / 5, 6.2 / 10	13.4 / 5, 6.5 / 10	13.4 / 5, 6.5 / 10	13.4 / 5, 6.5 / 10
no data	no data	no data	no data	no data
no data	no data	no data	no data	no data
Mechanical operating	cycles as operating time:		·	
10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Main circuit:		•	•	·
ONC / 3NO	ONC / 3NO	ONC / 3NO	ONC / 3NO	ONC / 3NO
2.6	7.7	13	18	35
5,000	5,000	2,000	2,000	2,000
Current ratings:				
60A @277V 1p 1ph 60A @480V 2p 1ph 60A @480V 3p 3ph	100A @277V 1p 1ph 100A @480V 2p 1ph 100A @480V 3p 3ph	200A @277V 1p 1ph 200A @480V 2p 1ph 200A @480V 3p 3ph	300A @277V 1p 1ph 300A @480V 2p 1ph 300A @480V 3p 3ph	400A @277V 1p 1ph 400A @480V 2p 1ph 400A @480V 3p 3ph
60A @600V 1p 1ph 60A @600V 2p 1ph 60A @600V 3p 3ph	100A @600V 1p 1ph 100A @600V 2p 1ph 100A @600V 3p 3ph	200A @600V 1p 1ph 200A @600V 2p 1ph 200A @600V 3p 3ph	300A @600V 1p 1ph 300A @600V 2p 1ph 300A @600V 3p 3ph	400A @600V 1p 1ph 400A @600V 2p 1ph 400A @600V 3p 3ph
60A @600V 1p 1ph 60A @600V 2p 1ph 60A @600V 3p 3ph	100A @600V 1p 1ph 100A @600V 2p 1ph 100A @600V 3p 3ph	200A @600V 1p 1ph 200A @600V 2p 1ph 200A @600V 3p 3ph	300A @600V 1p 1ph 300A @600V 2p 1ph 300A @600V 3p 3ph	400A@600V 1p 1ph 400A @600V 2p 1ph 400A @600V 3p 3ph
Coil ratings:				
2)	2)	2)	2)	2)
166 / 12.6	300 / 21	300 / 5.8	590 / 6.7	830 / 9.2
0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1
Internal/standard auxil	iary contact:	<u>'</u>		
NA①	NA ①	2NC / 2NO	2NC / 2NO	2NC / 2NO
NA	NA	A300 / Q300	A300 / Q300	A300 / Q300
Installation/mounting/c	limensions:			
vertical	vertical	vertical	vertical	vertical
yes / yes	yes / yes	yes / no	yes / no	yes / no
112 x 55 x 115	146 x 70 x 139	172 x 120 x 180	210 x 145 x 202	214 x 160 x 225
6	6	10	10	10
6	6	10	10	10
screw / 27-40 lb in	screw / 36-53 lb in	screw / 90-110 lb in	screw / 180-195 lb in	screw / 180-195 lb in
screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in	screw / 7-10 lb in
2x(18-3),	2x(10-1/0),	2x(6-3/0)	2x(2/0-500MCM)	2x(2/0-500MCM)
1x(18-2)	1x(10-2/0)	27(0 0/0)	ZAIZIO OOOIVIOIVII	ZA(Z) O OOOIVIOIVI)
2x(18-14)	2x(18-14)	2x(18-14)	2x(18-14)	2x(18-14)
75°C CU	75°C CU	75°C CU	75°C CU	75°C CU
Short circuit current ra	ting of main circuit:	•	•	
5kA @ 600V	10kA @ 600V	10kA @ 600V	18kA @ 600V	18kA @ 600V
		+	+	
100 / 80	200 / 125	400 / 250	600 / 400	800 / 500

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Lighting and Heating Control Electrically Held Lighting Contactors, Class LE

Selection



Coil Table

Jon Tubio	
VAC 60Hz	***
24	024
120	120
208	208
240	240
277	277
347 ^①	347
480	480
600	600

Replace the (***) with a number from the coil table.

Combination Contactor

			D.	D	0: :	Enclosure Type			
	Max. Amp	Number of NO	Disc. Amp	Disc Amp/ Fuse Clip	Circuit Breaker Rating	1	3/3R/12 ² , 4 ³	4/4X 304 S.S.	
Disconnect Type	Rating	Poles	Rating	Rating		Catalog Number			
	20	3	30A	_	_	LEDB1B003***B	LEDB2B003***B	LEDB4B003***B	
	30	3	30A	_	_	LEDB1C003***B	LEDB2C003***B	LEDB4C003***E	
N	60	3	60A	<u> </u>	_	LEDD1D003***B	LEDD2D003***B	LEDD4D003***I	
Non-Fusible	100	3	100A	_	_	LEDF1E003***B	LEDF2E003***B	LEDF4E003***B	
	200	3	200A	_	_	LEDH1F003***A	LEDH2F003***A	LEDH4F003***	
	300	3	400A	<u> </u>	_	LEDK1G003***A	LEDK2G003***A	LEDK4G003***/	
	00	3	<u> </u>	30A/250V	_	LEFA1B003***B	LEFA2B003***B	LEFA4B003***B	
	20	3	_	30A/600V	_	LEFB1B003***B	LEFB2B003***B	LEFB4B003***B	
	0.0	3	_	30A/250V	_	LEFA1C003***B	LEFA2C003***B	LEFA4C003***B	
	30	3	_	30A/600V	_	LEFB1C003***B	LEFB2C003***B	LEFB4C003***B	
	60	3	_	60A/250V	_	LEFC1D003***B	LEFC2D003***B	LEFC4D003***E	
- II		3	_	60A/600V	_	LEFD1D003***B	LEFD2D003***B	LEFD4D003***E	
Fusible		3	_	100A/250V	_	LEFE1E003***B	LEFE2E003***B	LEFE4E003***B	
	100	3	_	100A/600V	_	LEFF1E003***B	LEFF2E003***B	LEFF4E003***B	
	000	3	_	200A/250V	_	LEFG1F003***A	LEFG2F003***A	LEFG4F003***A	
	200	3	_	200A/600V	_	LEFH1F003***A	LEFH2F003***A	LEFH4F003***A	
	000	3	_	400A/250V	_	LEFJ1G003***A	LEFJ2G003***A	LEFJ4G003***A	
	300	3	_	400A/600V	_	LEFK1G003***A	LEFK2G003***A	LEFK4G003***	
	20	3	_	_	20A	LEBT1B003***B	LEBT2B003***B	LEBT4B003***E	
0: :. D	30	3	_	İ_	30A	LEBV1C003***B	LEBV2C003***B	LEBV4C003***I	
Circuit Breaker	60	3	_	_	60A	LEBY1D003***B	LEBY2D003***B	LEBY4D003***I	
	100	3	1_	1_	100A	LEBZ1E003***B	LEBZ2E003***B	LEBZ4E003***B	

 $[\]textcircled{1}$ Not available on 200 - 400A contactors.

 $^{\ \}mathfrak D$ Type 12 field convertible to type 3/3R.

③ Type 4 painted enclosure through 100 Amp only.

Features

Class LC lighting contactors deliver unprecedented versatility in application, simplicity in configuration and performance in operation. Ingenious design, rugged construction and a host of truly useful features make them uniquely appealing to all those who use them.

Contact position indication – when button protrudes, contact is closed

Power poles can easily be added at any time based on changing needs. Furthermore, they may be converted from NO to NC (or vice versa) simply by repositioning.

Plug-in auxiliary contacts

are NO when installed on

NC on the right.

the left side of the contactor,

A simple kit easily converts electrically held units to mechanically held and includes a 2-or 3-wire control module.

contactor to be field

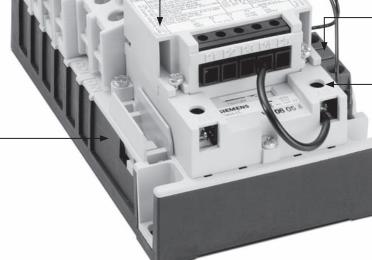
and future needs.

expandable for flexibility

Convenient side access

field power wiring.

Standard base enables —



Finger and back-of-hand safe terminals.

- Used in all applications where either electrically or mechanically held contactors are specifically suited and also ideal for maximum flexibility and future expansion
- Rated for tungsten lighting (incandescent filament), ballast lighting (fluorescent, HID, metal halide, mercury vapor, quartz halogen and sodium-lamp), resistive and general use loads
- Contacts are rated up to 30 amps at 600 volts
- Up to 12 poles (maximum of 8 normally closed)
- Wide range of coil voltages from 24 to 600 VAC 50/60Hz
- Can be ordered as either electrically or mechanically held and can also be converted from electrically to mechanically held in the field with a simple conversion kit
- Modular design enables you to stock the building block components to assemble all configurations of both the electrically and mechanically held contactors thus dramatically reducing inventory
- Full line of enclosures including NEMA 1, 3/3R, 4, 4/4X stainless steel and 12
- Full line of factory and field modifications

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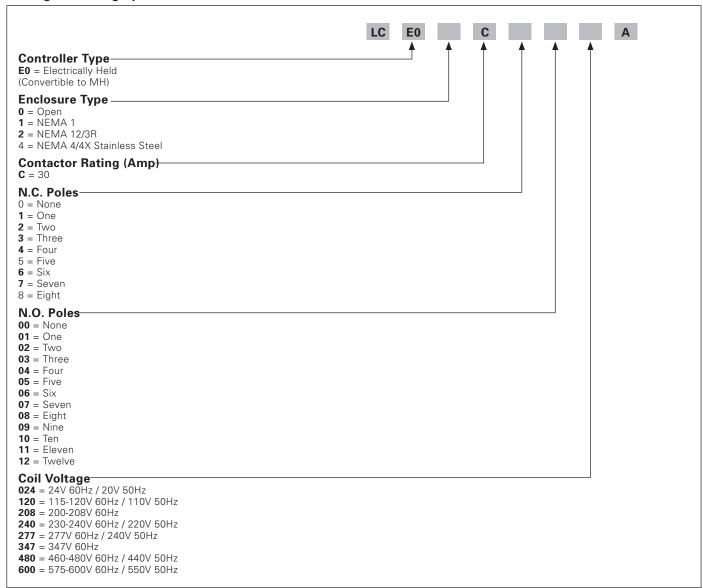
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Lighting and Heating Control

Electrically Held Lighting Contactors, Class LC

Features

Catalog Numbering System



Lighting and Heating Control

Electrically Held Lighting Contactors, Class LC

Selection



- To order standard electrically held contactor, simply select catalog number from tables below.
- To order mechanically held contactor, select catalog number from tables below and specify conversion module from factory modification section from page 14.
- To convert standard electrically held contactor to mechanically held in the field, select catalog number from tables below and select conversion module kit from page 15.

Coil Table

VAC 60Hz	***
24	024
120	120
208	208
240	240
277	277
347	347
480	480
600	600

Non-Combination Contactor (30 Amp max.)

N 1 D.	alaa.	Enclosure Type			
No. of Poles		Open	1	3/3R/12 ^①	4/4X 304 S.S.
I.C.	N.O.	Catalog Number			
2		LCE00C200***A	LCE01C200***A	LCE02C200***A	LCE04C200***A
3		LCE00C300***A	LCE01C300***A	LCE02C300***A	LCE04C300***A
4		LCE00C400***A	LCE01C400***A	LCE02C400***A	LCE04C400***A
5	0	LCE00C500***A	LCE01C500***A	LCE02C500***A	LCE04C500***A
6		LCE00C600***A	LCE01C600***A	LCE02C600***A	LCE04C600***A
7		LCE00C700***A	LCE01C700***A	LCE02C700***A	LCE04C700***A
8		LCE00C800***A	LCE01C800***A	LCE02C800***A	LCE04C800***A
1		LCE00C101***A	LCE01C101***A	LCE02C101***A	LCE04C101***A
2		LCE00C201***A	LCE01C201***A	LCE02C201***A	LCE04C201***A
3		LCE00C301***A	LCE01C301***A	LCE02C301***A	LCE04C301***A
4		LCE00C401***A	LCE01C401***A	LCE02C401***A	LCE04C401***A
5	1	LCE00C501***A	LCE01C501***A	LCE02C501***A	LCE04C501***A
6		LCE00C601***A	LCE01C601***A	LCE02C601***A	LCE04C601***A
7		LCE00C701***A	LCE01C701***A	LCE02C701***A	LCE04C701***A
8		LCE00C801***A	LCE01C801***A	LCE02C801***A	LCE04C801***A
0		LCE00C002***A	LCE01C002***A	LCE02C002***A	LCE04C002***A
1		LCE00C102***A	LCE01C102***A	LCE02C102***A	LCE04C102***A
2		LCE00C202***A	LCE01C202***A	LCE02C202***A	LCE04C202***A
3		LCE00C302***A	LCE01C302***A	LCE02C302***A	LCE04C302***A
4	2	LCE00C402***A	LCE01C402***A	LCE02C402***A	LCE04C402***A
5		LCE00C502***A	LCE01C502***A	LCE02C502***A	LCE04C502***A
6		LCE00C602***A	LCE01C602***A	LCE02C602***A	LCE04C602***A
7		LCE00C702***A	LCE01C702***A	LCE02C702***A	LCE04C702***A
8		LCE00C802***A	LCE01C802***A	LCE02C802***A	LCE04C802***A
0		LCE00C003***A	LCE01C003***A	LCE02C003***A	LCE04C003***A
1		LCE00C103***A	LCE01C103***A	LCE02C103***A	LCE04C103***A
2		LCE00C203***A	LCE01C203***A	LCE02C203***A	LCE04C203***A
3		LCE00C303***A	LCE01C303***A	LCE02C303***A	LCE04C303***A
4	3	LCE00C403***A	LCE01C403***A	LCE02C403***A	LCE04C403***A
5		LCE00C503***A	LCE01C503***A	LCE02C503***A	LCE04C503***A
6		LCE00C603***A	LCE01C603***A	LCE02C603***A	LCE04C603***A
7		LCE00C703***A	LCE01C703***A	LCE02C703***A	LCE04C703***A
8		LCE00C803***A	LCE01C803***A	LCE02C803***A	LCE04C803***A

① Type 12 field convertible to Type 3/3R.

Lighting and Heating Control Electrically Held Lighting Contactors, Class LC

Selection

Non-Combination Contactor (30 Amp max.)

No. of Pal	ae .	Enclosure Type						
No. of Poles		Open	1	3/3R/12 ^①	4/4X 304 S.S.			
N.C.	N.O.	Catalog Number	<u>'</u>					
0		LCE00C004***A	LCE01C004***A	LCE02C004***A	LCE04C004***A			
1		LCE00C104***A	LCE01C104***A	LCE02C104***A	LCE04C104***A			
2		LCE00C204***A	LCE01C204***A	LCE02C204***A	LCE04C204***A			
3		LCE00C304***A	LCE01C304***A	LCE02C304***A	LCE04C304***A			
4	4	LCE00C404***A	LCE01C404***A	LCE02C404***A	LCE04C404***A			
5		LCE00C504***A	LCE01C504***A	LCE02C504***A	LCE04C504***A			
6		LCE00C604***A	LCE01C604***A	LCE02C604***A	LCE04C604***A			
7	_	LCE00C704***A	LCE01C704***A	LCE02C704***A	LCE04C704***A			
8		LCE00C804***A	LCE01C804***A	LCE02C804***A	LCE04C804***A			
0		LCE00C005***A	LCE01C005***A	LCE02C005***A	LCE04C005***A			
1		LCE00C105***A	LCE01C105***A	LCE02C105***A	LCE04C105***A			
2		LCE00C205***A	LCE01C205***A	LCE02C205***A	LCE04C205***A			
3	5	LCE00C305***A	LCE01C305***A	LCE02C305***A	LCE04C305***A			
4		LCE00C405***A	LCE01C405***A	LCE02C405***A	LCE04C405***A			
5		LCE00C505***A	LCE01C505***A	LCE02C505***A	LCE04C505***A			
6		LCE00C605***A	LCE01C605***A	LCE02C605***A	LCE04C605***A			
0		LCE00C006***A	LCE01C006***A	LCE02C006***A	LCE04C006***A			
1		LCE00C106***A	LCE01C106***A	LCE02C106***A	LCE04C106***A			
2		LCE00C206***A	LCE01C206***A	LCE02C206***A	LCE04C206***A			
3	6	LCE00C306***A	LCE01C306***A	LCE02C306***A	LCE04C306***A			
4		LCE00C406***A	LCE01C406***A	LCE02C406***A	LCE04C406***A			
5		LCE00C506***A	LCE01C506***A	LCE02C506***A	LCE04C506***A			
6		LCE00C606***A	LCE01C606***A	LCE02C606***A	LCE04C606***A			
0		LCE00C007***A	LCE01C007***A	LCE02C007***A	LCE04C007***A			
	_							
1		LCE00C107***A	LCE01C107***A	LCE02C107***A	LCE04C107***A			
2	7	LCE00C207***A	LCE01C207***A	LCE02C207***A	LCE04C207***A			
3		LCE00C307***A	LCE01C307***A	LCE02C307***A	LCE04C307***A			
4		LCE00C407***A	LCE01C407***A	LCE02C407***A	LCE04C407***A			
0		LCE00C008***A	LCE01C008***A	LCE02C008***A	LCE04C008***A			
1		LCE00C108***A	LCE01C108***A	LCE02C108***A	LCE04C108***A			
2	8	LCE00C208***A	LCE01C208***A	LCE02C208***A	LCE04C208***A			
3		LCE00C308***A	LCE01C308***A	LCE02C308***A	LCE04C308***A			
4		LCE00C408***A	LCE01C408***A	LCE02C408***A	LCE04C408***A			
0		LCE00C009***A	LCE01C009***A	LCE02C009***A	LCE04C009***A			
1	9	LCE00C109***A	LCE01C109***A	LCE02C109***A	LCE04C109***A			
2		LCE00C209***A	LCE01C209***A	LCE02C209***A	LCE04C209***A			
0		LCE00C010***A	LCE01C010***A	LCE02C010***A	LCE04C010***A			
1	10	LCE00C110***A	LCE01C110***A	LCE02C110***A	LCE04C110***A			
2		LCE00C210***A	LCE01C210***A	LCE02C210***A	LCE04C210***A			
0	11	LCE00C011***A	LCE01C011***A	LCE02C011***A	LCE04C011***A			
0	12	LCE00C012***A	LCE01C012***A	LCE02C012***A	LCE04C012***A			

^① Type 12 field convertible to Type 3/3R.

Lighting and Heating Control Electrically Held Lighting Contactors, Class LC

-		
	nnica	Data
	шьса	Data

General technical data:	
Finger-safe (main circuit / control circuit)	yes / yes
Degree of pollution	3
Altitude (m)	2,000
Ambient storage temperature (°C)	-30 to 65
Ambient operating temperature (°C)	-25 to 40
Humidity (% non-condensing)	no data
Shock resistance at rectangular impulse (g/ms)	no data
Shock resistance at sine pulse (g/ms)	no data
Rated impulse voltage resistance (kV)	no data
Rated insulation voltage (V)	600
Mechanical operating cycles as operating	ng time:
of contactor	100,000
of contactor with additional aux contacts	100,000
Main circuit:	
Number of main contacts	2 - 12 (maximum of 8 NC)
Typical power loss per conductor (W)	no data
Off-load operating frequency (cycles per hour)	60 for continued operation
Current ratings:	15 to to continuou oporation
	20A @277V 1p 1ph
Tungsten (poles per phase)	20A @480V 2p 1ph
	20A @480V 3p 3ph
	30A @347V 1p 1ph
Ballast (poles per phase)	30A @600V 2p 1ph
	30A @600V 3p 3ph
General and resistive (poles per phase)	30A @600V 1p 1ph 30A @600V 2p 1ph
denotal and redictive (perce per phase)	30A @600V 3p 3ph
Coil ratings:	
Nominal voltage	(refer to coil voltage table)
Inrush / sealed power (VA)	248 / 28
Coil voltage tolerance factor	0.85 - 1.1
External/optional auxiliary contact:	
Number of NC / NO auxiliary contacts	2NC / 2NO max
Rating	A600, 24VDC, 24VAC
Installation/mounting/dimensions:	71000, 21100, 211110
Mounting orientation	vertical
Type of mounting: screw / DIN rail	yes / no
Height x Width x Depth (mm)	188 x 106 x 98
Minimum clearance to sides (mm)	12.7
Minimum clearance to sides (mm) Minimum clearance to earthed parts (mm)	12.7
Connection type / torque:	14.7
	gorow / 25 lb in
Main contact terminals	screw / 35 lb in
Coil terminals	screw / 15 lb in
Auxiliary contact terminals	screw / 7-12 lb in
Control module terminals	screw / 5 lb in
Solid and stranded conductors (AWG):	4 (44 0) (10 111
Main contact terminals	1x(14-8), #8 solid or stranded 2x(14-8), #8 stranded only
	1
Coil terminals	2x(18-14)
Coil terminals Auxiliary contact terminals	2x(18-14) 2x(22-12)
	- '
Auxiliary contact terminals	2x(22-12)
Auxiliary contact terminals Control module terminals	2x(22-12) 1x(22-12) 75°C CU / 60-75°C CU
Auxiliary contact terminals Control module terminals Conductor type for main / control circuits	2x(22-12) 1x(22-12) 75°C CU / 60-75°C CU

Coil voltages:
24V 60Hz / 20V 50Hz
115-120V 60Hz / 110V 50Hz
200-208V 60Hz
230-240V 60Hz / 220V 50Hz
277V 60Hz / 240V 50Hz
347V 60Hz
460-480V 60Hz / 440V 50Hz
575-600V 60Hz / 550V 50Hz

Short circuit current ratings with fuses:							
Max. Volt.	Fuse	Max. Device Rating (Amps)	SCCR (kA)				
600	RK fuse	60	5				

Short circuit current ratings with circuit breakers:							
Max. Volt.	Siemens Listed Circuit Breaker	Max. Device Rating (Amps)	SCCR (kA)				
600	NGG3B040L	40	5				
480	HEG3B040L	40	5				
480	ED63B040L	40	5				
480	NGG3B040L	40	5				

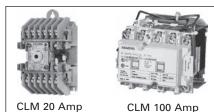
Conversion module:							
Input Volt. (AC)	Steady State Current @ Rated Volts (mA)	Max. VA					
24	80	5					
115-120	83	12					
200-277	91	30					

Conversion module:						
Min. pulse duration (3-wire module)	250ms					
Max. allowable leakage current	1.8 mA					
EMI	35 V/m					
Surge transient peak	6 kV					
Frequency range	40-70 Hz					

Lighting and Heating Contactors

Mechanically and Magnetically Held Lighting Contactors, Class CLM

Selection



Mechanically Latched Lighting and Heating Contactor

The CLM Lighting Contactors can be used with metal halide, mercury vapor, quartz halogen, tungsten and fluorescent lighting. They provide reliable and convenient lighting control in numerous applications, such as industrial plants, schools, hospitals, office buildings, shopping centers, airports, stadiums . . . literally everywhere lighting is required.

The CLMs are listed under UL 508 with no derating when used open or enclosed. Combination lighting contactors are listed for UL service entrance

UL listed File #E60310 CSA Certified File LR 6535

Type CLM 20 Amp Lighting Contactor Solid State Control Modules

The CLM 20 amp lighting contactor is an electromagnetically operated, mechanically latched three wire control contactor. The most commonly used method of control is a three position momentary contact switch with a center-off position. The controlling device must be able to make the coil inrush current but need not break it. The coil current is interrupted by the control contacts within the CLM contactor. Power for the control line may come from a separate source or directly from the line side of the CLM contactor. The CLM contactor can also be controlled by devices such as:

- Break-glass control stations
- Timers having single pole, double throw contacts
- Photo-electric cells[®]
- Energy management systems[®]
- Microprocessors[®]
- Occupancy sensors[®]

Control modules make it possible to use a controlling device that does not have enough current-carrying capacity to control the CLM contactor directly. Control modules are also used when

the control station is to be located at a distance greater than the allowable contactor line run.

Another use for control modules occurs when the controlling device is only available as a single pole single-throw contact necessitating a two wire control line.

Still another application for control modules is when start-stop three wire control is needed.

Control modules also can make it possible to operate the CLM coil from its own incoming line at one voltage while providing the control at a second, perhaps lower voltage.

Two Wire Control Module (Accessory 47)

The advantages of two wire controls are:

- **1.** Control station can have lower ampacity rating.
- Control station can be located an extended distance from the CLM contactor.
- **3.** Control module can frequently be controlled directly from microprocessor.
- **4.** Control devices can be two wire single pole, single-throw types.
- **5.** Control voltage may be different than the CLM coil circuit and at a lower voltage level.

Note: If the control power to the solid state control module is lost while the module is energized the lighting contactor will open. If the line power to the lighting contactor is lost while the contactor is energized the contactor will not change state with return of line voltage. Power will be restored to the load if the control module is still energized. Control station should be the maintained type.

Three Wire Control Module (Accessory 48)

- **1.** The accessory 48 consists of two relays with contacts appropriately interconnected which provides for an interlocking that prevents both relays from being energized simultaneously.
- 2. This module has similar characteristics to the two wire module (Accessory 47) except there is no change of switch contact position upon loss of control line power. Control stations should be the momentary type.

Stop-Start Control Module (Accessory 49)

Stop-start three wire maintained control is an arrangement used mostly when controlling motors, but can be used in lighting applications.

Any number of momentary contact control stations consisting of normally open start buttons and normally closed stop buttons can be used. Start buttons are connected in parallel and stop buttons in series.

Operation (Magnetic Latch)

A permanent magnet is built into the contactor structure of the 30A, 60A, 100A, and 200A contactors that will maintain the contactor in its energized state indefinitely without using control power. When energized, a DC current is applied that produces a magnetic field that reinforces the polarity of the permanent magnet, and the contactor pulls in immediately. The current to the coil is disconnected by the coil clearing interlock. In order to drop out the contactor, it is necessary to apply a field through the OFF coil in the reverse direction to the permanent magnet. This momentarily cancels the magnetic attraction and the contactor drops out. Coil and module failures are possible when used with solid state relays and PLC outputs. 24-volt systems are ok to use, but 120 volts and above should be discouraged. If higher values cannot be avoided, an interposing relay should be used.

(Mechanically Latched)

The 300 & 400A lighting and heating contactors operate using a latching mechanism.

Closing – When the "close" pushbutton is operated, the closing coil is energized, closing the contactor. As the contactor closes, the latch lever hooks over the latch pin to mechanically latch the contactor closed. The coil-clearing auxiliary contact de-energizes the closing coil.

Opening – When the "Trip" pushbutton is operated, the trip solenoid coil is energized, unhooking the latch lever from the latch pin, which allows the contactor to open. As the contactor opens, the coil-clearing auxiliary contact de-energizes the trip solenoid coil.

Mechanically and Magnetically Held Lighting Contactors, Class CLM

Selection



Ordering Information	Coil Table	
 Replace *** with a number from the coil table. Field modification kits see page 9/100. Factory modifications see page 9/115. Dimensions see page 9/147 open page 9/164 enclosed. Wiring Diagrams see page 9/185. Replacement parts see page 9/130. 	60Hz Voltage 24 [®] 120 208 240 277 480 600 [®]	Number 024 120 208 240 277 480 600

Open and Non-combination Enclosed Contactors

		Open Type [®]		Enclosure						
Max	Number			NEMA 1 General Purpose		NEMA 12 NEMA 3/3R [®] Industrial Use Weatherproof		NEMA 4/4X Stainless Steel® Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel		
Amp Rating	Number of Poles	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
	2 3			CLM1B02*** CLM1B03***		CLM2B02*** CLM2B03***		CLMSB02*** CLMSB03***		
20	6	see table		CLM1B04*** CLM1B06***		CLM2B04*** CLM2B06***		CLMSB04*** CLMSB06***		
	8 10 12	below		CLM1B08*** CLM1B10*** CLM1B12***		CLM2B08*** CLM2B10*** CLM2B12***		CLMSB08*** CLMSB10*** CLMSB12***		
	2	CLM0C02***		CLM1C02***		CLM2C02***		CLMSC02***		
	3 4	CLM0C03*** CLM0C04***		CLM1C03*** CLM1C04***		CLM2C03*** CLM2C04***		CLMSC03*** CLMSC04***		
30	5 6	CLM0C05*** CLM0C06***		CLM1C05*** CLM1C06***		CLM2C05*** CLM2C06***		CLMSC05***	_	
	8 9	CLM0C08*** CLM0C09***		CLM1C08*** CLM1C09***		CLM2C08*** CLM2C09***		_	_	
	10 12	CLM0C10*** CLM0C12***		CLM1C10*** CLM1C12***		CLM2C10*** CLM2C12***				
	2 3	CLM0D02*** CLM0D03***		CLM1D02*** CLM1D03***		CLM2D02*** CLM2D03***		CLMSD02*** CLMSD03***		
	4 5	CLM0D04*** CLM0D05***		CLM1D03*** CLM1D05***		CLM2D04*** CLM2D05***		CLMSD04*** CLMSD05***		
60	6	CLM0D06***		CLM1D06***		CLM2D06***		—	_	
	8 9	CLM0D08*** CLM0D09***		CLM1D08*** CLM1D09***		CLM2D08*** CLM2D09***		_	_	
	10 12	CLM0D10*** CLM0D12***		CLM1D10*** CLM1D12***		CLM2D10*** CLM2D12***		_	_	
100	2 3	CLM0E02*** CLM0E03***		CLM1E02*** CLM1E03***		CLM2E02*** CLM2E03***		CLMSE02*** CLMSE03***		
	4 5	CLM0E04*** CLM0E05***		CLM1E04*** CLM1E05***		CLM2E04*** CLM2E05***		CLMSE04*** CLMSE05***		
200	2 3 4	CLM0F02*** CLM0F03*** CLM0F04***		CLM1F02*** CLM1F03*** CLM1F04***		CLM2F02*** CLM2F03*** CLM2F04***		CLMSF02*** CLMSF03*** CLMSF04***		
	5 2	CLMOF05*** CLMOG02***		CLM1F05*** CLM1G02***		CLM2F05*** CLM2G02***		CLMSF05***		
300	3	CLM0G03***		CLM1G03***		CLM2G03***			<u> </u>	
400	2 3	CLM0H02*** CLM0H03***		CLM1H02*** CLM1H03***		CLM2H02*** CLM2H03***			_	

Open 20 Amp Contactors

Max		110-120V Coil 50/60Hz		208-240V Coil 50/60Hz		265-277V Coil 50/60Hz		440-480V Coil 50/60Hz	
Amp Rating	Number of Poles ^①	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
	2	CLM22031		CLM22061		CLM22071		CLM22091	
	3	CLM32031		CLM32061		CLM32071		CLM32091	
	4	CLM42031		CLM42061		CLM42071		CLM42091	
20	6	CLM62031		CLM62061		CLM62071		CLM62091	
	8	CLM82031		CLM82061		CLM82071		CLM82091	
	10	CLM102031		CLM102061		CLM102071		CLM102091	
	12	CLM122031		CLM122061		CLM122071		CLM122091	

① Contactors with 2–6-poles will be assembled with all poles located in the top portion of the contactor. Contactors with 8–12-poles will be assembled with 6-poles in the top portion and the remaining poles in the bottom portion of the contactor.

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Siemens Industry, Inc. Industrial Controls Catalog

② 24 volt coils are not available on 20, 300 and 400 amp contactor sizes. For 24 volt control of 20 amp contactor select solid state control module.

select solid state control module.

③ For conduit hubs and conversion instructions, see page 9/106.

CLM 30 & 60A 6-12-pole can be field assembled.
Order mounting kit 49MCMPMA and the appropriate number of 2-5 pole contactors.
 600 volt coils are not available on 20 amp

^{§ 600} volt coils are not available on 20 amp contactors.

Lighting Control Combination Mechanically and Magnetically Held Lighting Contactors, Class CLM

Selection



Ordering Information	Coil Table	Coil Table		
 ▶ Replace *** with a number from the coil table. ▶ Field modification kits see page 9/100. ▶ Factory modifications see page 9/115. ▶ Dimensions see page 9/164. ▶ Wiring Diagrams see page 9/185. 	60Hz Voltage 24 [©] 120 208 240 277 480	Number 024 120 208 240 277 480		
► Replacement parts see page 9/130.	6003	600		

Combination Lighting Contactors

						Enclosure								
Disconnect	Contactor		Disc Amp	Disc Amp/ Circuit			Disc Disc Amp/ Circuit		NEMA 1 General Purpo	se	NEMA 12, NEMA 3/3R [®] NEMA 4 Painted (thru 100 amps) Industrial Use Weatherproof, Watertight, Dust-tight		NEMA 4/4X Stainless Steel Watertight, Dust-tight, Corrosion Resistant, 304 Stainless Steel	
Туре	Amp Rating	of NO Poles	Rating	Fuse Clip Rating	Breaker Rating	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number List P	rice \$			
	20	3	30A	_	_	CMNB14***		CMNB24***		CMNBS4***				
	30	3	30A	_	_	CMNC14***		CMNC24***		CMNCS4***				
Non-Fusible	60	3	60A	_	_	CMND15***		CMND25***		CMNDS5***				
iaon-i noinie	100	3	100A	_		CMNE16***		CMNE26***		CMNES6***				
	200	3	200A	_	_	CMNF17***		CMNF27***		CMNFS7***				
	300	3	400A	_	_	CMNG18***		CMNG28***		CMNGS8***				
20	20	3	_	30A/250V	_	CMFB10***		CMFB20***		CMFBS0***				
	20	3	_	30A/600V	_	CMFB11***		CMFB21***		CMFBS1***				
	30	3	_	30A/250V	_	CMFC10***		CMFC20***		CMFCS0***				
	30	3	_	30A/600V	_	CMFC11***		CMFC21***		CMFCS1***				
	60	3	_	60A/250V	_	CMFD12***		CMFD22***		CMFDS2***				
Fusible	00	3	_	60A/600V	_	CMFD13***		CMFD23***		CMFDS3***				
rusinie	100	3	_	100A/250V	_	CMFE14***		CMFE24***		CMFES4***				
	100	3	_	100A/600V	_	CMFE15***		CMFE25***		CMFES5***				
	200	3	_	200A/250V	_	CMFF16***		CMFF26***		CMFFS6***				
	200	3	_	200A/600V	_	CMFF17***		CMFF27***		CMFFS7***				
	300	3	_	400A/250V	_	CMFG18***		CMFG28***		CMFGS8***				
	300	3	_	400A/600V	_	CMFG19***		CMFG29***		CMFGS9***				
	20	3	_	_	20A	CMBB14***		CMBB24***		CMBBS4***				
Circuit	30	3	_	_	30A	CMBC15***		CMBC25***		CMBCS5***				
Breaker	60	3	_	_	60A	CMBD18***		CMBD28***		CMBDS8***				
	100	3	_	_	100A	CMBE18***		CMBE28***		CMBES8***				
	200	3	_	_	200A	CMBF10***		CMBF20***		CMBFS0***				
	300	3	_	_	300A	CMBG11***		CMBG21***		CMBGS1***				

Lighting & Heating Contactor Ratings CLM

Maximum AC/DC Voltage and **Amp Ratings**

zuip nauige									
		Poles to Load							
Load Type	Amperes Continuous	1 for 1-Phase	2 for 1-Phase 3 for 3-Phase						
Tungsten	20	250V AC	250V AC						
Ballast	20	347V AC	600V AC						
General	30	347V AC	600V AC						
General	20	125V DC	250V DC						

Inrush Current Over Fuse Size (amps RMS) at AC Control Voltage 20A CLM								
Amps	120V	240V	277V	347V	480V			
Inrush	5.0	2.5	2.2	1.8	1.3			
Fuse	2.0	1.0	1.0	0.75	0.5			

Contacto	Contactor Ratings									
Load Type	Amperes Continuous	Max Volts Line to Line	Max Volts Line to Neutral							
Tungsten	30-400	480	277							
Ballast	30-400	600	346							
Heating	30-400	600	346							

a		
No. Poles	Inrush VA	Dropout VA
2-12	625	6
2-5	410	40
2-3	410	40
4-5	600	40
2-3	900	200
4-5	1300	130
2-3	1600	550
	2-12 2-5 2-3 4-5 2-3 4-5	No. Poles Inrush VA 2-12 625 2-5 410 2-3 410 4-5 600 2-3 900 4-5 1300

① 24 volt coils are not available on 20 and 300 amp contactors. Use solid state control module on 20 amp size.

[@] For conduit hubs and conversion instructions, see page 9/106.

^{3 600} volt coils are not available on 20 amp contactors.

General

Features

- Enclosed coils (50-5000VA);
 Completely encloses the transformer coils against moisture, dust, dirt and industrial contaminants for maximum protection in hostile and industrial environments.
- Fuse clips (most models). Factory mounted for integral fusing on the secondary side to save panel space, save wiring time and save the cost of buying an add-on fuse block or kit
- Integrally finger safe terminals.
 Between terminals and transformer, protect against electrical creepage.
 Up to 30% greater terminal contact area permits low-loss connections.
 Extra-deep barriers reduce the chance of shorts from frayed leads or careless wiring
- Terminals. Molded into the transformer, are difficult to break during wiring. A full quarter-inch of thread on the 8-32 terminal screws prevents stripping and pullout
- Jumpers supplied. Two jumper links are standard with all transformers which can be wired for dual primary voltages

Operation

Industrial control circuits and motor control loads typically require more current when they are initially energized than under normal operating conditions. This period of high current demand, referred to as inrush, may be as great as ten times the current required under steady state (normal) operating conditions, and can last up to 40 milliseconds. A transformer in a circuit subject to inrush will typically attempt to provide the load with the required current during the inrush period. However, it will be at the expense of the secondary voltage stability by allowing the voltage to the load to decrease as the current increases. This period of secondary voltage instability, resulting from increased current, can be of such magnitude that the transformer is unable to supply sufficient voltage to energize the load. The transformer must therefore be designed and constructed to accommodate the high inrush current, while maintaining secondary voltage stability. According to NEMA standards, the secondary voltage would typically be at 85% of the rated voltage.



Industrial Control Power Transformers are specifically designed and built to provide adequate voltage to the load while accommodating the high current levels present at inrush. These transformers deliver excellent secondary voltage regulation and meet or exceed the standards established by NEMA, ANSI, UL and cUL. Their rugged construction and excellent electrical characteristics ensure reliable operation of electromagnetic devices and trouble-free performance.

Specifications

- Laminations are built with silicon steel to minimize core losses and to increase optimum performance and efficiency
- Copper magnet wire of the highest quality assures efficient operation
- Factory mounted type "K" fuse clips are standard on all secondary transformers where possible
- Two jumper links are standard with all transformers which can be wired for dual primary voltages
- cUL Listed and CSA certified

- 50/60 Hz rated
- Insulation materials are of the highest rating available for the temperature class
- Mounting plate is heavy gauge steel to add strength to core construction and provide stable mounting. Slotted mounting feet permit easy installation
- Attractive black finish; easy-to-read nameplate with complete rating data and wiring diagram
- Class 105°C (221°F) insulation system. 55°C (131°F) temperature rise. (50–100VA typical)
- Class 130°C (226°F) insulation system. 80°C (176°F) temperature rise. (150-750VA typical)
- Class 180°C (356°F) insulation system. 120°C (248°F) temperature rise. (1000–5000VA typical)
- Optional field mounted 2-pole primary Class CC fuse block is available

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Revised • 11/10/14

General



Features

- Class MTG Industrial Control Transformers are 100% certified for all domestic and International Applications
- The MTG line has full compliance with IEC Safety standards EN 61 558
- CE Mark in accordance with requirements for EN 61 558
- Meets IP-20 specifications per IEC 529 for finger-safe protection when used with Siemens Touch Safe snap on terminal cover kits. Meets IP-00 specifications when covers are not used.
- UL Listed
- Exceeds applicable requirements for control transformers as determined by NEMA and ANSI
- Insulation requirements is twice that of UL5085
- Available in 50 to 750 VA sizes, in all standard voltage combinations
- Class 105°C (221°F) insulation system. 55°C (131°F) temperature rise. (50–100VA typical)
- Class 130°C (226°F) insulation system. 80°C (176°F) temperature rise. (150-750VA typical)
- Class 180°C (356°F) insulation system. 120°C (248°F) temperature rise. (1000–5000VA typical)
- Primary and secondary fusing capability available as field installed kits for domestic or international fusing
- Integrally-molded terminals and barriers between terminals make breakage virtually impossible during wiring. The MTG transformer construction is the same as our high quality Class MT transformers

Optional Field Installed Fuse Clip Kits For Panel Mounting

- 2-Pole primary Class CC fuse block
- $_{\bullet}$ 1-Pole secondary midget fuse block for $^{13}\!/_{\!32}$ \times $11\!/_{\!2}$ fuses
- 2-Pole primary international type fuse blocks
- 1-Pole secondary international type fuse blocks

Optional Touch-Safe Snap-On Terminal Cover Kits

The Touch-Safe terminal covers are designed to comply with IEC 742 and IP 20 requirements. When installed, the covers prevent contact with current carrying parts on

the transformer and are available for 4 terminal configurations. The international fuse block kits have inherent touch safe terminals and fuse clips.

Siemens Meets International Standards

CSA (Canadian Standards Association) was utilized as a Competent Body in reviewing, interpreting and properly complying with the requirements of IEC-742 to place a CE mark on its MTG Series product. As a National Certification Body, CSA also has the proper documentation and reports on file for MTG Series to utilize the CB Scheme ensuring acceptance throughout the world.

The standard Siemens MTG product is available with terminal covers which meets the requirements of IEC-529, IP20 degree of protection and meets the applicable requirements for covers per IEC-742.

IEC-742

The requirements for industrial control circuit transformers to be used in the European Common Market are identified by the International Electrotechnical Commission (IEC) and specified under IEC-742, Non-Short Circuit Proof Isolating Transformers, under the Low Voltage Directive 73/23/EEC. Manufacturers of control transformers indicate compliance with these requirements by placing a CE mark on the product.

- Winding to winding insulation requirements may be twice that for IEC-742 compared to UL506
- The electrical clearances between current carrying parts are one-third greater to comply with IEC-742 requirements for units up to 250VA with voltages up to 440 volts ac
- Transformers manufactured to IEC-742 requirements will have a minimum of 10% higher overload capacity than those manufactured only to UL506 requirements

While no requirement exists in IEC-742 for the electrical connections to be either finger safe or touch proof, the specification does state that IF a transformer is supplied with a cover to prevent incidental contact with current carrying parts, that cover must utilize two separate methods or places of securing it to the component, with neither being dependent upon the other. Additionally, one of these methods MUST require a tool to remove it.

IEC-529

The requirements for finger-safe or touch-proof electrical connections are identified by the International Electrotechnical Commission (IEC) under specification 529, Classification of Degrees of Protection Provided by Enclosures. These various degrees of protection are identified and differentiated by IP ratings.

The IP specification which most closely approximates protection to a human finger is IP20. This IP rating would be the most common degree of touch-proof connection for electrical components such as transformers.

EN 61 558

The requirements for industrial control transformers to be used in the European Common Market are identified by the IEC and specified in EN 61 558, Safety of Power Control Transformers, under Low Voltage Directive 73/23/EEC. CE mark on the product indicates compliance.

Industrial Control Power Transformers Class MT, MTG

General

Transformer Selection Process

Selecting a transformer for industrial control circuit applications requires knowledge of the following terms:

Inrush VA is the product of load voltage (V) multiplied by the current (A) that is required during circuit start-up. It is calculated by adding the inrush VA requirements of all devices (contactors, timers, relays, pilot lights, solenoids, etc.), which will be energized together. Inrush VA requirements are best obtained from the component manufacturer.

Sealed VA is the product of load voltage (V) multiplied by the current (A) that is required to operate the circuit after initial start-up or under normal operating conditions. It is calculated by adding the sealed VA requirements of all electrical components of the circuit that will be energized at any given time. Sealed VA requirements are best obtained from the component manufacturer. Sealed VA is also referred to as steady state VA.

Primary Voltage is the voltage available from the electrical distribution system and its operational frequency, which is connected to the transformer supply voltage terminals.

Secondary Voltage is the voltage required for load operation which is connected to the transformer load voltage terminals.



Primary Fuse Kit

In addition to factory installed secondary fusing, Siemens offers a primary fuse kit for class MT transformers size 50–750 VA for field installation. The primary fuse kit includes a 2-pole Class CC fuse block, instructions and all associated mounting and wiring hardware. Additionally, this fuse kit will fit most competitors' units. To order this kit, use catalog number **KCCFPX2R**. The primary fuse kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension.

Once the circuit variables have been determined, transformer selection is a simple 5-step process as follows:

- **1.** Determine the Application Inrush VA by using the following industry accepted formula: Application Inrush VA = $\sqrt{(Inrush \ VA)^2 + (Sealed \ VA)^2}$
- 2. Refer to the Regulation Data Chart. If the primary voltage is basically stable and does not vary by more than 5% from nominal, the 90% secondary voltage column should be used. If the primary voltage varies between 5% and 10% of nominal, the 95% secondary voltage column should be used.
- **3.** After determining the proper secondary voltage column, read down until a value equal to or greater than the Application Inrush VA is found. In no case should a figure less than the Application Inrush VA be used.
- **4.** Read left to the Transformer VA Rating column to determine the proper transformer for this application. As a final check, make sure that the Transformer VA Rating is equal to or greater than the total sealed requirements. If not, select a transformer with a VA rating equal to or greater than the total sealed VA.
- **5.** Refer to the following pages to determine the proper catalog number based on the transformer VA, and primary and secondary voltage requirements.

Regulation Data Chart

	Inrush VA At 20% P	ower Factor	
Transformer VA Ratings	NEMA/IEC 95% Sec Voltage	NEMA/IEC 90% Sec Voltage	NEMA/IEC 85% Sec Voltage
25	100/	130/	150/
50	170/190	200/220	240/270
75	310/350	410/460	540/600
100	370/410	540/600	730/810
150	780/860	930/1030	1150/1270
200	810/900	1150/1270	1450/1600
250	1400/1540	1900/2090	2300/2530
300	1900/2090	2700/2970	3850/4240
350	3100/3410	3650/4020	4800/5280
500	4000/4400	5300/5830	7000/7700
750	8300/9130	11000/12100	14000/15400
1000 ^①	15000/	21000/	27000/
1000 ^②	9000/	13000/	18500/
1500	10500/	15000/	205000/
2000	17000/	25500/	34000/
3000	24000/	36000/	47500/
5000	55000/	92500/	115000/

To comply with NEMA standards, which require all magnetic devices to operate successfully at 85% of rated voltage, the 90% secondary voltage column is most often used in selecting a transformer.

- ① For units with Class 105°C insulation systems.
- ② For units with Class 180°C insulation systems.

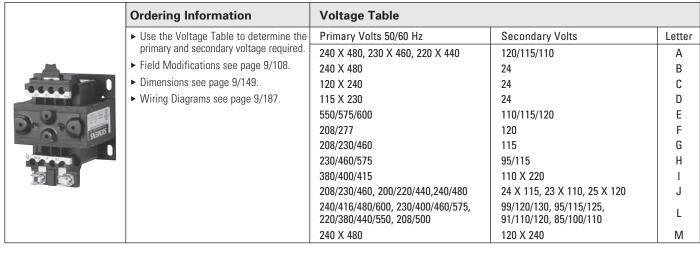


Primary Fuse Kit Installation—Class MT Transformer with Primary Fuse Kit, KCCFPX2R

Industrial Control Power Transformers

Domestic, Class MT

Revised11/10/14



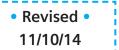
VA			Voltage Letter Voltage Lett C23		ter Voltage Letter D ² 3		Voltage Letter E ^{①②}		Voltage Letter F ^{①②}			
Rating	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
50	MT0050A		MT0050B		MT0050C		MT0050D		MT0050E		MT0050F	
75	MT0075A		MT0075B		MT0075C		MT0075D		MT0075E		MT0075F	
100	MT0100A		MT0100B		MT0100C		MT0100D		MT0100E		MT0100F	
150	MT0150A		MT0150B		MT0150C		MT0150D		MT0150E		MT0150F	
200	MT0200A		MT0200B		MT0200C		MT0200D		MT0200E		MT0200F	
250	MT0250A		MT0250B		MT0250C		MT0250D		MT0250E		MT0250F	
300	MT0300A		MT0300B		MT0300C		MT0300D		MT0300E		MT0300F	
350	MT0350A		MT0350B		MT0350C		MT0350D		MT0350E		MT0350F	
500	MT0500A		MT0500B		MT0500C		MT0500D		MT0500E		MT0500F	
750	MT0750A		MT0750B					_	MT0750E		MT0750F	
1000	MT1000A		_			1	ı	_	MT1000E		_	_
1500	MT1500A		_			1	ı	_		_	_	_
2000	MT2000A		_					_		_	_	_
3000	MT3000A		_	_				_		_	_	_
5000	MT5000A		_	_	_	_	_	_	_	_	_	_

VA	Voltage Letter G⊕②		Voltage Letter H ^② ④		Voltage Letter		Voltage Letter J@3		Voltage Letter L⊕②		Voltage Letter M ² ⁴	
Rating	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$	Catalog No	List Price \$
50	MT0050G		MT0050H		MT0050I		MT0050J		MT0050L		MT0050M	
75	MT0075G		MT0075H		MT0075I		MT0075J		_	_	MT0075M	
100	MT0100G		MT0100H		MT0100I		MT0100J		MT0100L		MT0100M	
150	MT0150G		MT0150H		MT0150I		MT0150J		MT0150L		MT0150M	
200	MT0200G		MT0200H		MT0200I		MT0200J		_	_	MT0200M	
250	MT0250G		MT0250H		MT0250I		MT0250J		MT0250L		MT0250M	
300	MT0300G		MT0300H		MT0300I		MT0300J		_	_	MT0300M	
350	MT0350G		MT0350H	_	MT0350I		MT0350J		MT0350L		MT0350M	
500	MT0500G		MT0500H		MT05001		MT0500J		MT0500L		MT0500M	
750	MT0750G		MT0750H		MT0750I		_	_	MT0750L		MT0750M	
1000	MT1000G		MT1000H		MT1000I		_	_	_	_	_	_
1500	MT1500G		MT1500H		MT1500I		_	_	_	_	_	_
2000	MT2000G		MT2000H		MT2000I		_	_	_	_	_	_
3000	MT3000G		MT3000H		MT3000I		_	_	ı	_		
5000	MT5000G		MT5000H		_	_	_	_	_	_	_	_

① Includes secondary fuse clip on sizes 50–750VA. ② A 2-pole primary Class CC fuse kit is available for field

② A 2-pole primary Class CC fuse kit is available for field installation. See page 9/95 for details. Catalog Number: KCCFPX2R.

Includes secondary fuse clip on sizes 50–500VA.
 Does not include secondary fuse clip on any size.



Industrial Control Power Transformers

International, Class MTG

Selection



Ordering Information	Voltage Table		
► Use the Voltage Table to determine	Primary Volts 50/60 Hz	Secondary Volts	Letter
the primary and secondary voltage required.	240 X 480, 230 X 460, 220 X 440	120/115/110	Α
'	240 X 480	24	В
► Field Modifications see page 9/108.	120 X 240	24	С
► Dimensions see page 9/149.	550/575/600	110/115/120	Е
► Wiring Diagrams see page 9/187.	380/400/415	110 X 220	ı
	208/230/460, 200/220/440, 240/480	24 X 115, 23 X 110, 25 X 120	J
	380	24	Р

VA	Voltage Lett A	ter	Voltage Lett B	ter	Voltage Let	ter	Voltage Let E	ter	Voltage Lett	ter	Voltage Let J	ter	Voltage Let	ter
Rating	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$	Catalog No	List Price\$
50	MTG0050A		MTG0050B		MTG0050C		MTG0050E		MTG00501		MTG0050J		MTG0050P	
75	MTG0075A		MTG0075B		MTG0075C		MTG0075E		MTG00751		MTG0075J		MTG0075P	
100	MTG0100A		MTG0100B		MTG0100C		MTG0100E		MTG0100I		MTG0100J		MTG0100P	
150	MTG0150A		MTG0150B		MTG0150C		MTG0150E		MTG0150I		MTG0150J		MTG0150P	
200	MTG0200A		MTG0200B		MTG0200C		MTG0200E		MTG02001		MTG0200J		MTG0200P	
250	MTG0250A		MTG0250B		MTG0250C		MTG0250E		MTG0250I		MTG0250J		MTG0250P	
300	MTG0300A		MTG0300B		MTG0300C		MTG0300E		MTG03001		MTG0300J		MTG0300P	
350	MTG0350A		MTG0350B		MTG0350C		MTG0350E		MTG0350I		MTG0350J		MTG0350P	
500	MTG0500A		MTG0500B		MTG0500C		MTG0500E		MTG05001		MTG0500J		MTG0500P	
750	MTG0750A		MTG0750B		MTG0750C		MTG0750E		MTG07501		MTG0750J		MTG0750P	
1000	MTG1000A		MTG1000B		MTG1000C	_	_	_		_	MTG1000J			_
1500	MTG1500A		_	_	_	_	_	_		_	_	_		_
2000	MTG2000A		_	_	_	_	_	_		_	_	_		_
3000	MTG3000A		_	_	_	_	_	_	_	_	_	_	_	
5000	MTG5000A		_	_	_	_	_	_	_	_	_	_	_	_

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Field Modification Kits

Class SMF, MMS, MRS

Selection

Accessories—Class SMF

Description	Catalog Number	List Price \$
Handle Guard Kit with Padlock Provision	SMFFL1	
Emergency Off Actuator	SMFPB1	
Additional Key for Key Operated Devices	SMFFK1	

Pilot Light Kits—Class MMS, MRS^①

	Voltage	Red Pilot Light		Green Pilot Light		
Device	Rating	Catalog Number	List Price \$	Catalog Number	List Price \$	
Class SMF	115-277V AC	SMFPL10		SMFPL10G		

Enclosures—Class SMF

Enclosure Type	For Use With SMF	Catalog Number	List Price \$
Standard Size NEMA 1 General Purpose	F01, F01P, F02, F02P, F03, F03P, F04, F04P	SMFFE2	
Oversized NEMA Type 1 General Purpose	F01, F01P, F02, F02P, F03, F03P, F04, F04P	SMFFE1	
NEMA 3R, 4, 12 Watertight Dust-tight	F01, F01P, F02, F02P, F03, F03P, F04, F04P	SMF40BC2	

Nameplates—Class SMF

		Without Pilot Light		With Pilot Light	
For Use On	Nameplate Marking	Catalog Number	List Price \$	Catalog Number	List Price \$
Standard commercial switch box cover including stainless steel plates	None	SMFFN2		_	_
Stainless Steel Plate	None	SMFFSN3		SMFFSN4	
NEMA 1	None	SMFFN30		SMFFN40	
surface mounted enclosure	High	SMFFN31		SMFFN41	
or gray flush plate	Low	SMFFN32		SMFFN42	

Replacement Parts—Class SMF, MMS

Description	Catalog Number	List Price \$
Replacement Toggle Kits:Type FW and KW (NEMA 4 Metallic Enclosure)	SMFHW1	

Accessories—Class MMS, MRS

Description	Catalog Number	List Price \$
Handle Guard Kit with Padlock Provision	SMFFL1	
Emergency Off Actuator	SMFPB1	
Additional Key for Key Operated Devices	SMFFK1	

Pilot Light Kits—Class MMS, MRS^①

	Voltage Red Pilot Light			Green Pilot Light	
Device	Rating	Catalog Number	List Price \$	Catalog Number	List Price \$
	110-120V AC	SMFPL11		SMFPL11G	
Class MMS	208-277V AC	SMFPL12		SMFPL12G	
	440-600V AC	SMFPL13		SMFPL13G	

Enclosures—Class MMS

Enclosure Type	For Use With MMS	Catalog Number	List Price \$
Standard Size NEMA 1 General Purpose	K01, K01P, K01B, K02, K02A, K02B, K03, K03A, K03B, K04, K04A, K04B	MMSKE3	
Oversized NEMA Type 1 General Purpose	K01, K02B, K02C, K03, K03A, K03B, K04, K04B, K04C, K02	SMFKE1	
Jumbo NEMA Type 1 General Purpose	K01, K02B, K02C, K03, K03A, K03B, K04, K04B, K04C, K02	SMFKE2	
NEMA 3R, 4, 12 Watertight Dust-tight	K01, K02B, K02C, K03, K03A, K03B, K04, K04B, K04C	SMF40BC2	

Nameplates—Class MMS

		Without Pilot Light		With Pilot Light	
For Use On	Nameplate Marking	Catalog Number	List Price \$	Catalog Number	List Price \$
Standard commercial switch box cover including stainless steel plates	None	SMFFN1		_	_
NEMA 1	None	SMFFN10		SMFFN20	
surface mounted	High	SMFFN11		SMFFN21	
enclosure or	Low	SMFFN12		SMFFN22	
gray flush plate	Forward	SMFFN13		_	_
	Reverse	SMFFN14		SMFFN24	

① Pilot lights can be field installed on standard NEMA 1 general purpose surface mount enclosures, and NEMA 3R, 4 and 12 enclosures only. For flush mounting units a complete switch unit with pilot light must be ordered.





3RV1901-1A



3RV1912-1CP0



3RV1902-1DP0



3RV1928-1H



3RV1901-0H

	D	T		Outstan Name to a	I D
	Description Auxiliary Contact Placks	Туре		Catalog Number	List Price \$
	Plug in contact block 1 block per 3RV	1 SPDT contact, NO/NC		3RV1901-1D 3RV1901-1E	
r	mountable at the front	1 SPDT contact NO/NC electronic co	ontact [®]	3RV1901-1G	
	Side mount auxiliary contact with screw connection 1 side mount auxiliary contact per 3RV mountable	1 NO + 1 NC 2 NO 2 NC 2 NO + 2 NC		3RV1901-1A 3RV1901-1B 3RV1901-1C 3RV1901-1J	
	on the left-hand side				
	Signaling Contact Block				
\	Signaling contact 1 signaling contact per 3RV mountable on the left-hand side. Can also be fitted together with side mount auxiliary contact.	1NO + 1NC for any trip + 1NO + 1NC for short circuit trip only.		3RV1921-1M	
	Auxiliary Releases				
	Undervoltage release 1 undervoltage release per 3RV mountable on the right-hand side. Cannot be fitted together with shunt trip.	AC 50Hz ————————————————————————————————————	AC 60Hz 120V 208V 240V 480V	3RV1902-1AF0 3RV1902-1AM1 3RV1902-1AP0 3RV1902-1AV1	
	Undervoltage release with early make contacts (2N0) 1 undervoltage release per 3RV mountable at the right-hand side. Cannot be fitted together with shunt trip.	AC 50Hz 230V 415V	AC 60Hz 240V 480V	3RV1922-1CP0 3RV1922-1CV1	
	Shunt trip 1 shunt trip per 3RV mountable at the right- hand side. Cannot be fitted together with undervoltage release.	AC 50Hz/60Hz [©] 20-24V 90-110V 200-240V 350-415V	DC® 20-70V 70-190V 190-330V 330-500V	3RV1902-1DB0 3RV1902-1DF0 3RV1902-1DP0 3RV1902-1DV0	
	Pilot Lights	AC 50Hz/60Hz			<u> </u>
	For NEMA 1 enclosure only. Kit includes Red, Green, and Amber lenses	24V 120V 240V 480V 600V		49SBLBJ ^③ 49SBLBF ^③ 49SBLBG ^③ 49SBLBH ^③ 49SBLBE ^③	
	Lug Kit				
	Required for Type E Manual Combination Starter	For 3RV with amp range: 0.11-22A up to 480V Max. 0.11-12.5 575V Max	A up to	3RV1928-1H	
	Mounting				ı
	Push-in Mounting Hole Kit For screw panel mounting of the 3RV	Four mounting holes required for ea	ch 3RV.	3RB1900-0B	
	Sealing device				I
	Adjustment Dial covers	For sealing the FLA adjustment dial (Kit includes 10 covers)		3RV1908-0P	
	Front mount auxiliary cover	For sealing the front mount auxiliary opening. (Kit includes 10 co	overs)	3RV1901-0H	
	Door Operators				
	Thru-the-door operators Rotary operating mechanism, rated NEMA 12, lockable with up to	With Black Handle	130 mm depth	3RV1926-0B	
	3 padlocks in the OFF position. Includes extension shift and connecting element for the 3RV.		330 mm depth with supporting bracket	3RV1926-0K	

① 100% on time. ② 5 sec. max. on time. ③ Product Category: PILO.

Field Modification Kits

Pilot Devices

Push Buttons and Selector Switches	Class	Enclosure Type	Controller Size or (Lighting Rating)	Турс	Catalog Number	List Price \$
				Start, Stop Push Buttons	49SAPB5	
	1	Open	00-4	Hand-Off-Auto Selector Switch	49SASB1	
				Off-On Selector Switch	49SASB4	
				Start, Stop Push Buttons	49SBPB5	
11 0 %			00-4 or (20-100A)	Hand-Off-Auto Selector Switch	49SBSB1	
49SBPB5			, ,	Off-On Selector Switch	49SBSB4	
4330103	14, 40, LEN, CLM [®]	1		Start, Stop Push Buttons	49SAP05	
	14, 40, LEN, GLIVI♥		E 0 ov /200 400A)	Hand-Off-Auto Selector Switch	49SAS01	
			5-8 or (200–400A)	Keyed Hand-Off-Auto (key removable in all positions)	49SAS09	
CHES				Off-On Selector Switch	49SAS04	
8 888				Start, Stop Push Buttons	49SAP05	
- 101-401		10 4/4	00.0 (20.4004)	Hand-Off-Auto Selector Switch	49SAS01	
		12, 4/4X	00-8 or (20-400A)	Keyed Hand-Off-Auto (key removable in all positions)	49SAS09	
8				Off-On Selector Switch	49SAS04	
		Open	00-4	Forward-Off-Reverse Selector Switch	49SASB2	
49SBSB1			00-4	Forward-Off-Reverse Selector Switch	49SBSB2	
	00.40	1 12, 4/4X	5-8	Forward, Reverse, Stop Push Buttons	49SAP02	
	22, 43			Forward-Off-Reverse Selector Switch	49SAS02	
			0.0	Forward, Reverse, Stop Push Buttons	49SAP02	
			0-8	Forward-Off-Reverse Selector Switch	49SAS02	
		Open	0-4	High-Off-Low Selector Switch	49SASB3	
			0-1 3/4	High-Off-Low Selector Switch	49SBSB3	
	20 (201)	1	, .	High, Low, Stop Push Buttons	49SAP03	
	30 (2S1W)		2-4	High-Off-Low Selector Switch	49SAS03	
		10. 4/4/	0.4	High, Low, Stop Push Buttons	49SAP03	
		12, 4/4X	0-4	High-Off-Low Selector Switch	49SAS03	
49SAP05		Open	0-4	High-Off-Low Selector Switch	49SASB3	
	20 (202)///	1	0-4	High-Off-Low Selector Switch	49SBSB3	
	30 (2S2W)	12 A/AV	0.4	High, Low, Stop Push Buttons	49SAP03	
		12, 4/4X	0-4	High-Off-Low Selector Switch	49SAS03	
				Start, Stop Push Buttons	49SAP05	
MANO OFF AUTO	17, 18, 36, 37, 83, 84,	1 12 4/4	0.0./20.4004\	Hand-Off-Auto Selector Switch	49SAS01	
	LED,LEF, LEB, CMN ^① ,	1, 12, 4/4X	0-8 (20-400A)	Keyed Hand-Off-Auto (key removable in all positions)	49SAS09	
	CMF®, CMB®			Off-On Selector Switch	49SAS04	
201	25 20	1 12 4/4V	0-8	Forward, Reverse, Stop Push Buttons	49SAP02	
	25, 26	1, 12, 4/4X	U-8	Forward-Off-Reverse Selector Switch	49SAS02	
49SAS01	32	1 12 4/4V	0-4	High, Low, Stop Push Buttons	49SAP03	
1007.001	32	1, 12, 4/4X	U-4	High-Off-Low Selector Switch	49SAS03	

① To be used for replacement of switch only. Does not include relay or extra contact block on 30-400A CLM and CM Lighting Contactors. Class 49SB not available for these devices.

Field Modification Kits Pilot Lights

Description	Class	Enclosure Type	Controller Size or (Lighting Rating)	Lens Color(s)	Legend(s)	Voltage	Catalog Number	List Price \$
					ON BURLOFF®	24 Vac	49SBLBJ	
			00–4 or (20–200A)	Red, Green, Amber	ON, RUN, OFF [®] ,	120 Vac	49SBLBF	
		1			OL TRIPPED [®] , FORWARD, REVERSE,	208/240/277 Vac	49SBLBG	
						480 Vac	49SBLBH	
					LOW, HIGH	600 Vac	49SBLBE	
						24 Vac (Full Voltage)	49SPL0BRJ	
	14, 40, 22 ^② , 43 ^② ,			Red		120 Vac	49SPL0BRF	
	30 (2S2W) ³ ,			(Transformer Type)	ON	240 Vac	49SPL0BRG	
0000 000	LEN, CLM			(Transformer Type)		480 Vac	49SPL0BRH	
		1	5–8 or (300–400A)			600 Vac	49SPL0BRE	
		'	J-0 01 (300-400A)			24 Vac (Full Voltage)	49SPL0AGJ	
		12, 4/4X	0–8 or (20–400A)	Green		120 Vac	49SPL0AGF	
		12, 4/4/	0-0 01 (20-400A)	(Transformer Type)	OFF [®]	240 Vac	49SPL0AGG	
				(Transformer Type)		480 Vac	49SPL0AGH	
49SBLBF						600 Vac	49SPL0AGE	
493DLDF					ON, RUN, OFF [®] ,	24 Vac	49SBLBJ	
			0-4	Red, Green, Amber	OL TRIPPED [®] , FORWARD, REVERSE.	120 Vac	49SBLBF	
		1				208/240/277 Vac	49SBLBG	
	30 (2S1W) ²				LOW, HIGH	480 Vac	49SBLBH	
					LUVV, HIGH	600 Vac	49SBLBE	
						24 Vac (Full Voltage)	49SPL0BRJ	
		W) ^②		Red		120 Vac	49SPL0BRF	
				(Transformer Type) ON	ON	240 Vac	49SPL0BRG	
			2–4			480 Vac	49SPL0BRH	
		1 2–4				600 Vac	49SPL0BRE	
					0FF®	24 Vac (Full Voltage)	49SPL0AGJ	
5		10 4/4	0.4			120 Vac	49SPL0AGF	
		12, 4/4X	0-4	Green		240 Vac	49SPL0AGG	
				(Transformer Type)		480 Vac	49SPL0AGH	
						600 Vac	49SPL0AGE	
49SPL0BRF						24 Vac (Full Voltage)	49SPL0BRJ	
				Red		120 Vac	49SPL0BRF	
					ON	240 Vac	49SPL0BRG	
	17, 18, 25 ² , 26 ² , 32 ² ,			(Transformer Type)		480 Vac	49SPL0BRH	
	36, 37, 81, 83, 84, 87, 88,	1 10 4/4\/	0.0/20.4004)			600 Vac	49SPL0BRE	
	LED, LEF, LEB,	1, 12, 4/4X	0-6 (20-400A)			24 Vac (Full Voltage)	49SPL0AGJ	
	CMN, CMF, CMB			Croon		120 Vac	49SPL0AGF	
				Green	OFF ⁴	240 Vac	49SPL0AGG	
				(Transformer Type)		480 Vac	49SPL0AGH	
						600 Vac	49SPL0AGE	
49SBLBL	Lens Kit ONLY (30 (2S1W)) (14, 40, 22, 43, 30 (2S2W), LEN, CLM)	1	0–1 ³ / ₄ 00–4 or (20–200A)	Red, Green, Amber	_	_	49SBLBL	

[&]quot;Off" PL requires: (1) N.C. aux contact, 49AB01 on sizes 00-4.
Class 22, 25, 26, 30, 32, 43, 83 & 84 requires qty. of (2) pilot light kits. Does not apply to 49SB kits. Select appropriate legend plate as a separate item per

type of starter; either "FORWARD" & "REVERSE" or "LOW" & "HIGH". 3 2S2W is starter size 0-4.

Includes NC aux contact for NEMA starter Size 0-4.
 The "OL TRIPPED" pilot light with a bimetal OLR, requires the OLR to have a N.O. contact as well as a N.C. contact.

Field Modification Kits

NEMA, Lighting and Heating Contactors, 20 Amp CLM, CMB, CMF, CMN

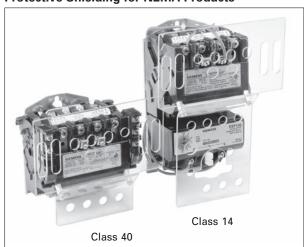
Selection

Solid State Control Module Kits For Lighting and Heating Contactors[®]



CLM 20 Amp Contactor Kit Description	Accessory	Catalog Number	List Price \$	Accessory	Catalog Number	List Price \$	Accessory	Catalog Number	List Price \$
120V AC, 50/60 Hz		CLM4379771			CLM4379781			CLM4379791	
24V AC/DC, 50/60 Hz	47	CLM4379772		48	CLM4379782		49	CLM4379792	
240/277V AC, 50/60 Hz	(2-Wire Control) (2W)	CLM4379773		(3-Wire Control) (3W)	CLM4379783		(Start/Stop Control) (3WS)	CLM4379793	
12V AC/DC, 50/60 Hz		CLM4379774			CLM4379784			CLM4379794	

Protective Shielding for NEMA Products





Class 14, 22, 30, 40, 43

0.000,, 00,	.0, .0							
Contactor or Starter Size	00–1%	List Price \$	2–2½	List Price \$	3–3½	List Price \$	4	List Price \$
Contactor Shield Catalog Number	49PSC1		49PSC2		49PSC3		49PSC4	
Starter Shield Catalog Number	49PSS1		49PSS2		49PSS3		49PSS4	

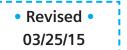
Class 17, 25, 32, 87

Disconnect Size	Catalog Number	List Price \$
30A	49PSD5	
60 & 100A	49PSD6	
200A	49PSD7	

Power Pole Kits	Class	Enclosure type	Contactor Size (Amp)	Description	Field Kit Catalog No.
	LC	Open, 1, 12, 4/4X	30	Single power pole Double power pole	49LCPP1A 49LCPP2A

Electrically Held to Mechanically Held Conversion Modules	Class	Enclosure type	Contactor Size (Amp)	Description	Field Kit Catalog No.
	LC	Open, 1, 12, 4/4X	30	2-wire, 24VAC 2-wire, 110-120VAC 2-wire, 200-277VAC 3-wire, 24VAC 3-wire, 110-120VAC 3-wire, 200-277VAC	49LCCM1A 49LCCM2A 49LCCM3A 49LCCM4A 49LCCM5A 49LCCM6A

 $[\]ensuremath{\mathfrak{D}}$ These kits are only for use with 20A mechanically held lighting contactors.



Field Modification Kits NEMA, Reduced Voltage and Lighting

Selection

Description	Class	Size	Туре	Catalog Number	List Price S
			1 NO	49AB10	
			1 NC	49AB01	
445			1 NC Early Break	49AB01EB	
			1 NC Late Break	49AB01LB	
9.0	14, 17, 18, 22, 25, 26,		1 NC Extra Late Break	49AB01XLB	
4 /101)	30, 32, 36, 37, 40, 43,	00-4	1 NO Extra Late Make	49AB10XLM	
	83, 84, 87, 88		1 NO & 1 NC	49AB11	
	35, 51, 57, 55		2 NO	49AB20	
			4 NO	49AB40	
			3 NO & 1 NC	49AB31	-
11111			2 NO & 2 NC 2 NO	49AB22 3RH1921-1EA20	
O see	14, 17, 18, 22, 25, 26,	5, 6	1 NO & 1 NC	3RH1921-1EA20	
411	36, 37, 40, 43, 87, 88	3, 0			
O ALPHO			2 NC	3RH1921-1EA02	
Ø	14, 17, 18, 22, 25, 26	7, 8	1 NO & 1 NC (Inside L or R)	49CAL18-11	
	40, 43	/, 0	1 NO & 1 NC (Outside L or R)	49CAL18-11B	
	LC	30	1 NO/NC	49LCAC1PA	
The second second	LC LC		2 NO/NC	49LCAC2PA	
Arrival		20	Front Mounted 1 NO/NC	3RH2911-1HA11	
cccc	LE	30	Side Mounted 1 NO/NC	3RH2911-1DA11	
cccc		60-400	Side Mounted 1 NO/NC	3RH1921-1EA11	
U 0 = P0 F 0			1 NO/NC SPDT	CLM4097291	
NO NO		20 Amps	2 NO/NC SPDT	CLM4097292	
			1 NO & 1 NC	CLMFCAK11	
		30-200 Amps	2 NC	CLMFCAK02	
	CLM, CMN, CMF, CMB	Ju-Zuu Allips	2 NO	CLMFCAK20	
	GLIVI, GIVIIV, GIVIF, GIVID		1 Coil Clearing NO & NC	CLMFCCK11	
			1 NO & 1 NC	CLMHCAK11	
		300-400 Amps	2 NC	CLMHCAK02	
		Jood 400 Allips	2 NO	CLMHCAK20	
			1 Coil Clearing NO & NC	CLMHCCK11	

Disconnect Auxiliary Switch Kits

Description		Class	Disconnect Amp or CB Rating	Туре	Catalog Number	List Price \$
Non-fusible or Fusible Type	1111	17, 25, 32, 37, 83, 84, 87, 88, LED, LEF, CMN, CMF	30 - 200A	2 NO/2 NC DPDT (NEMA A600)	HA261234	
MCP	8	18, 26, 32, 37, 83, 84,	3A-125A	1 NO/1 NC 240V	A02ED62	
IVIUF	1 m	87, 88, LEB, CMB	250A	1 NO/1 NC 480V	A02FD64	
		87, 88, LEB, CIVID	400A-600A	(2) 1 NO/1 NC SPDT-480V	A02JLD64	

Control Power Transformer Kits¹⁾³

	Recommended Tran	sformer Size	VA			Transformer Ta	able	
Description	Control Size	Transformer VA	Rating	Catalog Number	List Price \$	Primary Volts	Secondary Volts	Code
	00-2½	45 or 50 ³	45 VA	KT*050 ²³		120	24	1
- D	3–3½	75	50 VA	KT*050P ³		208	24	G
-	4	100	100 VA	KT*100		208	120	Н
A 249	5-6	150	150 VA	KT*150		240/480	24	4
E 3 34 50 1	7-8	300	200 VA	KT*200		240/480	120	8
大百里	Lighting Control		300 VA	KT*300		277	24	5
8	CLM		500 VA	KT*500		277	120	7
1	20A, 2 - 12P	150				600	24	6
0.78	30A, 3P	100	Replace * with code	from Transformer table	. Kits used with NEMA 1	600	120	9
	30A, 6 - 12P	200		off cover type require ex	ktra wide enclosure.			1
	60A, 3P	100	Class 14 Sizes 0-2½					1
	60A, 4 - 6P	150	Class 30 (2S2W) Size					1
7	60A, 8 - 12P	250	Class 30 (2S1W) Size	es 0-1¾				1
	100/200A, 3P	200						1
	100/200A, 5P	250						1
Transformer	300/400A, 3P	250						1
50/60HZ	LC & LE	400						
	LC 30A, 2-12P	100						
	LE 20, 30, 60A, 3 & 4P	45						
	LE 30A, 6P	45						1
	LE 30A, 9-12P	100						1
	LE 60A, 6-12P	150 100						1
	LE 100, 200A, 3P	150						1
	LE 300, 400A, 3P	100						

Installation of CPTs may require a larger enclosure.
 45VA transformer kits will include secondary but not primary fusing. Sizes 50VA and higher include

2-pole primary fusing and 1-pole secondary fusing.

 $\ensuremath{\mathfrak{B}}$ For 24VAC control a minimum of 100VA CPT is required.

ESP200 Accessories

Selection

Accessories

Accessories Description				Catalog Number	List Price \$
	ESP200 Tamper Resistance Cover	49ASTC1 3UB89848			
A		Frame Size	Controller Size		
	ESP100/200 Mounting Plate	A or A1	00 - 1 3/4	49ASMP1	
	Est 100/200 Mounting Flate	В	2 -2 1/2	49ASMP2	
		В	3-4	49ASMP3	
	Starter Mounting Adaptor Plate			49D70084	
	Mounting Kit	49ASMS1			
	Universal Reset Operator 8" for class 36, 37 and 87 in NEMA 1, 12 and 3/3R	49MARB			
	Single Reset (blue) for class 14, 17, 18, 22, 25, 26, 30 and 32 in NEMA 1, 12 and 4/4X	49MBRS			
	Single Reset (red) for class 14, 22 and 30 in NEMA 4/4X			49MARSR	
Internation ()	ESP200 Reset Extender			49ASRE	
	Oil Tight Boot For Single and Multi Unit using 49MARSR Resets Enclosure type 4, 4X			52AABA	
a a	Current Transformer 300:5 use with 3UB812	234JW2		97CT005	
	Current Transformer 400:5 use with 3UB812	234KW2		97CT006	
	Current Transformer 600:5 use with 3UB812	97CT008			
	rrent Transformer 750:5 use with 3UB81234MW2			97CT009	
	Current Transformer 1200:5 use with 3UB81	234NW2		97CT012	

Selection

Miscellaneous Kits

Description			Class	Enclosure Type	Controller Size	Catalog Number	List Price \$
	Mechanical Interlock for Horizontally Mounted Contactors	Includes wire	14, 40	Open	00–1 1 ³ / ₄ 2, 2 ¹ / ₂ 3, 3 ¹ / ₂	49CCF22H 49EEF22H 49GGF22H 49HHP22H 49JJG22H	
		Interlock Only Wire Kit Only	44.40	0	5, 6 5	3RA1954-2A 3RA1963-2A	
1-13		Base Plate Only	14, 40	Open	6 5	3RA1973-2A 3RA1962-2A	
() ()	#	Mechanical Interlock	14, 40	Open	6 7	3RA1972-2A 49VM750H	
		Includes wire & mounting plate	14, 40	Open	8 00–1 1¾ 2, 2½ 3, 3½ 4	49VM1650H 49CCF22HP 49EEF22HP 49GGF22HP 49HHP22HP 49JJG22HP	
		Includes mounting plate (Different Frame Sizes)	14, 40	Open	Left Right 2, 2½ 3, 3½ 3, 3½ 2, 2½	49L107944 49L107945	
CAT. No. MCMENT	Surge Suppressor	Surge Suppressor for 120V AC coil. Limits transient voltage produced by the coil to 220% maximum peak line volts.	All but Class LC, LE, CLM	All	00-4 ^①	49D26344	
ALL PER	Auxiliary Power Pole	NO 36A at 600V AC Max NC 25A at 600V AC Max	All but Class LC, LE, CLM	All	00-14	49SAF0 49SAFC	
100 mm	Main Contacts Lighting Contactors	Top or Bottom, 2-Pole Top, 3-Pole Top or Bottom, 4-Pole Top or Bottom, 6-Pole	CLM	All	20 Amps	CLM4097331 CLM4097332 CLM4097333 CLM4097334	
	Load Side Power Take Off Kit	Includes 3 power lugs for making extra connections to the load side of the contactor	All but Class LC, LE, CLM	All	00–1¾	49SAE	
	Lug Kit for Contactors Item Wire Range	For AL/CU Wire	14, 40	All	2-2½ 3-3½ 4 Line 4 Load	49SAAF ³ 49SAAH ³ 75D35994002 ³	
No.	49SAAF 2-14 49SAAH 2/0-14	For AL/CU Wire	14, 40	All	5, 6	3RT1966-4G ^②	
	75D35994001 250MCM-6	Use CU Only	14, 40	All	7 8	49ZATK750-3 ² 49ZATK1650-6 ²	
	Ground Lug Kit Meets CSA Standard 22.2 No 14-1973	1 Conductor 2-14 For AL/CU Wire	All	All	All	49D11960001	
SCHAMO.	Lightning Arrestor		All	All	All	49D45584002	
	Backspin Timer	On delay timer that reduces risk of starting into a backspin	87, 88	All	All	3RP2025-1AQ30 3RP2025-1AP30	
	Hole Plug	Covers the hole that is typically used for the conduit hub	87	All	1-4	49D41149006	

Illustration	Description	Contactor	Wire Size	Catalog Number	List Price \$
3RT1966-4G	Lug Kit 1 Kit = 1 Terminal block. 1 kit necessary for each line and load.	NEMA size 4 (Vacuum) NEMA size 5 NEMA size 6	2/0 to 600 MCM, max. one 500MCM & one 600MCM	3RT1966-4G	

① Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil. For size 4 panel mount.

<u>_</u>

4

7

3

9

② Only 3 lugs are suplied for line or load. If lugs for line and load are required order 2 kits.

③ Lug Kit for contactors include 3 lugs for line or load. 75D35994001 for line side. 75D35994002 for load side.

NEMA Accessories

Selection

Fused and Non-Fused Disconnect Switch Kits[®]

	Basic Switch Ampere Rating	Switch Catalog Number Non-Fused	List Price \$	Switch Catalog Number Fused	List Price \$	Kit Description	Load Base Catalog Number Class J	List Price \$	Load Base Catalog Number Class H ³	List Price \$	Lug Wire Size
1 B 6 B	30	HNB612		HFB21		30A, 250V	_	_	HBB21		#14-2 AWG (Cu/AI)
				HFB612		30A, 600V	HBB612		HBB612		
000	60	HNB623		HFB22		60A, 250V	_	_	HBB22		#14-2 AWG (Cu/AI)
la la la				HFB62		60A, 600V	HBB62		HBB62		
	100	HNB623		HFB63		100A, 250V	_	_	HBB63		#14-1/0 AWG (Cu/AI)
000						100A, 600V	HBB63				
	200	HNB64		HFB64		200A, 250V		_	HBB64		#6-300 AWG (Cu/AI)
						200A, 600V	HBB64				

Class R Fuse Conversion Kits

Catalog Number	Description	List Price \$							
HR21	30A, 240V								
HR612	30A, 600V								
HR612	60A, 240V								
HR62	60A, 600V								
HR63	100A, 240/600V								
HR64	200A, 240/600V								

Hazardous Location Accessories For Enclosure Types 7 & 9

	Description	Conduit Size Inches	Catalog Number	List Price \$
Breather/Drain	Install in bottom as drain. Install in top as breather. Suitable for Class I groups C & D and for Class II groups F & G applications only. for ½* NPT.		51AADB	
Hole Plugs	For tapered NPT conduit openings.	1/2 3/4 1 11/2 2 21/2	51AAHA 51AAHB 51AAHC 51AAHD 51AAHE 51AAHF	
		3/4-1/2 1-1/2 11/2-3/4 11/2-1	51AARBA 51AARCA 51AARDB 51AARDC	
Reducer Bushings	Cast aluminum, UL Recognized and CSA Certified. Used to reduce existing tapered NPT conduit opening when required.	2½-¾ 2½-1 2½-1½ 2½-2	51AARFB 51AARFC 51AARFD 51AARFE	
		3-1 3-1½ 3-2 3-2½	51AARGC 51AARGD 51AARGE 51AARGF	

Conduit Hubs

Description	Description				Controller Size	Enclosure Type	Catalog Number	List Price \$
	Conduit Hubs For Enclosures Noncombination - NEMA 12 may be field modified for NEMA 3/3R. Combination - NEMA 12 may be field modified for NEMA 3/3R/4 enclosure.	Metal Hub	3/4" 1" 1½" 2" 2'/2"	All	All	12, 3, 3R, 4	49MACML 49MACMD 49MACMN 49MACMF 49MACMG	
	Use UL Listed conduit hub for the appropriate NEMA type. NEMA 3R requires the location of the conduit hub to be at a level above the lowest live part and holes of 1/8" dia. to be added in the bottom of the enclosure. Does not apply to class 87 Pump Panels.	Metal Hub	1" 1½" 2" 2½"	81, 87	All	3R	75D41149001 75D41149003 75D41149004 75D41149005	

① Product Category: PILO.② Product Category: HDSS.

[®] For Class R fuses order Class H kit from this table and the Class R conversion kit.

NEMA, Overload Relays

Selection

Sirius 3RB20

Illustration	Description		For Overload Type	Catalog Number	List Price \$			
	Reset mechanisms							
ja.	Reset plunger Mounts directly to overload relay. Requires separate reset operator in enclosure door. Kit includes reset plunger, holder and funnel.	3RB206	3RU1900-1A					
Reset plunger with reset button	Flexible cable reset mechanism	Cable length 15.75 in (400mm)	200200	3RU1900-1B				
	Requires a 6.5 mm hole in the enclosure with a maximum enclosure thickness of 8 mm.	Cable length 23.62 in (600mm)	3RB206	3RU1900-1C				
Flexible reset	Covers Tamper resistant cover for current setting and manual	3RB206	3RB2984-0					

Competitive Retrofit Overload Plates

Manufacturer	NEMA Size	Plate Part Number	List Price \$
A-B	0, 1	49D57090	
A-B	2	49D57161	
Sq. D	0, 1	49D57091	

Electronic Coil System with Remaining Lifetime Indication and 24VDC PLC Output

						•			
			21 - 27V		96 - 127V		200 - 277V		
Class	Size	Model Type	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
	6	Р	-	-	3RT1965-5PF31		3RT1965-5PP31		
All	J	V	_	_	3RT1966-5PF31		3RT1966-5PP31		
	6	Р	_	-	3RT1975-5PF31		3RT1975-5PP31		
	"	V	_	_	3RT1976-5PF31		3RT1976-5PP31		

Class MT, MTG

Selection

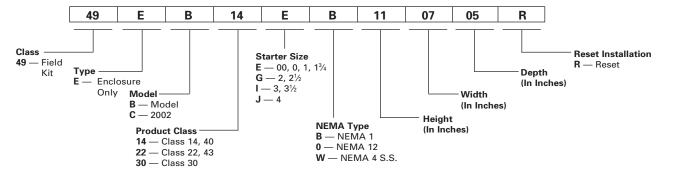
Fuse Blocks, Touch-Safe Terminal Covers

Catalog Number	Description	List Price \$
KCCF1G	SECONDARY FUSE BLOCK,1P,250V MAX	
KCCFBCK	SINGLE POLE FUSE BLOCK COVER KIT	
RUCFBUR		
BC603BPG. BC603B	2 Pole PRIMARY FUSE BLOCK,2P,600V MAX (block only)	
RCCFF2NG		
	2 Pole PRIMARY FUSE BLOCK KIT with wire Leads	
KCCFPX2R		
US2:49FCCPT	Secondary Fuse Clips, 2 per pack	
US2:49JUCPT	Terminal Jumpers	
US2:KCCSECFCVR	Terminal touchsafe cover Secondary Side: VAs 45 thru 350	
US2:KCCSECFCVR2	Terminal touchsafe cover Secondary Side: VAs 500 thru 2K	
US2:KCCFP3POLE	3 pole fuse blk (2 pole primary and 1 pole secondary)	

• Revised • 03/25/15

International Fusing®

International Fusing®		
Catalog Number	Description	List Price \$
8WA1011-1SF12	1-Pole Fuse Block, Touch-Safe. Up to 6.3A for 5 mm × 20 mm or 5 mm × 25 mm (Requires DIN Rail Mounting)	
3NW7013	1-Pole Fuse Block, Touch-Safe 32A, for 10 × 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
3NW7023	2-Pole Fuse Block, Touch-Safe 32A, for 10 × 38 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
3NW7111	1-Pole Fuse Block, Touch-Safe 4-50A, for 14 × 51 mm Cylindrical Fuses. (Requires DIN Rail Mounting.)	
8WA1815	Fuse Block DIN Rail Mounting for separate screw mounting to panel. (Max 2-pole 2-25A size per rail.) (Max 1-pole 4-50A size per rail.)	



Non-Reversing Starters & Contactors Class 14, 40

	NEMA 1 General Purpose (CI	neral Purpose (Clamshell) ^{②④}					NEMA 4/4X Stainless ^① Watertight, Dust-tight, Corrosion Resistant ^③ ⑥					NEMA 12/3/3R ^① Industrial Use, Weatherproof ^③ ⑤				
	Without CPT		With CPT (Extra Wi	Vith CPT (Extra Wide)			Without CPT With CPT (Extra Wide)		Without CPT		With CPT (Extra Wide)					
	Model C Enclosure		Model C Enclosure	Max		Model B Enclosure		Model B Enclosure	Max		Model B Enclosure		Model B Enclosure	Max		
Size		List Price \$	Catalog Number		List Price \$	Catalog Number	List Price\$	Catalog Number	CPT VA	List Price \$	Catalog Number	List Price \$	Catalog Number		List Price \$	
00-13/4	49EC14EB110705R		49EC14IB201208R	200		49EB14EW130806R		49EB22EW131306R			49EB14E0130806R		49EB22E0131306R			
2, 21/2	49EC14GB140807R		49EC14IB201208R	200		49EB14GW160907R		49EB22GW161406R			49EB14G0160907R		49EB22G0161406R			
3, 3½	49EC14IB201208R		49EC14IB201208R	100		49EB14JW261408R		49EB14JW261408R			49EB14J0261408R		49EB14J0261408R			
3, 3½	_	_	49EC14JB251409R	250		_		_		_	_	_	_		_	
4	49EC14JB251409R		49EC14JB251409R	300		49EB14JW261408R		49EB22JW302410R			49EB14J0261408R		49EB22J0302410R			

Reversing Starters & Reversing Contactors Class 22, 43

	NEMA 1 General Purpose (Cl	lamshel	1)24			NEMA 4/4X Stair Watertight, Dust-t		rosion Resistant®®			NEMA 12/3/3R ^① Industrial Use, Weatherproof ^③ ⑤				
	Without CPT		With CPT (Extra Wi	de)		Without CPT With CPT (Extra Wide)		Without CPT		With CPT (Extra Wide)					
	Model C Enclosure		Model C Enclosure	Max		Model B Enclosure		Model B Enclosure	Max		Model B Enclosure		Model B Enclosure	Max	
Size	Catalog Number	List Price \$	Catalog Number	CPT VA	List	Catalog Number	List Price\$	Catalog Number	CPT VA		Catalog Number	List Price \$	Catalog Number		List Price \$
00-13/4	49EC14IB201208R		49EC14IB201208R	200		49EB22EW131306R		49EB22EW131306R			49EB22E0131306R		49EB22E0131306R		
2, 21/2	49EC14IB201208R		49EC14IB201208R	200		49EB22GW161406R		49EB22GW161406R			49EB22G0161406R		49EB22G0161406R		
3, 3½	49EC14JB251409R		49EC14JB251409R	250		49EB22IW261808R		49EB22JW302410R			49EB22I0261808R		49EB22J0302410R		
4	49EC14JB251409R		49EC14JB251409R	300		49EB22JW302410R		49EB22JW302410R			49EB22J0302410R		49EB22J0302410R		

Two-Speed Two-Winding Starters Class 30

	NEMA 1					NEMA 4/4X Stain Watertight, Dust-ti	less ^① ight, Coi	rosion Resistant ^{®®}			NEMA 12/3/3R ^① Industrial Use, Weatherproof ^③ ⑤				
	Without CPT		With CPT (Extra Wide)			Without CPT With CPT (Extra Wide)			Without CPT With CPT (Extra W			ide)			
	Model C Enclosure		Model C Enclosure	Max		Model B Enclosure		Model B Enclosure	Max		Model B Enclosure		Model B Enclosure	Max	
Size		List Price \$	Catalog Number	CPT VA		Catalog Number	List Price\$	Catalog Number	CPT VA	List Price \$	Catalog Number	List Price \$	Catalog Number		List Price \$
0-13/4	49EC14IB201208R ²		49EC14JB251409R ²	200		49EB30EW131306R		49EB30GW161808R			49EB30E0131306R		49EB30G0161808R		
2, 21/2	49EC14IB201208R ²		49EC14JB251409R ²	200		49EB30GW161406R		49EB30GW161808R			49EB30G0161406R		49EB30G0161808R		
3, 3½	49EC14JB251409R ²		49EB22JB302410R ³	300		49EB30IW261808R		49EB22JW302410R			49EB30I0261808R		49EB22J0302410R		
4	49EC14JB251409R2		49EB22JB302410R ³	300		49EB22JW302410R		49EB22JW302410R			49EB22J0302410R		49EB22J0302410R		

Two-Speed One-Winding Starters Class 30

	NEMA 1 General Purpose (Cl	General Purpose (Clamshell)@4										NEMA 12/3/3R① Industrial Use, Weatherproof③⑤				
	Without CPT		With CPT (Extra Wi	ith CPT (Extra Wide)			Without CPT		With CPT (Extra Wide)		Without CPT		With CPT (Extra Wide)			
	Model C Enclosure		Model C Enclosure	Max		Model B Enclosure		Model B Enclosure	Max		Model B Enclosure		Model B Enclosure	Max		
		List		CPT			List		CPT			List			List	
Size	Catalog Number	Price \$	Catalog Number	VA	Price \$	Catalog Number	Price \$	Catalog Number	VA	Price \$	Catalog Number	Price \$	Catalog Number	VA	Price \$	
0-13/4	49EC14IB201208R2		49EC14JB251409R@	200		49EB30EW131306R		49EB30GW161808R			49EB30E0131306R		49EB30G0161808R			
2, 21/2	49EB30GB161808R3		49EB22JB302410R3	300		49EB30GW161808R		49EB22IW261808R			49EB30G0161808R		49EB22I0261808R			
3, 3½	49EB30IB192208R3		49EB22JB302410R3	300		49EB22JW302410R		49EB22JW302410R			49EB22J0302410R		49EB22J0302410R			
4	49EB22JB302410R3		49EB22JB302410R3	300		49EB22JW302410R		49EB22JW302410R			49EB22J0302410R		49EB22J0302410R			

Note: Dimensions...See appropriate Product Class Outline Drawing beginning on page 9/151.

- ① For conduit hubs and conversion instructions, see page 9/106.
- ② Clamshell enclosure suitable for one operating device and two pilot lights. See Field Mods page 9/100.
- 3 Hinged cover enclosure suitable for one or more class 52 operating devices and one or more class 52 pilot lights. See Field Mods page 9/100.
- 4 Install NEMA 1 hole plug cat. no. 3SB1902-0AR (included) when the cover OL reset is not needed.
- ⑤ Install NEMA 12 hole plug cat. no. 52ABH6 (not included) when the cover OL reset is not needed.
- ⑥ Install NEMA 4X stainless steel hole plug cat. no. 52ABHS (not included) when the cover OL reset is not needed.

Siemens Industry, Inc. Industrial Controls Catalog

Heavy Duty Control Lighting Enclosure Tables

Selection

Lighting Contactors Class LC and LE

Contactor	Type 1 1)			Type 4/4X Stainless S	Steel ²⁾		Type 3/3R/12 ³⁾			
	Without CPT	With CPT	Max.	Without CPT	With CPT	Max.	Without CPT	With CPT	Max.	
	Catalog Number	Catalog Number	CPT VA	Catalog Number	Catalog Number	CPT VA	Catalog Number	Catalog Number	CPT VA	
LC 30A 2-12P	49EC14GB140807R	49EC14IB201208R	200	49EB22GW161406R	49EB30GW161808		49EB22G0161406R	49EB30G0B161808		
LE 20, 30A 3-4P	49EC14EB110705R	49EC14IB201208R	200	49EB22GW161406R	49EB22GW161406R		49EB22G0161406R	49EB22G0161406R		
LE 30A 6-9P	49EC14IB201208R	49EC14IB201208R	200	49EB14JW261408R	49EB14JW261408R		49EB14J0261408R	49EB14J0261408R		
LE 30A 12P	49EC14IB201208R	49EC14JB251409R	250	49EB14JW261408R	49EB14JW261408R		49EB14J0261408R	49EB14J0261408R		
LE 60A 3P	49EC14GB140807R	49EC14IB201208R	200	49EB22GW161406R	49EB22GW161406R		49EB22G0161406R	49EB22G0161406R		
LE 60A 6-9P	49EC14IB201208R	49EC14IB201208R	200	49EB14JW261408R	49EB14JW261408R		49EB14J0261408R	49EB14J0261408R		
LE 60A 12P	49EC14IB201208R	49EC14IB201209R	250	49EB14JW261408R	49EB14JW261408R		49EB14J0261408R	49EB14J0261408R		
LE 100A 3P	49EC14IB201208R	49EC14IB201208R	200	49EB14JW261408R	49EB14JW261408R		49EB14J0261408R	49EB14J0261408R		

Lighting & Heating Contactors Class CLM

		NEMA 1 General Purpose (6	Clamsh	nell)24			NEMA 4/4X StainI Watertight, Corrosid		stant36			NEMA 12/3/3R ^① Industrial Use ^③ ⑤				
		Without CPT		With CPT (Extra \	/ith CPT (Extra Wide)			Without CPT With CPT (Extra Wide)				Without CPT		With CPT (Extra Wide)		,
		Model C/B Enclosure	List	Model C/B Enclosure	Max	List	Model B Enclosure	List	Model B Enclosure	Max	Lint	Model B Enclosure	List	Model B Enclosure	Max	Lint
Size	Pole	Catalog Number	Price \$	Catalog Number	CPT	Price \$	Catalog Number	Price \$	Catalog Number	CPT		Catalog Number	Price \$		CPT	Price \$
20A	2-12	49EC14GB140807R		49EC14IB201208R	200VA		49EB22GW161406R		49EB22GW161406R	_		49EB22G0161406R		49EB22G0161406R	_	
30A	2-5	49EC14EB110705R		49EC14IB201208R	200VA		49EB22GW161406R		49EB22GW161406R	_		49EB22G0161406R		49EB22G0161406R	_	
30A	6-12	49EB30GB161808R		49EB30GB161808R	200VA		49EB30GW161808R		49EB30GW161808R	_		49EB30G0161808R		49EB30G0161808R	_	
60A	2-5	49EC14GB140807R		49EC14IB201208R	200VA		_	_	_	_	_	_	_	_	_	_
60A	6-12	49EB30IB192208R		49EB30IB192208R	250VA		_	_				_		_		_
100/	2-5	49EC14IB201208R		49EC14IB201208R	200VA		_	_	_		_		_	_		

Note: Dimensions...See appropriate Product Class Outline Drawing on page 9/164.

① For conduit hubs and conversion instructions,

see page 9/106.
② Clamshell enclosure suitable for one operating device and two pilot lights. See Field Mods page 9/100.

³ Hinged cover enclosure suitable for one or more class 52 operating devices and one or more class 52 pilot lights. See Field Mods page 9/100.

(a) Install NEMA 1 hole plug cat. no. 3SB1902-0AR (included) when the cover OL reset is not needed.

(a) Install NEMA 12 hole plug cat. no. 52ABH6 (not included) when the cover OL reset is not needed.

⑥ Install NEMA 4X stainless steel hole plug cat. no. 52ABHS (not included) when the cover OL reset is not needed.

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Features

- Manufactured with a cold forming "TOX" process
- 100kA short circuit rating when protected with class R fuses to 600V or MCP to 480V and when installing listed components from the instruction guide
- Enclosure types available, Nema 1, 12, 3/3R and painted NEMA 4.
 Nema 12 field convertible to 3/3R/4 with the appropriate conduit hub and drain hole
- Pre-Drilled mounting panels
- Heavy duty quarter turns
- Industrial type disconnect handle

Disconnect Type Enclosure Kit

- Used to assemble both non-fusible and fusible combination starters
- Accommodates Class 14 full voltage non-reversing (FVNR) NEMA starters 00 – 4 including Siemens exclusive half sizes
- Handle mechanism, power wire, mounting panel, reset assembly, and instruction guide included. Hardware for panel mounted devices and disconnect switch are not included

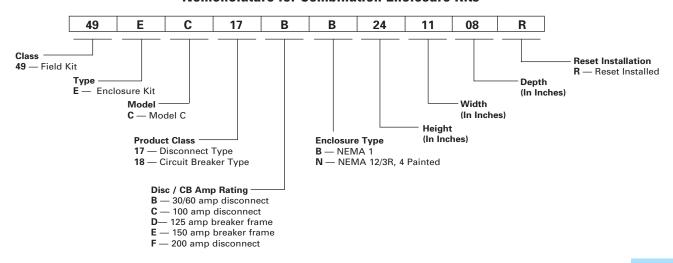
MCP Type Enclosure Kit

- Used to assemble combination starters with circuit breakers
- Accommodates Class 14 full voltage non-reversing (FVRN) NEMA starters 00 – 4 including Siemens exclusive half sizes
- Handle mechanism, power wire, mounting panel, reset assembly and instruction guide included. Circuit breaker not included however, mounting hardware for the circuit breaker is

How to Select the Required Kits to Assemble a Combination Starter

- 1. From the catalog, select a class 14 open type starter with the required starter size and overload relay type.
- 2. Based on the starter size, select the enclosure kit from table 1a for fusible or non-fusible combination starters or select from table 1b for combination starters with an MCP.
- **3.** For a non-fusible combination starter, select the disconnect switch kit from table 2a. For a fusible combination starter, select the appropriate disconnect switch, fuse clip kit, and class R rejection kit from table 2b (for H fusing, class R rejection kit not required). For combination starters with MCP, select the appropriate circuit breaker kit from table 3.

Nomenclature for Combination Enclosure Kits



Combination Starter Enclosure Kits

Selection

Table 1a - FVNR Combination Starter Kits for use with Disconnect Devices

	D:	NEMA 1		NEMA 12, 3/3R, 4 Painted ^①		NEMA 4/4X Stainless Steel	
Starter	Disc. Amp	General Purpose		Industrial Use, Weatherproof, Waterti	ght, Dust-tight	Watertight, Dust-tight, Corrosion	Resistant
Size	Rating	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
0 - 2	60	49EC17BB241108R		49EC17BN241108R		49EC17BW241108R	
2 ½ - 3	100	49EC17CB242008R		49EC17CN242008R		49EC17CW242008R	
3 ½ - 4	200	49EC17FB362408R		49EC17FN362408R		49EC17FW362408R	

Table 1b. - FVNR Combination Starter Kits for use with MCP Devices

	Max	NEMA 1		NEMA 12, 3/3R, 4 Painted ^①		NEMA 4/4X Stainless Steel		
Starter	MCP	General Purpose		Industrial Use, Weatherproof, Watert	ight, Dust-tight	Watertight, Dust-tight, Corrosion Resistant		
Size	Amps	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
0 - 2	50	49EC18DB241108R		49EC18DN241108R		49EC18DW241108R		
2 ½ - 3	100	49EC18DB242008R		49EC18DN242008R		49EC18DW242008R		
3 ½	125	49EC18DB362408R		49EC18DN362408R		49EC18DW362408R		
4	150	49EC18EB362408R		49EC18EN362408R		49EC18EW362408R		

Table 2a - Non-Fusible Disconnect Kits

Disconnect Swi	Disconnect Switch									
Switch Rating	Catalog Number	List Price \$								
30A	HNB612									
60A	HNB623									
100A	HNB623									
200A	200A HNB64									



Table 2b - Fusible Disconnect Kits

		Disconnect Switch		Load Base for Fuse		Rejection Clips for Class R Fusing		
Fuse Clip Ratings	Class Catalog Number List Price \$		s Catalog Number List Price \$ Catalog Number List Price \$					
30A-250V	Н	HFB21		HBB21		HR21		
30A-600V	Н	HFB612		HBB612		HR612		
60A-250V	Н	HFB22		HBB22		HR612		
60A-600V	Н	HFB62		HBB62		HR62		
100A-250V	Н	HFB63		HBB63		HR63		
100A-600V	Н	HFB63		HBB63		HR63		
200A-250V	Н	HFB64		HBB64		HR64		
200A-600V	Н	HFB64		HBB64		HR64		

Table 3 - Circuit Breaker Kits

	MCP Type Overload	Used with Solid Stat Relay	e	MCP Type Used with Thermal Overload Relay				
Starter Size	Overload Amp Range	Motor Circuit Interrupter Amps	Circuit Breaker Kit	Motor Circuit Interrupter Amps	Circuit Breaker Kit			
0	0.75-3.4	3	ED63A003	3	ED63A003			
	3-12	10	ED63A010	10	ED63A010			
	5.5-22	25	ED63A025	25	ED63A025			
1	0.75-3.4	3	ED63A003	3	ED63A003			
	3-12	10	ED63A010	10	ED63A010			
	5.5-22	25	ED63A025	25	ED63A025			
	10-40	30	ED63A030	30	ED63A030			
1 ¾	10-40	40	ED63A040	40	ED63A040			
2	13-52	50	ED63A050	50	ED63A050			
2 ½	25-100	100	ED63A100	100	ED63A100			
3	25-100	100	ED63A100	100	ED63A100			
3 ½	50-200	125	ED63A125	125	ED63A125			
4	50-200	150	FXD63A150L	150	FXD63A150L			

 $^{^{\}scriptsize \textcircled{1}}$ For conduit hubs and conversion instructions, see page 9/106.

Heavy Duty Control Class 87 Pump Panel Enclosure Kits

Selection



Ordering Information	Coil Table	
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage	Letter
Refer to Class 87 section of catalog for pump panel ratings and other details.	24 120 110–120/220–240	J F A ^①
► Handle mechanism, power wire, mounting panel, reset assembly and instruction guide are included with the enclosure kit.	200–208 220–240 220–240/440–480 277	D G C ^①
	440–480 550–600	H E
	330 000	_

Pump Panels with Solid-State Overload Relay Class 87

	Order these components										
To Field Assemble This Pump Panel:	Enclosure Catalog Number	Starter with Solid-State Overload Relay	Disconnect Switch	Fuse Load Base	Class R Rejection Clips	Motor Circuit Interrupter	Enclosure List Price \$				
87DUB6F*	49EB87GF242008	14DUB32A*	HFB612	HBB612	HR612	_					
87DUC6F*	49EB87GF242008	14DUC32A*	HFB612	HBB612	HR612	_					
87DUD6F*	49EB87GF242008	14DUD32A*	HFB612	HBB612	HR612	_					
87DUD60*	49EB87GF242008	14DUD32A*	HFB62	HBB62	HR62	_					
87EUE6F*	49EB87GF242008	14EUE32A*	HFB612	HBB612	HR612	_					
37EUE60*	49EB87GF242008	14EUE32A*	HFB62	HBB62	HR62	_					
37FUF6F*	49EB87GF242008	14FUF32A*	HFB62	HBB62	HR62	_					
37FUF60*	49EB87GF242008	14FUF32A*	HFB63	HBB63	HR63	_					
37GUG6F*	49EB87GF242008	14GUG32A*	HFB62	HBB62	HR62	_					
37GUG60*	49EB87GF242008	14GUG32A*	HFB63	HBB63	HR63	_					
B7HUG6F*	49EB87JF362408	14HUG32A*	HFB63	HBB63	HR63	_					
37HUG60*	49EB87JM362408	14HUG32A*	MCS620R	FCK620	SSRK34	_					
B7IUH6F*	49EB87JM362408	14IUH32A*	MCS620R	FCK620	SSRK34	_					
B7JUH6F*	49EB87JM362408	14JUH32A*	MCS620R	FCK620	SSRK34	_					
B7DUC6L*	49EB87GF242008	14DUC32A*	HFB21	HBB21	HR21	_					
37DUD6L*	49EB87GF242008	14DUD32A*	HFB21	HBB21	HR21	_					
B7DUE6L*	49EB87GF242008	14DUE32A*	HFB21	HBB21	HR21	_					
B7DUE6P*	49EB87GF242008	14DUE32A*	HFB22	HBB22	HR612	_					
37EUE6L*	49EB87GF242008	14EUE32A*	HFB22	HBB22	HR612	_					
37FUF6L*	49EB87GF242008	14FUF32A*	HFB22	HBB22	HR612	_					
37FUF6P*	49EB87GF242008	14FUF32A*	HFB63	HBB63	HR63	_					
37GUG6L*	49EB87GF242008	14GUG32A*	HFB22	HBB22	HR612	_					
37GUG6P*	49EB87GF242008	14GUG32A*	HFB63	HBB63	HR63	_					
37HUG6L*	49EB87JF362408	14HUG32A*	HFB63	HBB63	HR63	_					
37HUG6P*	49EB87JM362408	14HUG32A*	MCS620R	FCK620	SSRK34	_					
B7IUH6L*	49EB87JM362408	14IUH32A*	MCS620R	FCK620	SSRK34	_					
B7JUH6L*	49EB87JM362408	14JUH32A*	MCS620R	FCK620	SSRK34	_					
B7DUB6M*	49EB87GB242008	14DUB32A*		<u> </u>	_	ED63A003					
B7DUC6M*	49EB87GB242008	14DUC32A*	_	_	_	ED63A010					
87DUD6M*	49EB87GB242008	14DUD32A*	-	_	_	ED63A025					
37DUE6M*	49EB87GB242008	14DUE32A*	-		_	ED63A030					
37EUE6M*	49EB87GB242008	14EUE32A*	_	_	_	ED63A040					
37FUF6M*	49EB87GB242008	14FUF32A*		<u> </u>	_	ED63A050					
37GUG6M*	49EB87GB242008	14GUG32A*		<u> </u>	_	ED63A100					
37HUG6M*	49EB87IB362408	14HUG32A*	_	<u> </u>	_	ED63A100					
37IUH6M*	49EB87IB362408	14IUH32A*	_		_	ED63A125					
87JUH6M*	49EB87JB362408	14JUH32A*	_	_	_	FXD63A150L					

① Dual voltage coils not available in size 5-8 starters.

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Heavy Duty Control Class 87 Pump Panel Enclosure Kits

Selection



Ordering Information	Coil Table			
► Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.	60Hz Voltage L			
 Refer to Class 87 section of catalog for pump panel ratings and other details. Handle mechanism, power wire, mounting panel, reset assembly and instruction guide are included with the enclosure kit. 	24 120 110-120/220-240 200-208 220-240 220-240/440-480 277 440-480 550-600	J F A ^① D G C ^② L H E		

Pump Panels with Bimetal Overload Relay Class 87

	Order these components										
To Field Assemble This Pump Panel:	Enclosure Catalog Number	Starter with Bimetal Overload Relay	Disconnect Switch	Fuse Load Base	Class R Rejection Clips	Motor Circuit Interrupter	Enclosure List Price \$				
87DAE6FC	49EB87GF242008	14DP32A*81	HFB612	HBB612	HR612	_					
87DAE60C	7DAE60C 49EB87GF242008		HFB62	HBB62	HR62	_					
87EAF6FC	49EB87GF242008	14EP32A*81	HFB612	HBB612	HR612	_					
87EAF60C	49EB87GF242008	14EP32A*81	HFB62	HBB62	HR62	_					
87FAJ6FC	49EB87GF242008	14FP32A*81	HFB62	HBB62	HR62	_					
87FAJ60C	49EB87GF242008	14FP32A*81	HFB63	HBB63	HR63	_					
87GAK6FC	49EB87GF242008	14GP32A*81	HFB62	HBB62	HR62	_					
87GAK60C	49EB87GF242008	14GP32A*81	HFB63	HBB63	HR63	_					
87HAN6FC	49EB87JF362408	14HP32A*81	HFB63	HBB63	HR63	-					
87HAN60C	49EB87JM362408	14HP32A*81	MCS620R	FCK620	SSRK34						
87IAP6FC	49EB87JM362408	14IP32A*81	MCS620R	FCK620	SSRK34	_					
87JAR6FC	49EB87JM362408	14JG32A*81	MCS620R	FCK620	SSRK34	_					
87DAE6LC	49EB87GF242008	14DP32A*81	HFB21	HBB21	HR21	_					
87DAE6PC	49EB87GF242008	14DP32A*81	HFB22	HBB22	HR612	_					
87EAG6LC	49EB87GF242008	14EP32A*81	HFB22	HBB22	HR612	_					
87FAJ6LC	49EB87GF242008	14FP32A*81	HFB22	HBB22	HR612	_					
87FAJ6PC	49EB87GF242008	14FP32A*81	HFB63	HBB63	HR63	_					
87GAL6LC	49EB87GF242008	14GP32A*81	HFB63	HBB63	HR63	_					
87HAN6LC	49EB87JF362408	14HP32A*81	HFB63	HBB63	HR63	_					
87HAN6PC	49EB87JM362408	14HP32A*81	MCS620R	FCK620	SSRK34	_					
87IAP6LC	49EB87JM362408	14IP32A*81	MCS620R	FCK620	SSRK34	_					
87JAR6LC	49EB87JM362408	14JG32A*81	MCS620R	FCK620	SSRK34	_					
87DAA6MC	49EB87GB242008	14DP32A*81	-	_	_	ED63A003					
87DAB6MC	49EB87GB242008	14DP32A*81	-	-	_	ED63A010					
87DAD6MC	49EB87GB242008	14DP32A*81	-	-	_	ED63A025					
87DAE6MC	49EB87GB242008	14DP32A*81	-	-	_	ED63A030					
87EAF6MC	49EB87GB242008	14EP32A*81	<u> </u>	-	_	ED63A040					
87EAG6MC	49EB87GB242008	14EP32A*81	-	-		ED63A050					
87FAH6MC	49EB87GB242008	14FP32A*81	1-	<u> </u>	_	ED63A040					
87FAJ6MC	49EB87GB242008	14FP32A*81	_	_	_	ED63A050					
87GAK6MC	49EB87GB242008	14GP32A*81	1—			ED63A050					
87GAL6MC	49EB87GB242008	14GP32A*81	_			ED63A100					
87HAN6MC	49EB87IB362408	14HP32A*81	1—	<u> </u>		ED63A100					
87IAP6MC	49EB87IB362408	14IP32A*81	-			ED63A125					
87JAR6MC	49EB87JB362408	14JG32A*81	<u> </u>			FXD63A150L					

 $^{\,^\}odot$ Dual voltage coils not available in size 5-8 starters. $\,^\odot$ For NO/NC SPDT contact on overload, replace "81" with "91". "81" will give a NC contact.

Ordering Information

▶ All modifications will consist of Siemens standard components as available. Standard equipment dimensions and enclosure construction may not apply when certain modifications and special features are added.

Pilot Devices

Description	Modification	Class	Enclosure Type	Modification Code	List Price \$
	Start, Stop	14, 17, 18, 36, 37, 40, 83, 84, CLM, CM, LC, LE	All	A1	(5)
	Forward, Reverse, Stop	22, 25, 26, 43	All	A2	
Push Buttons	High, Low, Stop	30, 32	All	AZ .	
	E-Stop	14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 40, 43	All	ES	
	Test Push Buttons 83, 84		All	K1	
	Hand-Off-Auto	14, 17, 18, 36, 37, 40, 83, 84, LC, LE	All	A3	(5)
	Hand-OII-Auto	CM, CLM	All	A3	
	For 24 volt HOA control, 20 Amp contactor only	CM, CLM	1	EM	
	Off-On	14, 17,18, 22, 25, 26, 30, 32, 36, 37, 40, 43, 83, 84, CLM, CM, LC, LE	All	A4	(5)
Selector Switches	Auto-Off	14, 17, 18, 40, 83, 84, CM, CLM, LC, LE	All	A6	(5)
	Forward-Off-Reverse	22, 25, 26, 43	All	A5	
	High-Off-Low 30, 32		All	AS	
	Hand-Off-Auto (Keyed) 14, 17, 18, 36, 37, 40, 83, 84, LC, LE, CLM, CM		All	A9	(5)
	Auto-Off-Low-High	30, 32	All	A0	

Dilat Liabta

1	riiot Lights														
			Lens Color →	Red	Green	Red	Green	Red	Green	Amber	White	Red Push-To-Test	Green Push-To-Test	Green Push-To-Test	LED Bulb Upgrade
		Enclosure	Legend→	On For/Rev Low/High	On For/Rev Low/High	Run	Run	Off	Off	OL Tripped	Control Power On	On For/Rev Low/High	On For/Rev Low/High	Off	
l	Class		Mod Code →	FA	FB	FC	FD	FJ	FK	FL [®]	FW	FS	FT	FU	FE ^①
	14, 40, 17, 18, 36, 37, 87, 88, LC, LE, CLM, CM	All													
- 1	22, 25, 26, 30, 32, 43, 83, 84	All				8	8								

Coil Options

Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43, 83 [©] , 84 [©] , 87, 88									
		Coil Letter	Controller Size — List Price \$						
Volts 60 HZ	Volts 50 HZ	Change	00-21/2	3, 31/2	4				
24	24	J							
120	110	F							
110-120/220-240	110/190-220	Α							
200-208	_	D							
220-240	190-220	G							
277	240	L							
220-240/440-480	190-220/380-440	C							
440-480	380-440	Н							
575-600	550	E							
	24V	S ^⑦							
DO 0 :13	48V	U							
DC Coil [®]	125V	V	-						
	250V	w							

AC (50–60 HZ) or DC	Coil Letter Change	Controller Size 4 (Vacuum Only) Size 5 & 6 (ALL)
23-26V	J	
42-48V	U	
110-127V	F	
200-220V	D	
220-240V	G	
240-277V	L	
380-420V	K	
440-480V	Н	
575-600V	E	

 $[\]ensuremath{\mathbb{O}}$ Pilot lights are transformer type as standard. For LED type bulbs, order suffix FE in addition to the standard device suffix(es). For example, to order red "ON" and green "OFF" pilot lights with LED bulbs, order FA, FK and FE.

② DC coils include 1 NC, late break aux. contact. This aux. contact takes up one side of the starter (00-4

³ Price x 2 for Classes 22, 25, 26, 30, 32, 43, 83, 84.

⁴ Bimetal OL - Size 00 - 2 1/2 available. Solid-state OL -Size 00 - 4, 7 & 8 available.

 $[\]ensuremath{\texttt{\textcircled{5}}}$ For Class 83, 84 two devices are provided. Price x 2.

⁶ For Class 83, 84 standard enclosure (92) alternating relay available in 24V or 120V control only.

To S coil is not available for size 4 contactors or starters.

[®] Class 83 and 84 only.

Factory Modifications

Selection

Ordering Information	Transfor	Transformer Table			
	Primary	Seconda	ry		
► Replace (*) with letter from Transformer Table.	Volts	Volts	Letter		
	120	24	В		
	208	24	S		
	208	120	T		
	240	24	J		
	240	120	F		
	277	24	N		
	277	120	Р		
	380	110	U		
	415	100	W		
	480	240	R		
	480/240	24	D		
	480/240	120	Α		
	600	24	E		
	600	120	С		

Control Power Transformers[®]

OOIILI OI I OVVCI	114113101	111013									_
	Modification	Product	Enclosure	20-60	100	_	200	300-400	_	_	← Lighting & Heating Ratings (Amps)
Description	Code	Class	Туре	0-21/2	3	31/2, 4	5	6	7	8	⋖ Motor Controller Size
Standard Capacity®	B*	14, 17, 18, 22, 25, 26, 30,	1, 3, 4, 12		_	_	_	_	_	_	
with 1-Secondary Fuse	B.	32, 40, 43, 83 ³ , 84 ³ , 87, LE	7 & 9		_	_	_	_	_	_	
Standard Capacity		14, 17, 18, 22, 25, 26, 30,	1, 3, 4, 12								
with 2-Primary and	D*	32, 40, 43, 83③, 84③, 87,									-
1-Secondary Fuse		LC, LE, CLM, CM	7 & 9								
100VA Extra Capacity		14, 17, 18, 22, 25, 26, 30, 32, 40,	1, 3, 4, 12								
with 2-Primary and	C*	43, 83 ³ , 84 ³ , 87, LC, LE, CLM, CM	7 & 9								
1-Secondary Fuse	,	36, 37, 88	All						_	_	
150VA Extra Capacity		14, 17, 18, 22, 25, 26, 30, 32, 40,	4 0 4 40								
with 2-Primary and	C*1	43, 83 ³ , 84 ³ , 87, LC, LE, CLM, CM	1, 3, 4, 12								
1-Secondary Fuse		36, 37, 88	All						_	_	1

Factory Assembled Fuse Clips—Class 25, 32, 849

ractory Asse	actory Assembled ruse Clips—Class 25, 32, 84®							
Fuse Clip Amps	Volts	Modification Code	List Price \$					
30	250	10						
30	600	11						
60	250	12						
60	600	13						
100	250	14						
100	600	15						
200	250	16						
200	600	17						
400	250	18						
400	600	19						
600	250	20						
600	600	21						
800	600	23						
1200	600	24						
1600	600	25						

Note: Factory will furnish the same voltage coils as transformer secondary voltage (except with class 36,37).

① The standard control transformer supplied for starter sizes 0 through 2½ will be rated 45VA and have the appropriate secondary fuse. Primary fuses will not be supplied as standard. For primary fuse option select appropriate suffix from table.

For 24VAC control a minimum of 100VA CPT required.
 Price x 2 Class 83 and 84.
 Class 84 Duplex Controllers require two fusible disconnects thus multiply the price adder by two.

Factory Modifications

Selection

Additional Auxiliary Contacts

	NO	NC	Modication	Controller Size — List Price \$				
Class	Contacts	Contacts	Code	00-13/4	2–4	5–6	7–8	
	_	1	G01			_	_	
	_	2	G02				_	
	1	_	G10			_	_	
	1	1	G11					
	1	2	G12			_		
	2	-	G20				_	
	2	1	G21			_	_	
	2	2 3	G22				_	
	2		G23			_		
	3	1	G31				_	
14 17 10 40 000 040	3	2 3	G32 G33			_	_	
14, 17, 18, 40, 83 ³ , 84 ³	3	3						
	4 4	1	G40 G41				_	
	4 4	2	G41			_		
	4 4	4	G42 G44					
	5	-	G50					
	5	1	G51		_	_	_	
	5	3	G53		_	_	_	
	6		G60		_	_		
	6	2	G62		_	_	_	
	7	1	G71		_	_		
	8	<u> </u>	G80		_	_		
		2	G02 ^①			_		
	2	Z	G20 [©]					
	2	2	G22 [©]			_	_	
22, 25, 26, 43 &	4	0	G40 ^①					
22, 23, 20, 43 & 30, 32 (2-winding)	4 4	4	G44 [©]			_		
30, 32 (2-willulig)	6	2	G62 ^①					
			G80 [©]					
	8	0				_		
	0	2	G02 ^①			_	-	
	2		G20 ^①	_		_	_	
	2	2	G22 ^①			_	_	
30, 32	4		G40 ^①			_	_	
(1-winding)	4	4	G44 ^①	-		_	_	
	6	2	G62 ^①	_		_	_	
	8		G80 ^①			_		
LE, CLM, CM	1	1	G11	+ -	_			
LC	0	1	G01					
	1	0	G10					
	1	1	G11					
	0	2	G02					
	2	0	G20					
LE, CLM, CM	0	2	G02 ^①		_	_		
LE, JEIVI, OIVI	2	0	G20 ^①				<u> </u>	
	2	2	G22 ^①		ı —	_	_	

		Modification	Controller Size - Price Deduction \$					
Description	Class	Code	0, 1	1¾ - 2½	3	3½, 4	5, 6	7, 8
Omit Overload Relay and Reset Button	17, 18, 25, 26	EX1						

-

① Auxiliary contacts will be added evenly across contactors. (i.e. Class 22, G02 suffix will add 2 NC contacts (one per contactor).

② Double the price addition for Class 30 and 32.
 ③ For class 83 and 84 contacts will be added to both starters. Price x 2.

Factory Modifications

Selection

Control Options

Description	Class	Enclosure Type	Modification Code	List Price \$
Lighting Control Modules (does not include pilot devices)	CLM 20 Amp only	All	2W (2-wire control module) 3W (3-wire control module) 3WS (Start/Stop control module)	
Surge Suppression for 120V AC Coil [®]	14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 83, 84, 87, 88	All	SS	
Disconnect Switch Interlock 2 NO/2 NC DPDT	17, 25, 32, 37, 84, CM, LE	1, 3, 4, 4X, 12	GY	
Motor Circuit NO/NC SPDT Protector Interlock	18, 26, 32, 37, 84, CM, LE	All	GY	
Lightning Arrestor	All	All	L	
Circuit Breaker Shunt Trip	18, 26, 32, 37, 84, 87, 88, CM, LE	All	L6	
Circuit Breaker Undervoltage Trip	18, 26, 32, 37, 84, 87, 88, CM, LE	All	L7	
Circuit Breaker Alarm Switch Trip	18, 26, 32, 37, 84, 87, 88, CM, LE	All	L8	
Ground Lug – 1 Conductor	All	All	L10	
Control Circuit Fuse and Holder (Transformer Primary Fusing)	All	All	F1 (1 fuse) F2 (2 fuses)	
Control Circuit Circuit Breaker Internally Operated	All	All	F4	
Space Heater (120V separate control)	All	All	SH	
Space Heater with Thermostat (120V separate control)	All	All	ST	
Surge Capacitor	87, 88	All	SC	
Alarm Package (includes horn, light, relay & push-button)	83, 84, 87, 88	All	M7	
Backspin Protection	87, 88	All	T5	
Minimum Run Timer 0.2 sec 3 mins.	87, 88	All	T6	
Blown Control Fuse Indicator Light	17, 25, 32, 37, 84, 87, 88, CM, LC, LE	All	L11	
Single Phase 120VAC Combination Starter	17, 18, 25, 26	All	SP1	
Single Phase 240VAC Combination Starter	17, 18, 25, 26	All	SP2	

Reversing Options

	Modification Co		Modification Controller Size —List Price \$								
Description	Class	Code	0	1	13/4	2	2 ½	3	31/2	4	5
Reversing in one speed only 2 speed 1 winding Reversing in one speed only 2 speed 2 winding Reversing in both speeds 2 speed 1 winding Reversing in both speeds 2 speed 2 winding	30, 32	R6 R7 R8 R9									_
Reversing for Reduced Voltage	36, 37	R									

Motor Management with PROFIBUS DP Communications[®]

Description	Class	Enclosure Type	Modification Code	List Price
SIMOCODE pro C With 0.3-3A Current Module			MC1	
SIMOCODE pro C With 2.4-25A Current Module			MC2	
SIMOCODE pro C With 10-100A Current Module			MC3	
SIMOCODE pro C With 20-200A Current Module			MC4	
SIMOCODE pro C With 63-630A Current Module			MC5	
SIMOCODE pro V With 0.3-3A Current/Voltage Module	14,17,18,22,25,26	All	MV1	
SIMOCODE pro V With 2.4-25A Current/Voltage Module			MV2	
SIMOCODE pro V With 10-100A Current/Voltage Module			MV3	
SIMOCODE pro V With 20-200A Current/Voltage Module			MV4	
SIMOCODE pro V With 63-630A Current/Voltage Module			MV5	
Factory Parameterization of SIMOCODE			MM0	

Electrically Held to Mechanically Held Conversion Modules	Class	Enclosure type	Contactor Size (Amp)	Description	Modification Code
	LC	Open, 1, 12, 4/4X		2-wire, 24VAC 2-wire, 110-120VAC 2-wire, 200-277VAC 3-wire, 24VAC 3-wire, 110-120VAC 3-wire, 200-277VAC	2W1 2W2 2W3 3W1 3W2 3W3

Supplied as NEMA 12, field convertible to NEMA 3R.
 Surge Suppression for NEMA sizes 5 – 8 are supplied internal with the coil.

A CPT must also be ordered to power the motor management device. Motor management may be ordered with other product classes as specials.

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Control Relays

Description		Class	Enclosure Type	Modifi- cation Code	List Price \$
Control Relay	4 NO			R40	
4-Poles Max	2 NO/2 NC	All	1, 3, 4, 7, 9, 12	R22	
4-1 Oles Iviax	4 NC			R04	
Under/Over Voltage, Phase Failure, Phase	se Sequence, Phase Unbalance		All	R1	
Ground Fault Relay			All	R5	
Electronic On Delay Relay (.15s-100h) 2	4V/120V	All	1, 3, 4, 7, 9, 12	T1	
Electronic On Delay Relay (.15s-100h) 2	4V/240V ^①			T2	
Electronic Off Delay Relay (.15s-100s) 1				T3	
Electronic Off Delay Relay (.15s-100s)	240V ^①			T4	
24 hour time clock				T7	
24 hour time clock with day omission		LC, LE, CLM, CM	All	T8	
7 day time clock				T9	
Compelling Relay				A6	
Acceleration Control		30, 32	1, 4, 12	A7	
Deceleration Control				A8	

Meters-Mounted on Enclosure

Description	Class	Enclosure Type	Modification Code	List ^② Price \$
Ammeter (includes a C.T. if necessary)			M1	
Ammeter and Switch (3-Phase with 3 C.T.'s)	14, 17, 18, 22,		M2	
Voltmeter	25, 26, 30 ^⑤ , 32 ^⑤ ,	1, 3, 4, 4X, 12	M3	
Voltmeter and Switch (3-Phase)	36, 37, 40, 43, 83,		M4	
Elapsed Time Meter [®]	84, 87, 88		M5	
Wattmeter			M6	

Function Identification Plates

Description	Class	Modification Code	List Price \$
Function identification plate, with marking as specified	All	N1	

Terminal Blocks

Description	Class	Modification Code	List Price \$
3 Point Terminal		TC3 ⁴	
6 Point Terminal	All	TC6 ⁴	
9 Point Terminal	Δ"	TC9 ⁴	

Special Ratings

Description	Class	Modification Code	List Price \$
Service Entrance Rating	17, 18, 25, 26, 32, 37, 84, 87	N3	

Drawings

Description	Class	Catalog Number	List Price \$
Approval/submittal and as-built drawings for factory modified product may be ordered. The drawing set includes an enclosure outline, a panel layout and a schematic. When entering the order, use the line item notes to reference a product and modifications or an existing order that the drawings are to be engineered for. Specify the contact information and an email address in the ship to address field. Attach any reference drawings to the order or forward to National Customer Support. Once completed, the drawing set will emailed.	All	CONTROLDRAWING	

① Not available on Class 36, 37.

② Price x 2 Class 83 and 84.

③ ETM available with 120V coil only.

For terminal point more than 9 terminals use additional suffixes. Max 3 suffixes can be selected.

Overload Relay Heater Tables

Selection of Heater Elements for Overload Relays

General

Use only when motor full load current is not known. Motor amps will vary depending on the type and manufacturer of the motor. These average values, for motors with service factor of 1.15, are to be used only as a guide. The formulas at the bottom of the page may be used to obtain approximate amps for other motors.

Note: RPM shown for 60 cycle motors. For 50 cycle motors, multiply RPM by .83.

CAUTION: Actual motor amps may be higher or lower than the values listed below for a particular motor. For more reliable motor protection, select heater elements by using the full load motor nameplate amps.

Single Phase motor full load amps of the same horsepower, voltage and speed vary over wide ranges. The following table conforms with table 430.148 of the NEC.

1-Phase

	Full Load Currer	nt (60Hz)
Нр	115 Volts	230 Volts
1/8	4.4	2.2
1/4	5.8	2.9
1/3	7.2	3.6
1/2	9.8	4.9
3/4	13.8	6.9
1	16	8
1 ½	20	10
2	24	12
3	34	17
5	56	28
7 ½	80	40
10	100	50

		Full Load	Full Load Current (60Hz)				
Нр	Syn Speed RPM	200 Volts	230 Volts	460 Volts	575 Volts	380 Volts	
	1800	1.09	0.95	0.48	0.38	0.55	
1/4	1200	1.61	1.40	0.70	0.56	0.81	
	900	1.84	1.60	0.80	0.64	0.93	
	1800	1.37	1.19	0.60	0.48	0.64	
1/3	1200	1.83	1.59	0.80	0.64	0.92	
	900	2.07	1.80	0.90	0.72	1.04	
	1800	1.98	1.72	0.86	0.69	0.99	
1/2	1200	2.47	2.15	1.08	0.86	1.24	
	900	2.74	2.38	1.19	0.95	1.38	
	1800	2.83	2.46	1.23	0.98	1.42	
3/4	1200	3.36	2.82	1.46	1.17	-	
	900	3.75	3.26	1.63	1.30	1.88	
	3600	3.22	2.80	1.40	1.12	1.70	
1	1800	4.09	3.56	1.78	1.42	2.06	
	1200	4.32	3.76	1.88	1.50	2.28	
	900	4.95	4.30	2.15	1.72	2.60	
	3600	5.01	4.36	2.18	1.74	2.69	
1/2	1800	5.59	4.86	2.43	1.94	2.94	
	1200	6.07	5.28	2.64	2.11	3.20	
	900	6.44	5.60	2.80	2.24	3.39	
	3600	6.44	5.60	2.80	2.24	3.39	
2	1800	7.36	6.40	3.20	2.56	3.84	
	1200	7.87	6.84	3.42	2.74	4.14	
	900	9.09	7.90	3.95	3.16	4.77	
	3600	9.59	8.34	4.17	3.34	5.02	
3	1800	10.8	9.40	4.70	3.76	5.70	
	1200	11.7	10.2	5.12	4.10	6.20	
	900	13.1	11.4	5.70	4.55	6.80	
	3600	15.5	13.5	5.76	5.41	8.20	
5	1800	16.6	14.4	7.21	5.78	8.74	
	1200	18.2	15.8	7.91	6.32	9.59	
	900	18.3	15.9	7.92	6.33	9.60	
	3600	22.4	19.5	9.79	7.81	11.50	
71/2	1800	24.7	21.5	10.7	8.55	13.00	
	1200	25.1	21.8	10.9	8.70	13.20	
	900	26.5	23.0	11.5	9.19	13.90	
	3600	29.2	25.4	12.7	10.1	15.40	
10	1800	30.8	25.8	13.4	10.7	16.30	
	1200	32.2	28.0	14.0	11.2	16.90	
	900	35.1	30.5	15.2	12.2	18.50	
	3600	41.9	36.4	18.2	14.5	22.00	
15	1800	45.1	39.2	19.6	15.7	23.70	
	1200	47.6	41.4	20.7	16.5	25.00	
	900	51.2	44.5	22.2	17.8	26.90	
	3600	58.0	50.4	25.2	20.1	30.50	
20	1800	58.9	51.2	25.6	20.5	31.00	
-	1200	60.7	52.8	26.4	21.1	31.90	
	900	63.1	54.9	27.4	21.9	33.20	

3-Phase

		Full Load Current (60Hz)				
Нр	Syn Speed RPM	200 Volts	230 Volts	460 Volts	575 Volts	380 Volts
25	3600 1800 1200 900	69.9 74.5 75.4 77.4	60.8 64.8 65.6 67.3	30.4 32.4 32.8 33.7	24.3 25.9 26.2 27.0	36.80 39.20 39.60 40.70
30	3600 1800 1200 900	84.8 86.9 90.6 94.1	73.7 75.6 78.8 81.8	36.8 37.8 39.4 40.9	29.4 30.2 31.5 32.7	45.70 47.60 49.50
40	3600 1800 1200 900	111 116 117 121	96.4 101 102 105	48.2 50.4 50.6 52.2	38.5 40.3 40.4 41.7	61.00 61.20 63.20
50	3600 1800 1200 900	138 143 145 150	120 124 126 130	60.1 62.2 63.0 65.0	48.2 49.7 50.4 52.0	75.20 76.20 78.50
60	3600 1800 1200 900	164 171 173 177	143 149 150 154	71.7 74.5 75.0 77.0	57.3 59.4 60.0 61.5	90.00 91.10 93.10
75	3600 1800 1200 900	206 210 212 222	179 183 184 193	89.6 91.6 92.0 96.5	71.7 73.2 73.5 77.5	111.00 112.00 117.00
100	3600 1800 1200 900	266 271 275 290	231 236 239 252	115 118 120 126	92.2 94.8 95.6 101	144.00 145.00 153.00
125	3600 1800 1200 900	_ _ _	292 293 298 305	146 147 149 153	116 117 119 122	177.00 180.00 186.00
150	3600 1800 1200 900	_ _ _	343 348 350 365	171 174 174 183	137 139 139 146	210.00 210.00 211.00
200	3600 1800 1200 900		458 452 460 482	229 226 230 241	184 181 184 193	274.00 276.00 279.00
250	3600 1800 1200 900	_ _ _	559 568 573 600	279 284 287 300	223 227 229 240	343.00 345.00 347.00
300	1800 1200		278 684	339 342	271 274	392.00 395.00
400	1800		896	448	358	

Formula—Approximate Full Load Amps for Other Motors

208 Volt Full Load Amp ≈ 230 Volt current × 110% 2-Phase FLA \approx 0.866 \times the 3-Phase FLA 2-Phase, 3-wire current in common wire \approx 1.41 \times that in the other 2 lines

25Hz 1500 RPM, amps \approx amps of 60Hz, 3600 RPM 25Hz 750 RPM, amps \approx amps of 60Hz, 1800 RPM Service factor 1.0 \approx amps \times 0.9 $50^{\circ}\text{C--}55^{\circ}\text{C}$ motor \approx amps \times 0.9

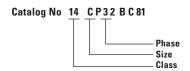
Overload Relay Heater Tables

Selection of Heater Elements for Overload Relays

General

To Select Heater Catalog Number Use

- Product Class
- Controller Size
- Motor Amp
- Phase



 Find heater table number below, using the Product Class, Controller Size and Phase. Heater table number is found in the column under the type of overload and phase.

- 2. Refer to the specified table and use the controller size and motor amps to select the heater catalog number.
- **a.** If motor amps are not known, an approximate value may be found on the previous page. These values should be used with caution and only when motor amps are not available.

Heaters shown on the following pages provide a maximum trip rating of 125% of minimum motor amperes for 40°C motors (service factor 1.15). For other motors (service factor 1.0), select the next lower listed heater catalog number within the designated table which provides a maximum trip rating of approximately 115%.

Overload relays do not provide protection against short circuits. To ensure proper coordination with short circuit protective device, select heaters from the information packaged with the control device.

				Heater Table Number				
		Bimetal Standard Trip (Class 20)		l Trip (Class 20)	Bimetal Quick Trip (Class 10)			
		Size	Controller Size	Compensated E Heaters Green Reset		E Heaters K Heaters		
Class	Description	Amperage	Letter	1Ph	3Ph	1Ph	3Ph	
SMF	Manual	All	_	See Page 9/122				
	Magnetic							
14, 22	Non-reversing, Reversing	00-4	B-J	213	233	313	332	
17, 18 25, 26 30, 32 ^① 83, 84 87, 89	Combination Reversing Combination Multi Speed Pump Controllers Motor Control Centers	0-4	C-J	_	233	_	332	
48	Panel Mounted Overload Relay	25-180A	D-J	216	238	316	335	

ESP200 starters do not require heater elements.

① Overload Relay Selection Multi-Speed Each speed requires a separate set of overloads. The adjustment range must be selected on the basis of the full-load current for each particular speed.

9/121

General



Heater Elements Class SMF

Ordering Information

- 1. Determine number of heater elements required from Table A.
- 2. Determine motor full load current and service factor.

NOTE: If motor amps are unknown, an approximate value may be found on page 9/120. These values should be used with caution and only when motor amps are not available.

- 3. If the motor and controller are in the same ambient temperature:
 - a. For 1.15 to 1.25 service factor motors use 100% of motor full load current for heater element selection.
 - b. For 1.0 service factor motors use 90% of motor full load current for heater element selection.
 - c. Heater elements are class 20.
- 4. If the motor and controller are in different ambient temperatures multiply motor full load current by the multiplier in Table B. Use the resultant full load current for heater element selection.
- 5. Select proper heater element from table below.
- 6. All tables are based on the operation of the motor and controller in the same ambient temperature, 40°C (104°F) or less. Always be certain the correct heater element is installed in the starter before operating the motor.

Heater	Motor Full-Load	List
Catalog Number	Current (Amps)	Price \$
SMFH01	0.157-0.173	
SMFH02	0.174-0.192	
SMFH03	0.193-0.212	
SMFH04	0.213-0.235	
SMFH05	0.236-0.261	
SMFH06	0.262-0.289	
SMFH07	0.290-0.321	
SMFH08	0.322-0.355	
SMFH09	0.356-0.399	
SMFH10	0.41-0.44	
SMFH11	0.45-0.49	
SMFH12	0.50-0.53	
SMFH13	0.54-0.58	
SMFH14	0.59-0.65	
SMFH15	0.66-0.71	
SMFH16	0.72-0.78	
SMFH17	0.79–0.85	
SMFH18	0.86–0.96	
SMFH19	0.97–1.04	
SMFH20	1.05–1.16	
SMFH21	1.17–1.25	
SMFH22	1.30–1.39	
SMFH23	1.38–1.54	
SMFH24	1.48–1.63	
SMFH25	1.57–1.75	
SMFH26	1.66–1.86	

Table A		
Number of	Heater	Elements

Device	Number of Heater Elements	Notes
SMFF*1 SMFF*2 SMFF*3 SMFF*4 SMFF*5 SMFF*6	1	All single pole and two pole SMF starters require only 1 Heater Element.
SMFF*22 SMFF*44	2	Duplex Unit. One Heater Element per starter.
SMFF*11 SMFF*22	2	Two Speed Starter. One Heater Element per speed.

Heater Catalog Number	Motor Full-Load Current (Amps)	List Price \$
SMFH27	1.80-1.99	
SMFH28	1.96-2.15	
SMFH29	2.16-2.38	
SMFH30	2.39-2.75	
SMFH31	2.76-2.84	
SMFH32	2.85-3.06	
SMFH33	3.07-3.45	
SMFH34	3.46-3.70	
SMFH35	3.71-4.07	
SMFH36	4.08-4.32	
SMFH37	4.33-4.90	
SMFH38	4.91-5.35	
SMFH39	5.36–5.85	
SMFH40	5.86-6.41	
SMFH41	6.42-6.79	
SMFH42	6.80-7.57	
SMFH43	7.58–8.15	
SMFH44	8.16-8.98	
SMFH45	8.99–9.67	
SMFH46	9.68–9.95	
SMFH47	9.96-10.8	
SMFH48	10.9–12.1	
SMFH49	12.2–13.1	
SMFH50	13.2–13.9	
SMFH51	14.0-15.0	
SMFH52	15.1–16.0	

Table B—Special Applications Heater Element Selection

	Ambient Temperature of Motor				
Continuous Duty Motor	Same as Controller Ambient	Constant 10°C (18°F) Higher Than Controller Ambient	Constant 10°C (18°F) Lower Than Controller Ambient		
Service Factor	Full Load Current Multiplier				
1.15 to 1.25	1.0	0.9	1.05		
1.0	0.9 0.8 0.95				

Overload Relay Heater Tables Full Load Motor Amps, Single Phase, Trip Class 20 – Tables 213, 216

Table 213 for Class 14, 22 (1-Phase)

	Table 213 for Class 14, 22 (1-Phase)					
Full Load Ar			Heater			
Size 00, 0, 1	Size 1P	Size 2, 2 ¹ / ₂	Catalog No	List Price \$		
0.37-0.40			E3			
0.41-0.44 0.45-0.47	0.41-0.44 0.45-0.47		E4 E5			
0.45-0.47	0.48-0.52		E6			
0.53-0.57	0.53-0.57	_	E7			
0.58-0.62	0.58-0.62	_	E8			
0.63-0.69 0.70-0.74	0.63-0.69 0.70-0.74	-	E9 E11			
0.70-0.74	0.75-0.74		E12			
0.82-0.85	0.82-0.85	_	E13			
0.86-0.93	0.86-0.93	_	E14			
0.94-1.03	0.94-1.03	-	E16			
1.04–1.11 1.12–1.22	1.04–1.11 1.12–1.22		E18			
1.23-1.34	1.23-1.34	_	E23			
1.35-1.53	1.35-1.53	_	E24			
1.54-1.71	1.54-1.71	-	E26 E27			
1.72–1.92 1.93–2.12	1.72–1.92 1.93–2.12		E27			
2.13–2.24	2.13–2.24	_	E29			
2.25-2.43	2.25-2.43	_	E31			
2.44-2.57	2.44-2.57	-	E32 E33			
2.58–2.86 2.87–3.16	2.58–2.86 2.87–3.16		E33			
3.17–3.35	3.17–3.35	_	E36			
3.36-3.58	3.36-3.58	_	E37			
3.59-3.90	3.59-3.90	-	E38 E39			
3.91–4.25 4.26–4.77	3.91–4.25 4.26–4.77		E41			
4.78–5.35	4.78-5.35	_	E42			
5.36-5.76	5.36-5.76	_	E44			
5.77–6.33 6.34–6.98	5.77–6.33 6.34–6.98		E46 E47			
6.99–7.37	6.99-7.37		E48			
7.38–7.71	7.38-7.71	_	E49			
7.72–8.51	7.72–8.51	_	E50			
8.52–9.31 9.32–10.1	8.52–9.31 9.32–10.1		E51 E52			
10.2–10.9	10.2–10.9	_	E53			
11.0-12.2	11.0-12.2	_	E54			
12.3–13.5	12.3-13.5	_	E55			
13.6–15.7 15.8–17.3	13.6–15.7 15.8–17.3	19.4–22.0	E56 E57			
17.4–19.9	17.4–19.9	22.1–23.5	E60			
20.0-21.7	20.0-21.7	23.6-25.0	E61			
21.8–23.4 23.5–24.0	21.8–23.4	25.1–27.0	E62			
Z3.J-Z4.U —	23.5–23.7 23.8–25.1	27.1–28.9 29.0–31.0	E65 E66			
_	25.2–27.9	31.1–34.8	E67			
	28.0-32.2	34.9–36.9	E69			
_	32.3–34.0	37.0–43.9 44.0–46.0	E70 E72			
_	_	46.1–48.3	E72 E73			
-	_	48.4–55.0	E74			
-		55.1-60.0	E76			

Table 216	for Class			
Full Load Amps			Heater	
48DA, 48GA	48HA	48JA	Catalog No	List Price \$
0.34-0.36 0.37-0.40	_		E3 E4	
0.37-0.40			E5	
0.44-0.47			E6	
0.48-0.51	_	_	E7	
0.52-0.56	_	_	E8	
0.57-0.62	_	_	E9	
0.63-0.67 0.68-0.73	_	_	E11 E12	
0.74-0.77			E13	
0.78-0.84	_	_	E14	
0.85-0.93			E16	
0.94-1.00			E17	
1.01–1.10			E18 E19	
1.11–1.21			E23	
1.22–1.38	_	_	E24	
1.39-1.54	_	_	E26	
1.55-1.73	_	_	E27	
1.74–1.91	_	_	E28	
1.92–2.02 2.03–2.19			E29 E31	
2.20–2.19			E32	
2.33-2.58	_	_	E33	
2.59-2.85	_	_	E34	
2.86-3.02	_		E36	
3.03-3.23	_	_	E37	
3.24–3.52 3.53–3.83			E38 E39	
3.84-4.30			E41	
4.31-4.82	_	_	E42	
4.83-5.19	_	_	E44	
5.20-5.71	_	_	E46	
5.72–6.29 6.30–6.64			E47 E48	
6.65-6.95			E49	
6.96–7.67	_	_	E50	
7.68–8.39	_	_	E51	
8.40-9.19	_	_	E52	
9.20-9.94	_	_	E53	
9.95–10.9 11.0–12.2			E54 E55	
12.3–14.2			E56	
14.3–15.6	_	_	E57	
_	_	—	E59	
15.7–17.9			E60	
18.0–19.6 19.7–22.3	_	_	E61 E62	
22.4–24.0			E65	
24.1–25.9	_	_	E66	
26.0-29.5	27.1-30.0	_	E67	
29.6–32.5	30.1–33.2	_	E69	
32.6–33.5 33.6–36.9	33.3–35.7 35.8–39.4		E70 E71	
37.0-30.9	39.5–43.4		E72	
39.3–43.1	43.5–46.9	_	E73	
43.2-47.4	47.0-51.5	_	E74	
47.5-50.0	51.6-57.0	-	E76	
50.1–55.2 55.3–60.0	57.1-62.8		E77 E78	
55.3–60.0 —	62.9–69.1 69.2–75.0		E78	
_	75.1–83.3		E80	
	_	50.0-55.9	E88	
_	-	56.0-60.9	E89	
	_	61.0-65.9	E91	
		66.0–69.9 70.0–75.9	E92 E93	
_		76.0-75.9	E94	
_	83.4-86.9	82.0-86.9	E96	
_	87.0-92.9	87.0–92.9	E97	
_	93.0-100.0	93.0-97.9	E98	
_	_	98.0–107.9 108.0–113.9	E99 E101	
_ _ _		114.0-113.9	E101	
_	_	126.0-138.0	E103	
_	_	139.0–153.0	E104	
_		154.0-163.0	E106	
	l —	164.0-180.0	E107	

Overload Relay Heater Tables
Full Load Motor Amps, 3-Phase, Trip Class 20 – Tables 233, 238

Table 233 for Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87 (3-Phase)

Table 233	able 233 for Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87 (3-Phas					
Full Load Amps					Heater	
Size 00, 0, 1	Size 1 ³ / ₄	Size 2, 21/2	Size 3, 31/2	Size 4	Catalog No	List Price \$
0.38-0.40	_	_	_	_	E6	
0.41-0.43	_	—	—	—	E7 E8	
0.44-0.48 0.49-0.53					E9	
0.54-0.57	_	_	_	_	E11	
0.58-0.62	_	_	_	_	E12	
0.63-0.66	_	_	_	_	E13	
0.67-0.72 0.73-0.80	_				E14 E16	
0.81-0.85	_	_	_	_	E17	
0.86-0.92		_	_	_	E18	
0.93-0.99	_	_	_	_	E19	
1.00-1.08 1.09-1.23	_				E23 E24	
1.24–1.37	_				E26	
1.38-1.54	_	_	_	_	E27	
1.55-1.69	—	—	—	—	E28	
1.70-1.80		_	—	—	E29	
1.81–1.94 1.95–2.07					E31 E32	
2.08–2.26	_	_	_	_	E33	
2.27-2.54	2.27-2.54	_	l —	—	E34	
2.55-2.69	2.55-2.69	—	—	—	E36	
2.70–2.88 2.89–3.14	2.70-2.88	_	_	_	E37 E38	
3.15–3.40	2.89-3.14 3.15-3.40				E39	
3.41–3.81	3.41–3.81				E41	
3.82-4.26	3.82-4.25	_	l —	l —	E42	
4.27-4.62	4.26-4.62	_	—	—	E44	
4.63-5.09	4.63-5.09	_	_	_	E46 E47	
5.10–5.61 5.62–5.91	5.10–5.61 5.62–5.91	_			E47 E48	
5.92–6.15	5.92–6.15	_	_	_	E49	
6.16-6.70	6.16-6.70	—	—	—	E50	
6.71–7.54	6.71–7.54		_	_	E51	
7.55–8.29 8.30–8.99	7.55–8.29 8.30–8.99				E52 E53	
9.00-9.85	9.00-9.85				E54	
9.86-10.4	9.86-10.4	_	_	_	E55	
10.5–12.0	10.5–12.0	10.5–12.0	_	_	E56	
12.1-13.6	12.1-13.6	12.1-13.6	_	_	E57	
13.7–15.6 15.7–17.0	13.7–15.6 15.7–17.0	13.7–15.6 15.7–17.1			E60 E61	
17.1–18.4	17.1–19.4	17.2–19.4	l —	l —	E62	
18.5-19.4	19.5–20.9	19.5–20.9	_	_	E65	
19.5–21.3	21.0-22.2	21.0-22.2	—	—	E66	
21.4–24.4 24.5–25.9	22.3–25.3 25.4–26.9	22.3–25.3 25.4–26.9	30.0–33.5		E67 E69	
26.0–27.0	27.0-30.2	27.0-30.2	33.6–36.4	_	E70	
_		_	36.5–39.6	_	E71	
_	30.3–33.3	30.3–33.3		_	E72	
	33.4–36.0	33.4–35.3	39.7–43.6 43.7–46.5		E73 E73A	
	_	35.4-41.5	46.6–51.6		E74	
_		41.6-45.0	51.7-54.4	_	E76	
_	_	45.1–52.3	54.5-58.0		E77	
	_ _ _ _	52.4–55.7 55.8–60.0	58.1–63.0 63.1–67.7		E78 E79	
_	_		67.8–72.4		E80	
		_		—	E88	
_	_	_	_	56.9-60.9	E89	
		_	-	61.0-63.9	E91	
	_	—		64.0–67.7 67.8–72.4	E92 E93	
_	_	_	72.5-80.0	72.5–77.7	E94	
_	_		80.1-88.1	77.8–85.9	E96	
	_	_	88.2–91.5	86.0-91.9	E97	
		— — — —	91.6–96.8 96.9–99.0	92.0–96.7 96.8–105	E98 E99	
	_		99.1–108.0		E101	
	_	_	_	_	E102	
	-		—	106-115	E103	
				116–130	E104	

Table 238 for Class 48

	38 for C	1033 40			
Full Load	Amps			Heater	
48DC	48GC	48HA	48JA	Catalog No	List Price \$
0.30-0.32	_	_	_	E3	
0.33-0.35	_	_	_	E4	
0.36-0.38	_	_	_	E5	
0.39-0.41 0.42-0.44				E6 E7	
0.45-0.49	_	_	_	E8	
0.50-0.54	_	_	_	E9	
0.55-0.58	_	_	_	E11	
0.59-0.63	_	-	-	E12	
0.64-0.67	_	_	_	E13	
0.68-0.73 0.74-0.81				E14 E16	
0.82-0.87	_	_	_	E17	
0.88-0.94	_	_	_	E18	
0.95-1.00	_	_	_	E19	
1.01-1.10	_	-	-	E23	
1.11-1.26 1.27-1.40	_	_	_	E24 E26	
1.41-1.58				E27	
1.59-1.74	_	_	_	E28	
1.75-1.85	_	_	_	E29	
1.86-1.99	_	_	-	E31	
2.00-2.11	_	-	-	E32	
2.12-2.31	_	_	_	E33 E34	
2.32-2.59 2.60-2.75				E36	
2.76-2.75	_	_	_	E37	
2.96-3.21	_	_	_	E38	
3.22-3.48	_		-	E39	
3.49-3.89	_	_	_	E41	
3.90-4.35	_	-	-	E42 E44	
4.36–4.73 4.74–5.21				E44	
5.22-5.74	_	_	_	E47	
5.75-6.05	_	_	_	E48	
6.06-6.46	_	_	_	E49	
6.47-6.95	_	_	_	E50	
6.96–8.09 8.10–9.29				E51 E52	
9.30-10.4			_	E53	
_	_	_	_	E54	
10.5-10.9	_	_	_	E55	
11.0-12.0	_	_	_	E56	
12.1–14.5 14.6–16.8	_	_	_	E57 E60	
16.9–18.4	16.9–18.4	_	_	E61	
18.5–20.9	18.5–20.9	_	_	E62	
21.0-22.5	21.0-22.5	_	_	E65	
22.6-24.3	22.6-24.7		_	E66	
24.4-27.2	24.8–27.2	27.1–30.0	_	E67 E69	
27.3–29.2 29.3–30.0	27.3–29.2 29.3–32.0	30.1–33.2 33.3–35.7		E70	
_	32.1–34.9	35.8–39.4	_	E71	
_	_	39.5-43.4	_	E72	
_	35.0–37.8	43.5–46.9	_	E73	
_	37.9–41.7 41.8–45.9	— 47.0–51.5	_ _ _	E73A E74	
	46.0-49.0	51.6-57.0		E76	
_	49.1–54.2	57.1–62.8	_	E77	
_	54.3-60.0	62.9-69.1	_	E78	
_	_	69.2-75.0	_	E79	
_	_	75.1–83.3		E80	
			50.0–55.9 56.0–60.9	E88 E89	
_	_	l_	61.0–65.9	E91	
	_	_	66.0-69.9	E92	
_ _ _ _	-	-	70.0-75.9	E93	
_	-		76.0-81.9	E94	
_		83.4–86.9 87.0–92.9	82.0–86.9 87.0–92.9	E96 E97	
_	_	93.0–100.0	93.0–97.9	E98	
_	_	_	98.0–107.9	E99	
_	_	-	108-113.9	E101	
	-	-	114-125.9	E102	
			126–138.9 139–153.9	E103 E104	
	_	_	154–153.9	E104	
_	_	_	164–180.9	E107	
	-				

Overload Relay Heater Tables Full Load Motor Amps, Single Phase, Trip Class 10 – Tables 313, 316

Table 313 for Class 14, 22 (1-Phase)

Full Load An	nps		Heater	
Size 00, 0, 1	Size 1P	Size 2, 21/2	Catalog No	List Price \$
1.85-2.05	1.85-2.05	_	K21	
2.06-2.35	2.06-2.35	—	K22	
2.36-2.64	2.36-2.64	—	K24	
2.65-2.96	2.65-2.96	—	K27	
2.97-3.31	2.97-3.31	<u> </u>	K28	
3.32-3.51	3.32-3.51	—	K29	
3.52-3.87	3.52-3.87	l —	K31	
3.88-4.31	3.88-4.31	l —	K32	
4.32-4.79	4.32-4.79	—	K33	
4.80-5.21	4.80-5.21	<u> </u>	K34	
5.22-5.75	5.22-5.75	I —	K36	
5.76-6.11	5.76-6.11	l —	K37	
6.12-6.95	6.12-6.95	—	K39	
6.96-7.73	6.96-7.73	—	K41	
7.74-8.47	7.74–8.47	—	K42	
8.48-9.52	8.48-9.52	l —	K43	
9.53-10.4	9.53-10.4	—	K49	
10.5-11.1	10.5-11.1	—	K50	
11.2-12.4	11.2–12.4	-	K52	
12.5-13.5	12.5–13.5	_	K53	
13.6-15.1	13.6-15.1	—	K54	
15.2-16.6	15.2-16.6	l —	K55	
16.7-17.6	16.7-17.6	—	K57	
17.7–18.8	17.7–18.8	18.7–19.7	K58	
18.9–21.6	18.9–21.6	19.8–21.3	K60	
21.7-22.7	21.7-22.7	21.4-22.8	K61	
22.8-25.3	22.8-25.3	22.9-24.2	K62	
_	25.4-26.6	24.3-26.5	K63	
_	26.7-30.1	26.6-29.3	K64	
_	30.2–33.0	29.4-32.0	K67	
_	33.1-34.1	32.1-35.6	K68	
_	—	35.7-37.9	K69	
_	—	38.0-40.3	K70	
_	—	40.4-44.3	K72	
	<u> </u>	44.4-49.5	K73	
_		49.6-52.1	K74	
_	—	52.2-53.7	K75	
_	l —	53.8-60.0	K76	

Table 316 for Class 48

Full Load	Amps	Heater			
48DA	48GA	48HA	48JA	Catalog No	List Price \$
1.69-1.88	_	_	_	K21	
1.89-2.05	_	_		K22	
2.06-2.21	_	_		K23	
2.22-2.44	_	_	_	K24	
2.45-2.70	_	_	_	K26	
2.71-2.92	_	_	_	K27	
2.93-3.27	_	_	-	K28 K29	
3.28–3.56 3.57–3.83	_	_		K31	
3.84-4.23				K32	
4.24-4.57	_	_	_	K33	
4.58-4.97				K34	
4.98-5.67	_	_	_	K36	
5.68–6.11	_	_	_	K37	
6.12-6.91	_	_	_	K39	
6.92-7.65	_	_	_	K41	
7.66-8.4	_	_	_	K42	
8.5-8.9	_	_	_	K43	
9.0-10.1	9.12-9.6	_		K49	
10.2-11.2	9.7–10.4	_	_	K50	
11.3–12.3	10.5-11.4	_	_	K52	
12.4-13.3	11.5–12.1	_	-	K53	
13.4–14.1	12.2-12.9	_	_	K54	
14.2-15.0	13.0-13.7	_	_	K55 K56	
15.1–16.2 16.3–17.5	13.8–14.8 14.9–16.4			K57	
17.6–18.6	16.5–18.2	_	_	K58	
18.7–19.9	18.3–19.5			K60	
20.0–21.3	19.6–20.9	_	_	K61	
21.4–22.8	21.0-22.8	23.2-25.1	_	K62	
22.9-25.1	22.9-24.7	25.2-27.3	_	K63	
25.2-27.6	24.8-27.6	27.4-30.4	_	K64	
27.7-30.0	27.7-30.5	30.5-33.3	_	K67	
_	30.6-33.9	33.4-36.5	_	K68	
_	34.0-37.3	36.6-39.3	_	K69	
	37.4-40.2	39.4–43.5	<u> </u>	K70	
-	40.3-41.9	43.6–46.6	43.0-46.5	K72	
-	42.0-45.9	46.7–51.1	46.6-50.9	K73	
-	46.0-50.9	51.2-56.3	51.0-55.9	K74	
	51.0-52.9	56.4-61.1	56.0-59.1	K75	
_	53.0–57.7 57.8–60.0	61.2–64.9 65.0–71.9	59.2–68.7 —	K76 K77	
	J7.0-00.0	72.0–80.7	68.8–80.7	K78	
	_	80.8–92.7	80.8–92.7	K85	
_	_	92.8–100.0	92.8–103.9	K86	
_	_	_	104.0-113.5	K87	
_	_	_	113.6–127.9	K89	
_	_	_	128.0-143.9	K92	
	_	_	144.0-163.9	K94	
_	_	_	164.0-180.0	K96	

Overload Relay Heater Tables
Full Load Motor Amps, 3-Phase, Trip Class 10 – Tables 332, 335

Table 332 for Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87 (3-Phase)

Full Load Am	ins		, , , , , , , , , , , , , , , , , , , ,			
Size 00, 0, 1	Size 1¾	Size 2, 2½	Size 3. 3½	Size 4	Heater Catalog No	List Price \$
1.52–1.65	1.52–1.65	3126 2, 2/l	3126 3, 3/2	3126 4	K21	List i lice \$
1.66-1.79	1.66-1.79	l <u> </u>			K21	
1.80-1.94	1.80-1.73				K23	
1.95–2.15	1.95–2.15	l	_	_	K24	
2.16–2.37	2.16–2.37	l	l	_	K26	
2.38–2.56	2.38–2.56	_	_	_	K27	
2.57-2.87	2.57-2.87	l	_	_	K28	
2.88–3.13	2.88–3.13	_	_	_	K29	
3.14–3.37	3.14-3.37	_	_	_	K31	
3.38-3.72	3.38-3.72	—	l —	l —	K32	
3.73-4.00	3.73-4.00	_	_	_	K33	
4.01-4.35	4.01-4.35	l —	l —	l —	K34	
4.36-4.99	4.36-4.99	—	_	_	K36	
5.00-5.38	5.00-5.38	—	_	_	K37	
5.39-5.79	5.39-5.79	_	_	_	K39	
5.80-6.43	5.80-6.43	_	_	_	K41	
6.44-6.83	6.44-6.83	—	—		K42	
6.84-7.83	6.84-7.83	—	_	_	K43	
7.84–8.23	7.84–8.23	—	_	_	K49	
8.24-9.59	8.24-9.59	_	_	_	K50	
9.60-9.90	9.60-9.90	—	_	_	K52	
10.0–10.7	10.0-10.7	-	—	-	K53	
10.8–11.6	10.8–11.6	12.1–12.7	—	-	K54	
11.7–12.3	11.7–12.3	12.8–13.5	_	_	K55	
12.4–13.4	12.4-13.4	13.6-14.6	_	_	K56	
13.5–14.2	13.5-14.2	14.7–15.9	_	_	K57	
14.3–15.1	14.3-15.1	16.0-16.9		-	K58 K60	
15.2–17.5 17.6–18.7	15.2–17.5 17.6–18.7	17.0–18.2 18.3–19.5	_	_	K61	
18.8–20.0	18.8–20.0	19.6–20.9	_		K62	
20.1–21.5	20.1–21.5	21.0-23.1			K63	
21.6–23.9	21.6–23.9	23.2–25.4			K64	
24.0–25.8	24.0–25.8	25.5–27.9			K67	
	25.9–29.5		_	_	K68	
_		28.0-30.5	_	_	K69	
_	29.6-32.7	30.6-33.5	36.8-40.0	_	K70	
l —	32.8-36.0	33.6-37.2	40.1-42.4	l —	K72	
l —	l —	37.3-40.7	42.5-46.3	l —	K73	
_	_	40.8-43.0	46.4-49.6	_	K74	
_	_	43.1-47.9	49.7-52.3	49.7-52.3	K75	
_	_	48.0-52.7	52.4-57.5	52.4-57.5	K76	
-	—	52.8-58.3	57.6-63.9	57.6-63.0	K77	
-	—	58.4-60.0	64.0-67.9	63.1-68.1	K78	
_	_	—	68.0-74.3	68.2-74.3	K83	
_	-	-	74.4–77.9	74.4–79.9	K85	
-	—	—	78.0–83.1	80.0-87.4	K86	
-	-	—	83.2–91.4	87.5–90.0	K87	
_	-	-	91.5–99.9	90.1–100.0	K88	
_	_	-	100.0-108.0	100.1-108.0	K89	
		 	_	108.1-119.0	K90	
_	-	—	-	119.1–130.0	K92 K94	
_	_	-	-	_	K94 K96	
ı —	_	1 —	_	_	IV30	1

Table 335 for Class 48

Full Load	Amps	Heater			
48DC	48GC	48HA	48JA	Catalog No	List Price \$
1.56-1.69	_	_	_	K21	
1.70-1.84		—	_	K22	
1.85–1.98	_	—	_	K23	
1.99–2.19		—	_	K24	
2.20-2.43	_	_	_	K26	
2.44-2.63		—	_	K27	
2.64-2.95		—	_	K28	
2.96-3.21		—	_	K29	
3.22-3.45	-			K31	
3.46-3.81	_	_	_	K32	
3.82-4.10				K33	
4.11-4.46				K34	
4.47-5.10	_		_	K36	
5.11-5.49		_	_	K37	
5.50-6.21	_	_	_	K39	
6.22-6.76				K41	
6.77-7.62	_		_	K42	
7.63-8.07			_	K43	
8.08-9.19			_	K49	
9.20-10.0	_	_	_	K50	
10.1–11.0			_	K52	
11.1–12.0		_	_	K53	
12.1–12.7	-		_	K54	
12.8–13.5		_	_	K55	
13.6–14.5	_	_	_	K56	
14.6–15.7		_	_	K57	
15.8–16.7		_	_	K58	
16.8–17.9			_	K60	
18.0-19.2	18.0-19.2	22.2.25.1		K61	
19.3–20.5	19.3–20.5	23.2–25.1	_	K62	
20.6–22.5	20.6–22.5	25.2-27.3	_	K63	
22.6-24.8	22.6-24.8	27.4–30.4		K64 K67	
24.9–27.6 27.7–30.0	24.9–27.6	30.5–33.3 33.4–36.5		K68	
27.7-30.0	27.7–30.1	36.6–39.3		K69	
	30.2–33.1	39.4–43.5		K70	
	33.2-36.7	43.6–46.6	43.0–46.5	K70 K72	
	36.8–40.1	46.7–51.1	46.6–50.9	K72 K73	
	40.2-45.5	51.2-56.3	51.0-55.9	K74	
	45.6–47.9	56.4-61.1	56.0-59.1	K75	
	48.0–52.7	61.2–64.9	59.2–68.7	K76	
	52.8–55.1	65.0-71.9	JJ.Z-00./	K77	
	55.2-60.0	72.0–80.7	68.8–80.7	K78	
_		80.8–92.7	80.8–92.7	K85	
_	l_	92.8–100.0		K86	
_			104.0-113.5	K87	
_	l_		113.6–127.9	K89	
_	l_		128.0–143.9	K92	
_	_		144.0–163.9	K94	
_	_		164.0–180.0	K96	
	l		.51.5 150.0		l

Replacement Parts Starters and Contactors – AC Coils

Selection

Ordering Information

▶ 4th character of starter or contactor catalog number indicates model.

	Size 00–2½	Model P U (ESP200)	Volts 60Hz 24 120 110–120/220–240 208 220–240	50Hz 24 110 110/190–220	Catalog Number 75D73070J 75D73070F	List Price \$
		Р	24 120 110–120/220–240 208	24 110	75D73070J	LIST Price \$
	00-2½	P U (ESP200)	120 110–120/220–240 208	110		
	00-2½	P U (ESP200)	110–120/220–240 208			
TO DE TO	00–2½	P U (ESP200)	208	110,100 220	75D73070A	
TO DE TO	00–2½	U (ESP200)	220-240	I —	75D73070D	
TO DE TO				190-220	75D73070G	
TO DE TO			277	240	75D73070L	
			220-240/440-480 440-480	190–220/380–440 380–440	75D73070C 75D73070H	
			575–600	550	75D73070E	
VE THE THE THE REAL PROPERTY OF THE PARTY OF			24	24	75D73251J	
200 mg 20			120	110	75D73251F	
196-370 V - W/		P	110–120/220–240 208	110/190–220	75D73251A 75D73251D	
	3,3½	U (ESP200)	220–240	190-220	75D73251G	
	0,0		277	240	75D73251L	
			220-240/440-480	190-220/380-440	75D73251C	
			440–480 575–600	380–440 550	75D73251H 75D73251E	
			24	24	75D73251E 75D70131J	
4			120	110	75D70131F	
			120/220-240	110/190–220	75D70131A	
	4	G U (ESP200)	208 220–240	190–220	75D70131D	
	4	0 (E3F200)	277	240	75D70131G 75D70131L	
0 8 3			220-240/440-480	190-220/380-440	75D70131C	
基本			440-480	380-440	75D70131H	
			575–600	550	75D70131E	
			23-26	23-26 110-127	3RT1966-5AB31 3RT1966-5AF31	
			110-127 200-220	200-220	3RT1966-5AM31	
	4, 5	V (Vacuum)	220-240	220-240	3RT1966-5AP31	
	1,7	(12222,	240-277	240-277	3RT1966-5AU31	
			380-420	380-420	3RT1966-5AV31	
production of the same of the			440-480	440-480	3RT1966-5AR31	
			575-600	575-600	3RT1966-5AT31	
3 0			23-26	23-26	3RT1965-5AB31	
			110-127	110-127	3RT1965-5AF31	
	5	Р	200-220 220-240	200-220 220-240	3RT1965-5AM31 3RT1965-5AP31	
	J	'	240-277	240-277	3RT1965-5AU31	
			380-420	380-420	3RT1965-5AV31	
			440-480	440-480	3RT1965-5AR31	
			575-600	575-600	3RT1965-5AT31	
			23-26	23-26	3RT1975-5AB31	
			110-127	110-127	3RT1975-5AF31	
		l n	200-220	200-220	3RT1975-5AM31	
	6	V (Vacuum)	220-240	220-240 240-277	3RT1975-5AP31 3RT1975-5AU31	
		v (vacuuiii)	240-277 380-420	380-420	3RT1975-5AU31	
			440-480	440-480	3RT1975-5AR31	
			575-600	575-600	3RT1975-5AT31	
and and						
The same of the sa	7	Н	100-250	100-250	75ZAF750-70	
Charles and the same of the sa			150-500	150-500	75ZAF750-71	
	8	Н	100-250	100-250	75ZAF1650-70①	

① Set of 2 coils. Recommend to change printed circuit board when changing coils. **49ZP1650** see page 9/128.

Replacement Parts

Starters and Contactors - DC Coils, Late Break Aux Contacts, Rectifiers, Contact Kits

Selection

Ordering Information

- ▶ 4th character of starter or contactor catalog number indicates model.
- ▶ DC Coils for Size 00-4 require Late Break Interlock.

DC Coils — For Class 14, 17, 18, 22, 25, 26, 30, 32, 40, 43

	Size	Model	Volts DC	Catalog Number	List Price \$
F 2 3 3	00-2½	P U (ESP200)	12 24 32 48 125 250	75D73070R 75D73070S 75D73070T 75D73070U 75D73070V 75D73070W	
The state of the S	3, 3½	P U (ESP200)	12 24 32 48 125 250	75D73251R 75D73251S 75D73251T 75D73251U 75D73251V 75D73251W	
	4	G U (ESP200)	48 125 250	75D70131U 75D70131V 75D70131W	
	4, 5	V (Vacuum)	23-26 42-48 110-127 240-277	3RT1966-5AB31 3RT1966-5AD31 3RT1966-5AF31 3RT1966-5AU31	

Note: For sizes 7 & 8 contactors the AC coils are used for DC see page 9/125.

Late Break Auxiliary Contacts

Control Size	Model	Catalog Number	List Price \$
00–4	P, G, S, T	49AB01LB	

Board for Size 8 Contactor

	Control Size	Model	Catalog Number	List Price
	8	Н	49ZP1650	

Contact Kits - Single Pole Stationary and Movable Contacts, Contact Spring¹

Description	Size	Number of Poles in Kit	Model (4th position in part number)	Catalog Number	List Price \$
Alles.	Internal Aux Contact (00-1-3/4)		P, U	75AF14	
18	00		P, U P, U	75BF14 75CF14	
	1 1 ³ / ₄ –1P	1	P, U	75DF14	
-	2	1	P, U P, U	75EF14 75FP14	
	21/2	1	P, U	75GP14	
A TOMO	3 3½	1	P, U P, U	75HF14 75IF14	
B	4 4 (Vacuum)	1 3 (Bottles)	G, T V, C	75JG14 3RT1964-6V	
Class 14, 17, 18, 22, 25, 26, 30, 32, 36, 37, 40, 43,	5 5 (Vacuum)	3 3 (Bottles)	P V, C	3RT1966-6A 3RT1966-6V	
83, 84, 87, 88	6 6 (Vacuum)	3 3 (Bottles)	P V, C	3RT1976-6A 3RT1976-6V	
14.40	7	3	Н	49ZL750	
14, 40	8	3	Н	49ZL1650	

Armature and Magnet Kits

Size	Catalog Number	List Price \$
00-2½	49AMSA2	
3–3%	49AMSA3	
4	49AMSA4	

 $[\]ensuremath{\textcircled{0}}$ On 3-phase controls, all 3-poles should be replaced - 3 kits required.

Starters and Contactors - Coil VA Ratings and Overload Relays

Selection

Coil VA Ratings

Device Type	Contactor Size	Amps	Volts	Number of Poles	Total Inrush VA	Total Sealed VA
	00 thru 2 1/2	_	_	_	218	25
	3 thru 3 1/2	_	_	_	310	26
	4	_	_	_	510	51
NIENAA Canatan	5	_	_	_	590	6.7
NEMA Starter	6	_	_	_	830	9.2
	7	_	_	_	850	12
	8	_	_	_	1900	48
	4,5,6 (Vacuum)	_	_	_	630	7.4
	_	20	_	2-12	625	6
	_	30	_	2-5	410	40
Lighting Contactor	_	60	_	2-3	410	40
Mechanically Held (CLM)	_	60	_	4-5	600	40
I Mechanically Held (GLIVI)	_	100 - 200	_	2-3	900	200
	_	100 - 200	_	4-5	1300	130
	_	300 - 400	_	3	1600	550
Lighting Contactor	_	30	ALL	2-12	248	28
Electrically Held Held (LC)						
	_	20	ALL	3 and 4	31.7	4.8
	_	30	ALL	3 and 4	87	9.4
Lighting Contactor	_	60	ALL	3	166	12.6
Electrically Held Held (LE)	—	100	ALL	3	300	21
	—	200	ALL	3	300	5.6
	—	300	ALL	3	590	6.7
	_	400	ALL	3	830	9.2

Overload Relays^{©©} - For Class 14, 17, 18, 22, 25, 26, 30, 32, 83, 84, 87

	Half			Ambient Comp Bimetal				
Size	Size	Model	Number Poles	Catalog Number (1) NC	List Price \$	Catalog Number (1) NO/NC	List Price \$	
00-1	_	Р	1 3	48DC18AA3 48DC38AA3		48DC39AA3		
1P		P	1	48EC18AA3				
_	13/4	P	3	48EC38AA3		48EC39AA3		
2	_	Р	1 3	48GC18AA3 48GC38AA3		48GC39AA3		
_	21/2	Р	1 3	48GC18AA3 48GC38AA3		48GC39AA3		
3	_	P	3	48HC38AA3				
_	31/2	P	3	48HC38AA3				
4	_	G	3	48JC38AA3				

For Starter and Contactor replacement parts not found in this section, please refer to Field Modification kits found starting on page 9/99.

Siemens Industry, Inc. Industrial Controls Catalog 9/129

Product Category: NEMA

① For replacement Solid State overload relays, please see the Overload Relay section found starting on page 9/64.

② Includes overload mounting plate to be coupled to contactor mounting plate.

Replacement Parts Lighting and Heating Contactors, Type LC, LE, CLM, CMF, CMN

Selection

Power Pole Kits	Class	Enclosure type	Contactor Size (Amp)	Description	Catalog No.
A TOTAL	LC	Open, 1, 12, 4/4X		Single power pole Double power pole	49LCPP1A 49LCPP2A

Replacement Pole Kits	Class	Enclosure type	Description	Catalog No.
	LC	30	24V 60Hz / 20V 50Hz 115-120V 60Hz / 110V 50Hz 200-208V 60Hz 230-240V 60Hz / 220V 50Hz 277V 60Hz / 240V 50Hz 347V 60Hz 460-480V 60Hz / 440V 50Hz 575-600V 60Hz / 550V 50Hz	75LCC024A 75LCC120A 75LCC208A 75LCC240A 75LCC277A 75LCC347A 75LCC480A 75LCC600A
	LE	20, 30	NA	NA
6-6		60	24VAC 50/60Hz 110VAC 50Hz / 120VAC 60Hz 208VAC 50/60Hz 220VAC 50Hz / 240VAC 60Hz 277VAC 60Hz 347VAC 60Hz 480VAC 60Hz 600VAC 60Hz	3RT19455AC21 3RT19455AK61 3RT19455AM21 3RT19455AP61 3RT19455AU61 3RT19455AW61 3RT19455AV61 3RT19455AT61
0 0		100	24VAC 50/60Hz 110VAC 50Hz / 120VAC 60Hz 208VAC 50/60Hz 220VAC 50Hz / 240VAC 60Hz 277VAC 60Hz 347VAC 60Hz 480VAC 60Hz 600VAC 60Hz	3RT19455AC21 3RT19455AK61 3RT19455AM21 3RT19455AP61 3RT19455AU61 3RT19455AW61 3RT19455AV61 3RT19455AV61
Replacement Contact Kits	Class	Enclosure type	Description	Catalog No.
TO A TOTAL OF THE PARTY OF THE	LC	30	NA	NA
	LE	20, 30	NA	NA
DEADE.		60 100 200 300 400	1 contact kit includes 3 moving and 6 fixed contacts.	3RT1935-6A 3RT1945-6A 3RT1956-6A 3RT1965-6A 3RT1975-6A

AC Coils 20 Amps²

2	Туре	Contactor Size	Number of Poles	120V, 60Hz 110V, 50Hz	List Price \$	240V, 60Hz 208V, 50Hz	List Price \$	277V 50/60Hz	List Price \$	480V, 60Hz 440V, 50Hz	List Price \$
CLM4097341	CLM	20 Amp	2–12	CLM4097341		CLM4097342		CLM4097343		CLM4097344	

AC Coils 30-400 Amps³

e 12		Contactor	Number	Catalog Num	ber						List
	Туре	Size	of Poles	24V AC	120V AC	208V AC	220/240V AC	277V AC	480V AC	600V AC	Price \$
	CLM†C	30 Amp	2–3-Pole 4-Pole 5-Pole	CLMC4C024 CLMC4C024 CLMC5C024	CLMC4C120 CLMC4C120 CLMC5C120	CLMC4C208 CLMC4C208 CLMC5C208	CLMC4C240 CLMC4C240 CLMC5C240	CLMC4C277 CLMC4C277 CLMC5C277	CLMC4C480 CLMC4C480 CLMC5C480	CLMC4C600 CLMC4C600 CLMC5C600	
CLMC4C120	CLM†D	60 Amp	2–3-Pole 4-Pole 5-Pole	CLMD3C024 CLMD5C024 CLMD5C024	CLMD3C120 CLMD5C120 CLMD5C120	CLMD3C208 CLMD5C208 CLMD5C208	CLMD3C240 CLMD5C240 CLMD5C240	CLMD3C277 CLMD5C277 CLMD5C277	CLMD3C480 CLMD5C480 CLMD5C480	CLMD3C600 CLMD5C600 CLMD5C600	
	CLM†E	100, 200 Amp	2–3-Pole 4-Pole 5-Pole	CLME3C024 CLME5C024 CLME5C024	CLME3C120 CLME5C120 CLME5C120	CLME3C208 CLME5C208 CLME5C208	CLME3C240 CLME5C240 CLME5C240	CLME3C277 CLME5C277 CLME5C277	CLME3C480 CLME5C480 CLME5C480	CLME3C600 CLME5C600 CLME5C600	
	CLM†G Latching Coil	300/400 Amp	2–3-Pole	_	CLMGL3C120	CLMGL3C208	CLMGL3C240	CLMGL3C277	CLMGL3C480	CLMGL3C600	
CLMGU3C120	Unlatch Coil		2–3-Pole	_	CLMGU3C120	CLMGU3C208	CLMGU3C240	CLMGU3C277	CLMGU3C480	CLMGU3C600	

Control Module Rectifier[®]

Туре	Device	Contactor Size	Number of Poles	Catalog Number	List Price \$
CLM	CLM†C to CLM†F	30-200 Amps	All	CLMKCMR	

① Product Category: IEC.

² Coil kits for 20 amp CLM contactors include the coil clearing auxiliary contact.

³ For 30-200 amp CLM contactors, in the event that either the coil or the control module fails, it is recommended that both be replaced.

Replacement Parts Miscellaneous

Selection

Replacement Handle Assemblies and Disconnect Mechanisms Enclosure Types 1, 3R, 4, 4X Stainless Steel & 12

			Handle Assembly Only		Handle Assembly and Disconnect Mechanism		
Class	Disconnect (Amps)	Enclosure Size	Catalog Number	List Price \$	Catalog Number	List Price \$	
17, 25, 32, 84, 87, CM, LE	30, 60 & 100		75D73944015		75D68257103		
37, 88	30 & 60		75D73944018		75D68257048		
17, 25, 32, 84	200	All Standard and Extra-wide Sizes	75D73944015		75D68257105		
37, 88, CM, LE	200	All Standard and Extra-wide Sizes	75D73944015		75D68257063		
87	200		75D73944023		75D68257068		
17, 25, 37, 87, 88, CM, LE	400 & 600		75D73944027		75D68257078		
	Motor Circuit		Handle Assembly Only		Handle Assembly and Disconnect Mechanism		
Class	Interrupter (Amps)	Enclosure Size	Catalog Number	List Price \$	Catalog Number	List Price \$	
18, 26, 32, CM, LE	3 - 125	(24"H x 11"W x 8"D), (24"H x 20"W x 8"D)	75D73944025		75D68257080		
18, 26, 32	100 - 125	(36"H x 24"W x 8"D)	75D73944025	7	75D68257073	1	
18, 26, 32	150 & 250		75D73944028	7	75D68257089	1	
18, 26, 37, 87, 88, CM	300 - 600		75D73944027		75D68257078		
87	3 - 125		75D73944025		75D68257080		
87	150	All Standard Sizes	75D73944028		75D68257089		
87	250	All Standard Sizes	75D73944011		75D68257077		
37, 88	30 - 125		75D73944025		75D68257073		
37, 84, 88, CM	150 - 250		75D73944011		75D68257077		
84	3 - 125		75D73944025		75D68257074		

Quarter Turn Assemblies

Description	Class	Enclosure Type	Catalog Number	List Price \$
	17, 18, 25, 26, 32, 87 & 88	1, 3/3R & 12	75D46260004	
		4 & 4X	75D46260005	

3

4

5

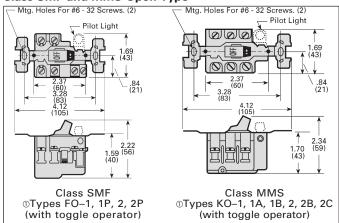
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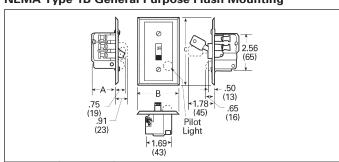
9

Dimensions

Class SMF and MMS Open Type

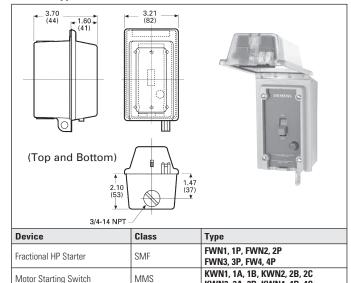


NEMA Type 1B General Purpose Flush Mounting

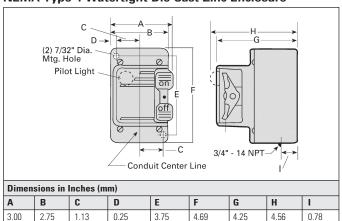


	Type of		Dimens	ions in In	ches (mm)
Device	Operator	Туре	Α	В	С
		FF1, 1P, 2, 2P	1.44	2.75	4.50
	Toggle	FS1, 1P, 2, 2P	(37)	(70)	(114)
CI CNAF	Toggie	FSJ1P, 2P	1.44	3.50	5.25
Class SMF Fractional		13311, 21	(37)	(89)	(133)
HP Starter	FF3 3P 4 4	FF3, 3P, 4, 4P	1.44	2.75	4.50
TII Starter	Key	FS3, 3P, 4, 4P	(37)	(70)	(114)
	IKCy	FSJ3P. 4P	1.44	3.50	5.25
		13331, 41	(37)	(89)	(133)
		KF1, 1A, 1B, 2, 2B, 2C	1.75	2.75	4.50
Class	Toggle	KS1, 1A, 1B, 2, 2B, 2C	(44)	(70)	(114)
MMS	Toggic	KSJ1A, 1B, 2B, 2C	1.75	3.50	5.25
Motor		K331A, 1D, 2D, 20	(44)	(89)	(133)
Starting		KF3, 3A, 3B, 4, 4B, 4C	1.75	2.75	4.50
Switch	Key	KS3, 3A, 3B, 4, 4B, 4C	(44)	(70)	(114)
	1107	KSJ3A, 3B, 4B, 4C	1.75	3.50	5.25
		1000A, 3D, 4B, 40	(44)	(89)	(133)

NEMA Type 3R, 4 and 12



NEMA Type 4 Watertight Die Cast Zinc Enclosure



KWN3, 3A, 3B, KWN4, 4B, 4C

Device	Class	Туре
Fractional HP Starter	SMF	FW1, 1P, 2, 2P
Motor Starting Switch	MMS	KW1, 1A, 1B, 2, 2B, 2C

(119)

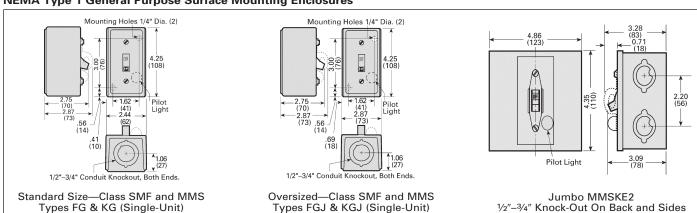
(108)

(116)

(20)

(95)

NEMA Type 1 General Purpose Surface Mounting Enclosures



(76)

(70)

(28)

(6)

Note: Dimensions for reference, not for construction. Dimensions are in inches (mm).

① Dimensions typical for key operator devices.

2

1

5

7

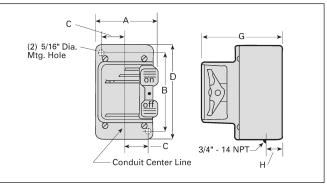
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9

NEMA Type 7 and 9 Cast Aluminum Enclosure

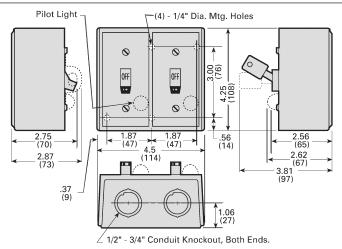
Dimensions in Inches (mm)							
Α	В	С	D	G	Н		
4.00	5.75	1.38	6.36	4.38	1.20		
(101)	(146)	(35)	(161)	(111)	(30)		

Device	Class	Туре
Fractional HP Starter	SMF	FR1, FR2
Motor Starting Switch	MMS	KR1, KR2



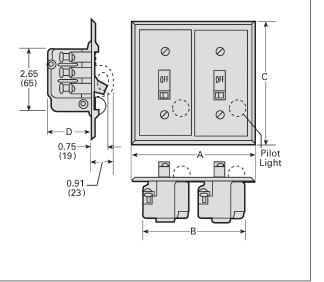
NEMA Type 1 General Purpose Enclosure For Two Unit Devices

Device	Type of Operator	Class	Туре
One Starter	Toggle	SMF	FG02, 02P
One starter	Key	SMF	FG04P
Two Starters	Toggle	SMF	FG222, 222P
I WU Starters	Key	SMF	FG44P
One Starter and	Toggle	SMF	FG71, 71P, 72, 72P
One Sel. Switch®	Key	SMF	FG74P
Reversing Switch®	Toggle	MRS	KG11, 11A, 11B, 22, 22A, 22B, 22C
Two Speed Starter	Toggle	SMF	FG11, 11P, 22, 22P
Two Speed Switch	Toggle	MMS	KG11, 11A, 11B, 22, 22B, 22C



NEMA Type 1B General Purpose Flush Mounting For Two Unit Devices

Device ³	Type of Operator	Class	Туре	A	В	С	D
	Toggle	SMF	FF22, 22P	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)
Two	Toggie	JIVII	FS22P	4.56 (116)	3.50 (89)	4.50 (114)	1.44 (37)
Starters	Kev	SMF	FF44P	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)
	Key	OIVII	FS44P	4.56 (116)	3.50 (89)	4.50 (114)	1.44 (37)
One	Toggle	SMF	FF71, 71P, 72, 72P	5.25 (133)	0.75 (19)	5.25 (133)	2.00 (51)
Starter and One	roggic	OIVII	FS71P, 72P	4.56 (116)	3.50 (89)	4.50 (114)	2.00 (51)
Selector Switch [®]	Kev	SMF	FF74P	5.25 (133)	3.75 (95)	5.25 (133)	2.00 (51)
	Noy	Olvii	FS74P	4.56 (116)	3.50 (89)	4.50 (114)	2.00 (51)
Reversing Switch	Toggle	MRS	KF11, 11A, 11B KF22, 22A 22B, 22C	5.25 (133)	3.75 (95)	5.25 (133)	1.75 (44)
Two Speed Switch	Toggle	SMF	FF11, 11P, 22, 22P	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)
Two Speed Switch	Toggle	MMS	KF11, 11A, 11B 22, 22B, 22C	5.25 (133)	3.75 (95)	5.25 (133)	1.44 (37)

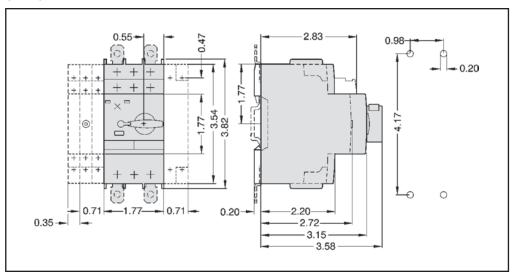


Dimensions for reference, not for construction Dimensions are in inches (mm).

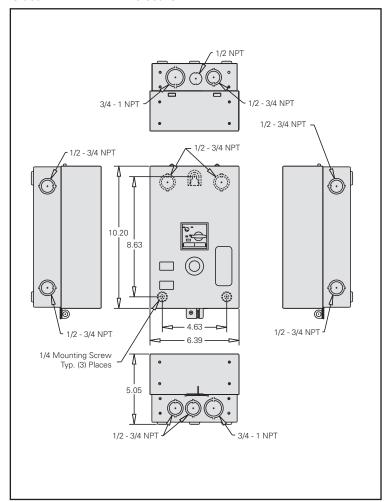
- Selector switch is on the left, increases overall depth to 3.50 in. (89 mm).
- ② Only one pilot light (located on right) is used on MRS switches.
- (a) Dimensions include factory wired power connections.
- Selector switch is on the left, extends 1.62 in. (41 mm) from mounting surface.

Dimensions

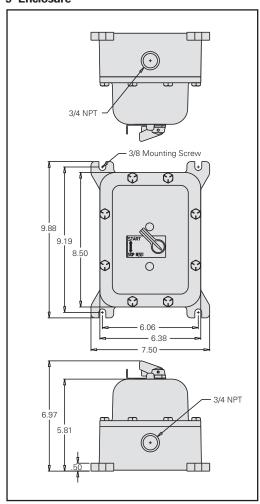
3RV102



Class 11 - NEMA 1 Enclosure

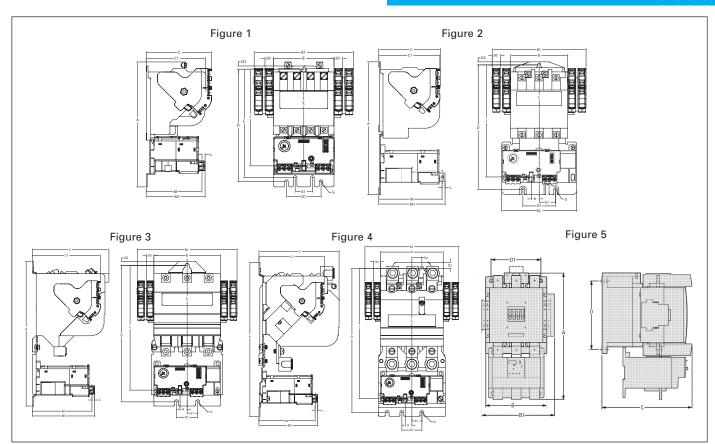


Class 11 - NEMA 7 & 9, 3 & 4, and NEMA 7 & 9 Enclosure



Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Dimensions



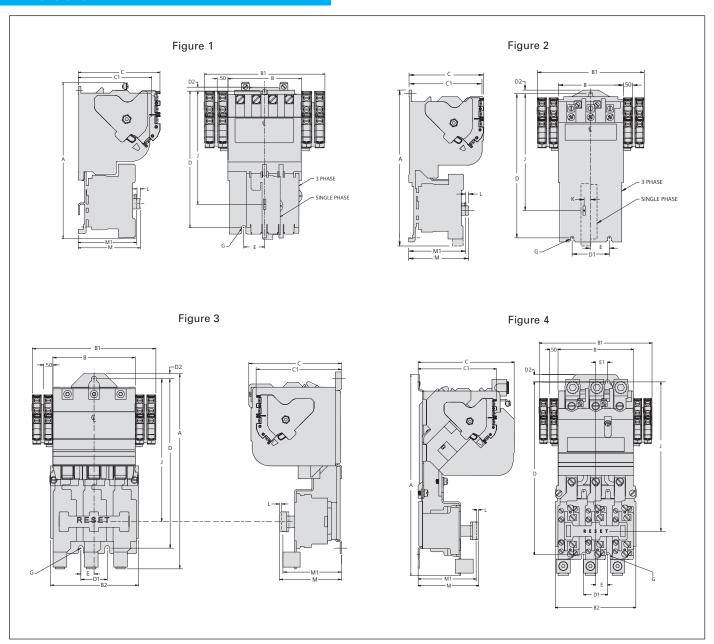
Open Type Solid State Overload

		Outline	Dimensio	ns				Mounti	ng Dimens	sions			Mounting Screw	Reset Dimensions					
Size	Figure	Α	В	B1	B2	С	C1	D	D1	D2	E	E1	E2	G	J	К	L	М	M1
00-13/4	1	7.44	3.50	5.75	_	3.75	3.50	6.50	2.00	0.19	6.27	1.00	_	#10	5.60	_	0.18	3.23	3.41
		(189)	(89)	(146)		(95)	(89)	(165)	(51)	(5)	(159)	(25)			(142)		(5)	(82)	(87)
2-21/2	2	8.13	3.50	5.75	4.60	4.00	3.77	7.62	2.00	0.19	_	1.00	_	#10	6.87	0.48	0.18	3.88	4.06
		(207)	(89)	(146)	(117)	(102)	(96)	(194)	(51)	(5)		(25)			(174)	(12)	(5)	(99)	(103)
3-31/2	3	9.78	4.50	6.75	_	5.19	4.66	9.22	1.44	0.28	_	0.72	_	0.25	8.43	0.48	0.18	4.04	4.22
		(248)	(114)	(171)		(132)	(118)	(234)	(37)	(7)		(18)		(6)	(214)	(12)	(5)	(103)	(107)
4	4	11.06	4.50	6.75	_	5.75	4.66	10.34	1.44	0.44	_	0.72	0.72	0.25	9.35	0.48	0.18	4.04	4.22
		(281)	(114)	(171)		(146)	(118)	(263)	(37)	(11)		(18)	(18)	(6)	(237)	(12)	(5)	(103)	(107)
5	5	12.76	5.71	6.89	_	8.54	_	7.09	4.72	_	_	_	_	0.35	_	_	_	_	_
		(324)	(145)	(175)		(217)		(180)	(120)					(9)					
6	6	13.03	6.30	7.48	_	9.29	_	7.09	5.12	_	_	_	_	0.35	_	_	_	_	_
		(331)	(160)	(190)		(236)		(180)	(130)					(9)					

Note: Dimensions in inches (millimeters). Dimensions

Heavy Duty Motor Starters & Contactors Ambient Compensated Bimetal Class 14

Dimensions

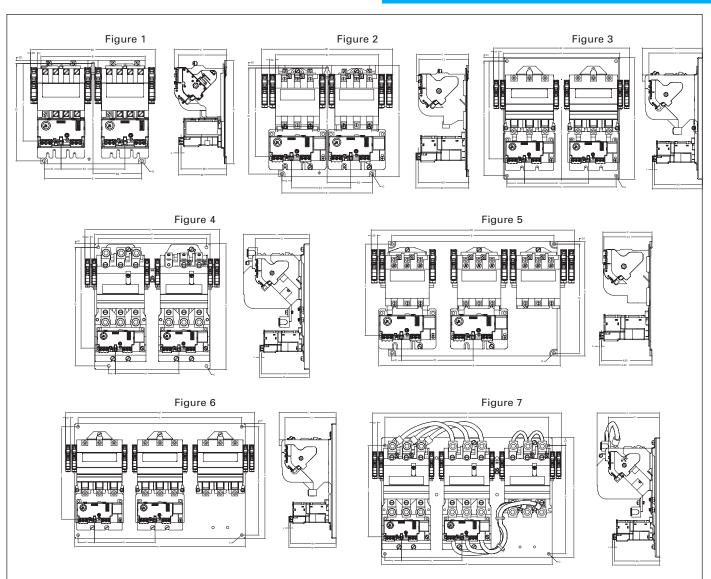


Open Type Ambient Compensated Bimetal Overload

		Outline	Dimensio	ons			Mountir	ng Dimens	ions			Mounting Screw	Reset Dimensions						
Size	Figure	Α	В	B1	C	C1	D	D1	D2	E	E1	G	J	K	L	М	M1		
00-13/4	1	7.45 (189)	3.50 (89)	5.75 (146)	3.89 (99)	3.50 (89)	6.50 (165)	_	0.19 (4.8)	1.00 (25)	_	#10	5.39 (137)	_	0.16	2.97 (75)	2.81 (71)		
2-21/2	2	8.38 (213)	3.50 (89)	5.75 (146)	4.00 (102)	3.77 (96)	7.75 (197)	2.00 (51)	0.19 (4.8)	1.00	_	#10	6.28 (160)	0.36	0.16	3.22 (82)	3.06 (78)		
3-3½	3	10.66 (271)	4.50 (114)	6.75 (171)	5.06 (129)	4.66 (118)	9.25 (235)	1.44 (37)	0.28 (7)	0.72 (18)	_	0.25 (6)	7.81 (198)	_	0.12 (3)	3.39 (86)	3.27 (83)		
4	4	12.02 (305)	4.50 (114)	6.75 (171)	5.75 (146)	4.66 (118)	10.34 (263)	1.44 (37)	0.44 (11)	0.72 (18)	0.72 (18)	0.25 (6)	8.78 (223)	_	0.12 (3)	3.63 (92)	3.51 (89)		

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Dimensions



Class 22 Reversing & Class 30 2 Speed/2 Winding

Glass 2	LZ INEVE	Silly 6	Class	30 Z 31	Jeeu/2	- VVIIIC	iiiig												
											Mounting								
		Outline	Dimension	ıs				Mounting	Dimension	ns	Screw	Reset	Dimens	ions					
Size	Figure	Α	В	B1	B2	С	C1	D	D1	E	G	J	K	K1	L	M	M1		
00-134	1	7.69	7.75	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.18	3.58	3.40		
2-21/2	2	8.94	8.25	10.50	3.62	4.17	3.98	8.50	0.22	7.25	#10	7.10	0.77	4.75	0.18	4.23	4.05		
3-31/2	3	11.44	10.94	12.75	_	5.65	5.03	10.75	0.34	10.25	#10	9.18	1.64	6.00	0.18	4.69	4.51		
4	4	11.91	10.94	12.75	_	6.22	5.12	11.22	0.34	10.25	0.25	9.53	0.65	6.00	0.18	4.68	4.50		

Class 30 2 Speed/1 Winding

Glass S	v z Spe	eu/ i v	viiiuiiig	,													
											Mounting						
		Outline	Dimension	ıs				Mounting	Dimensio	Screw	Reset Dimensions						
Size	Figure	Α	В	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1
00-13/4	1	7.69	7.75	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.18	3.58	3.40
2-21/2	5	9.19	14.55	16.30	l —	3.94	3.85	8.75	0.22	13.00	#10	7.33	0.77	5.75	0.18	4.23	4.05
3-31/2	6	11.44	16.94	18.75	l —	5.65	5.07	10.75	0.34	16.25	#10	9.18	1.64	6.00	0.18	4.68	4.50
4	7	11 91	16 94	17 75	_	6 22	5 12	10.75	0.82	16.25	#10	9.06	1 64	6.00	0.18	4 68	4 50

Note: Dimensions for reference, not for construction. Contact sales office for dimensions not listed. Dimensions are in inches (mm).

9/137

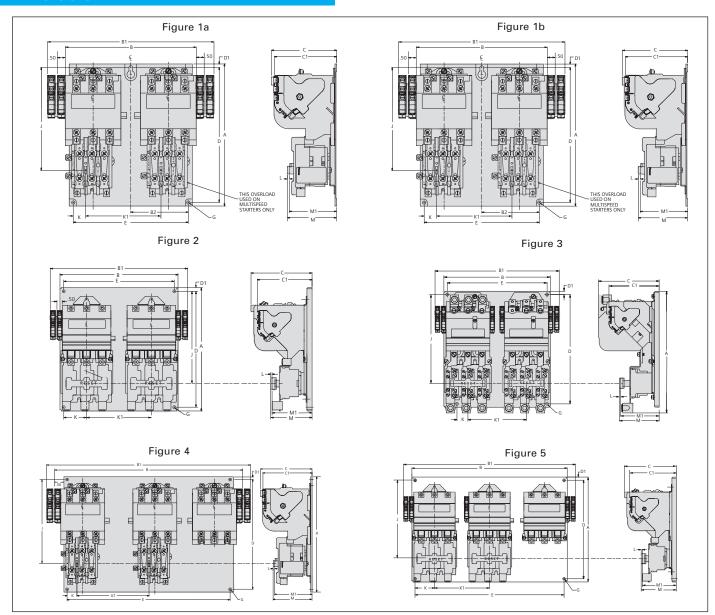
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Reversing & Multispeed Heavy Duty Starters Ambient Compensated Bimetal Overload Class 22, 30

Dimensions



Class 22 Reversing & Class 30 2 Speed/2 Winding with Bimetal Overload

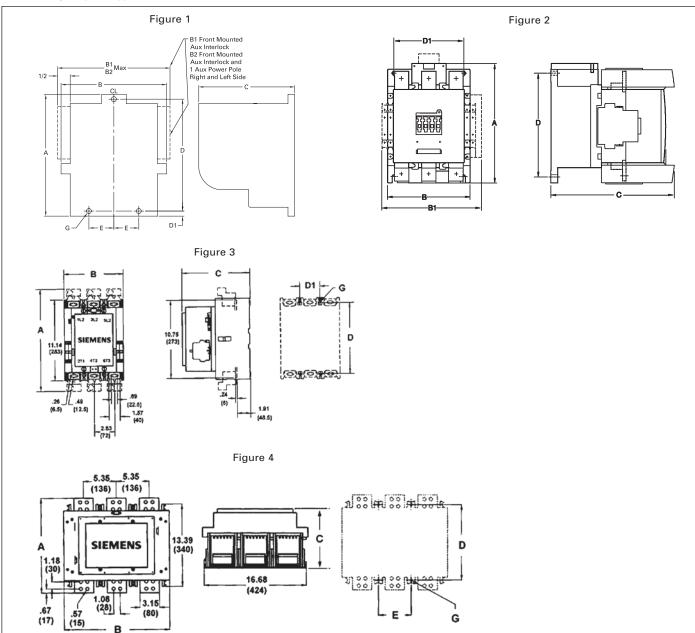
		Outline	Dimensio	ns				Mounti Screw	ng		Mounting Dimensions	Reset Dimensions						
Size	Figure	A	В	B1	B2	С	C1	D	D1	E	G	J	K	K1	L	М	M1	
00-134	1a	7.69	8.25	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.60	1.25	4.75	0.16	3.12	3.07	
2-21/2	1b	8.94	8.25	10.50	3.62	4.17	3.98	8.50	0.22	7.25	#10	6.46	0.79	4.75	0.16	3.10	3.05	
3-31/2	2	11.44	10.94	12.94	_	5.66	5.08	10.75	0.34	10.25	#10	8.56	2.12	6.00	0.12	3.83	3.71	
4	3	12.50	10.94	12.75	_	6.22	5.16	11.22	0.34	10.25	0.25	9.11	2.12	6.00	0.12	4.09	3.97	

Class 30 2 Speed/1 Winding with Bimetal Overload

		Outline	Dimensio	ns				Screw Dimensio			Mounting Dimensions	ns Reset Dimensions							
Size	Figure	Α	В	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1		
00-134	1a	7.69	8.25	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.60	1.25	4.75	0.16	3.12	3.07		
2-21/2	4	9.19	14.56	16.25	_	4.11	3.92	8.75	0.22	13.00	0.25	6.71	0.78	5.75	0.16	3.10	3.05		
3-31/2	5	11.44	16.94	18.75	_	5.66	5.08	10.75	0.34	16.25	0.25	8.56	2.12	6.00	0.12	3.83	3.71		

Note: Dimensions for reference, not for construction. Contact sales office for dimensions not listed. Dimensions are in inches (mm).

Full Voltage Open Type NEMA Contactor Size 00-8



Open Type

Open	уре										
	3rd Character	Outline	Dimensions					Mounting Dimensions			Mounting Screw
Size	of Catalog No. ^①	Fig	Α	В	B1	B2	С	D	D1	E	G
00-13/4	C, D, E	1	4.31 (110)	3.94 (100)	4.25 (108)	4.75 (121)	3.75 (70)	3.94 (100)	0.19 (5)	1.00 (25)	#10
2-21/2	F,G	1	4.88 (124)	3.94 (100)	4.25 (108)	_	4.00 (102)	4.50 (114)	0.19 (5)	1.00 (25)	#10
3-31/2	H, I	1	6.13 (156)	5.13 (130)	5.50 (140)	_	5.06 (129)	5.63 (143)	0.25 (6)	0.75 (19)	0.25 (6)
4	J	1	7.81 (198)	5.19 (132)	5.50 (140)	_	5.75 (146)	6.56 (167)	0.81 (21)	0.75 (19)	0.5 (13)
5	L	2	8.27 (210)	5.71 (145)	6.89 (175)	_	8.54 (217)	7.09 (180)	4.72 (120)	<u> </u>	0.35 (9)
6	M	2	8.43 (214)	6.3 (160)	7.48 (190)	_	9.29 (236)	7.09 (180)	5.12 (130)	_	0.35 (9)
7	N	3	14.05 (357)	8.27 (210)	_		9.53 (242)	9.80 (249)	2.83 (72)	T —	0.25 (6)
8	Р	4	15.41 (392)	17.23 (438)	_		10.56 (268)	12.28 (312)	_	5.35 (136)	0.35 (9)

Note: Dimensions for reference, not for construction.

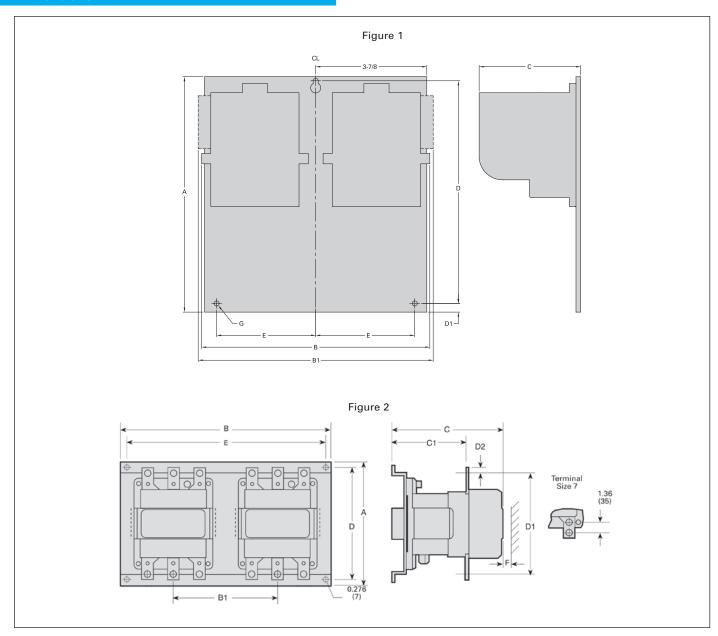
Contact sales office for dimensions not listed.

Dimensions are in inches (mm).

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① 3rd character of catalog number identifies contactor rating.



Open Type Horizontal Mounted

		Outline Dimen	sions				Mounting Dimensions				Mouning Screw
Size	Fig.	Α	В	B1	C	C1	D	D1	E	F	G
00-13/4	1	7.69 (195)	7.75 (197)	9.25 (235)	3.88 (98)	I —	7.25 (184)	0.25 (6)	3.63 (92)	_	#10
2, 21/2	1	8.94 (227)	7.75 (197)	9.25 (235)	4.56 (116)	_	8.5 (216)	0.25 (6)	3.63 (92)	_	#10
3-31/2	1	11.44 (291)	10.94 (278)	11.50 (292)	5.19 (132)	—	10.75 (273)	0.38 (6)	5.13 (130)	—	0.25
4	1	8.50 (216)	10.94 (278)	11.50 (292)	6.25 (159)	l —	7.81 (198)	0.38 (6)	5.13 (130)	_	0.25
5	2	18.07 (459)	14.20 (361)	_	9.44 (240)	I —	17.20 (437)	_	9.61 (244)		_
6	2	11.61 (295)	18.88 (480)	9.45 (240)	10.85 (276)	7.44 (189)	10.44 (265)	10.71 (272)	17.72 (450)	1.18 (30)	—

Note: Dimensions for reference, not for construction. Contact sales office for dimensions not listed.

Overload (55 - 630 Amps), SIRIUS 3RB20

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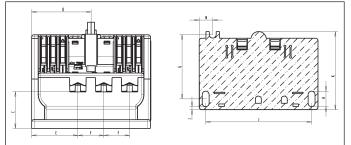
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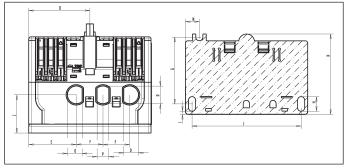
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-0.24

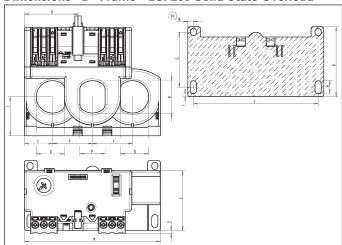
Dimensions "A" Frame—ESP200 Solid State Overload



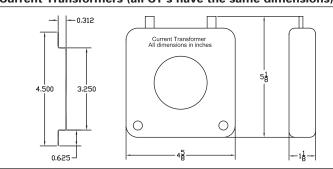
Dimensions "A1" Frame—ESP200 Solid State Overload



Dimensions "B" Frame—ESP200 Solid State Overload

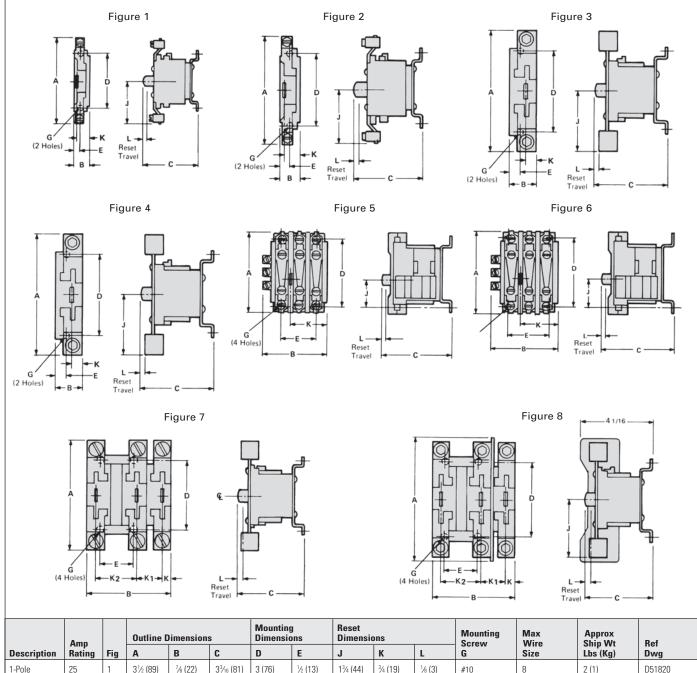


Current Transformers (all CT's have the same dimensions)



	-5.71———	-	-		5	.94
Dimensions	Frame	Size A	Frame	Size A1	Frame	Size B
Dilliciisiolis	mm	in.	mm	in.	mm	in.
Α	80	3.15	80	3.15	100.4	3.95
В	12.6	0.5	12.6	0.5	8.6	0.34
С	27.7	1.1	28	1.10	32.6	1.28
D	44.85	1.77	44.85	1.77	44.85	1.77
E	34.9	1.37	34.9	1.37	23.5	0.93
F	19.6	0.77	19.6	.077	33.5	1.32
G	48.95	1.93	48.95	1.93	46.23	1.82
Н	10.7	0.42	10.7	0.42	10.9	0.43
I	2.3	0.09	2.3	0.09	2.4	0.09
J	80	3.15	80	3.15	104.6	4.12
К	53.9	2.12	53.9	2.12	58.6	2.31
L	66.0	2.6	55.9	2.20	50	1.97
М	89.7	3.53	89.7	3.53	114	4.49
N	10.18	0.40	10.18	0.40	4.7	0.19
0	_	_	10.77	0.42	23.6	0.93
Р	_	_	8.62	0.34	21.1	0.83
R	_	_	12.9	0.51	27.1	1.07
S	95	0.37	_	_	2.45	0.1

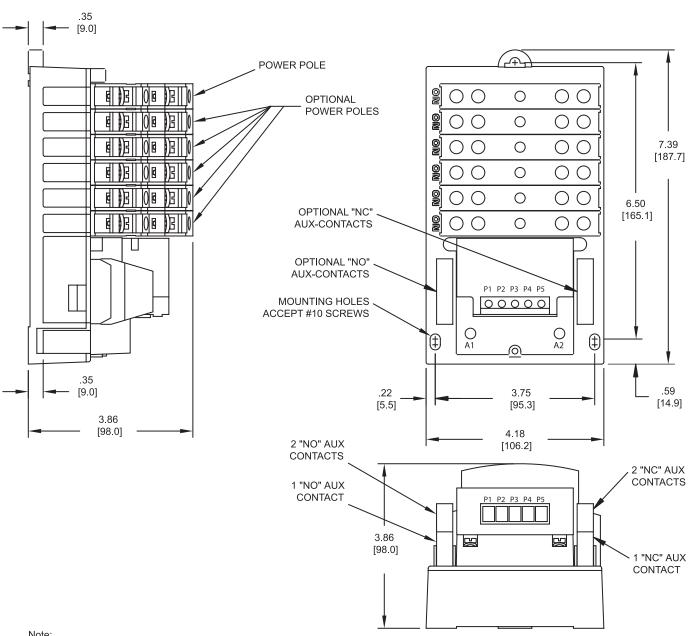
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Description	Rating	Fig	Α	В	С	D	E	J	К	L	G	Size		Lbs (Kg)	Dv	
1-Pole Bimetal Ambient Compensated	25 60 100 180	1 2 3 4	3½ (89) 4½ (124) 4½ (124) 5½ (151)	7/8 (22) 7/8 (22) 11/4 (32) 11/4 (32)	3 ³ / ₁₆ (81) 3 ³ / ₁₆ (81) 3 ⁹ / ₁₆ (90) 3 ⁹ / ₁₆ (90)	3 (76) 3 (76) 3½ (89) 3½ (89)	½ (13) ½ (13) ¾ (14) ¾ (14)	1 ³ / ₄ (44) 2 ⁷ / ₁₆ 2 ⁷ / ₁₆ 3 (76)	3/4 (19) 3/4 (19) 1/2 (13) 1/2 (13)	1/8 (3) 1/8 (3) 1/8 (3) 1/8 (3)	#10 #10 #10 #10	8 1 00 250 MCN	М	2 (1) 2 (1) 3 (1) 4 (2)	D5 ⁻	1820 1830 1833 2206
						Mountin	g	Reset				N/I	ter.	May	Annroy	

	Amp		Outline D	imensions	3	Mounting Dimension		Reset Dimension	ons				Mtg Screw	Max Wire	Approx Ship Wt	Ref
Description	Rating	Fig	Α	В	С	D	E	J	K	K1	K2	L	G	Size	Lbs (Kg)	Dwg
3-Pole	30	5	3% (92)	31/16 (78)	31/2 (79)	3 (76)	1½ (38)	11/4 (32)	1 13/16 (46)	_	_	³⁄16 (5)	#10	8	3 (1)	D54791
Bimetal	60	6	31/4 (98)	31/16 (78)	31/4 (79)	3 (76)	1½ (38)	11/4 (32)	1 13/16 (46)	l —	l —	³ / ₁₆ (5)	#10	2	3 (1)	D54823
Ambient	100	7	41/8 (124)	47/16 (113)	3%6 (90)	3½ (89)	1% (41)	27/16 (62)	%16 (14)	115/16 (49)	2 (51)	1/4 (3)	#10	00	4 (2)	D51868
Compensated	180	8	6½ (165)	4½16 (113)	3%6 (90)	3½ (89)	1% (41)	3 (76)	⁹ / ₁₆ (14)	115/16 (49)	2 (51)	1/4 (3)	#10	250 MCM	5 (2)	D52038

Note: Dimensions for reference, not for construction. Dimensions in inches (mm).



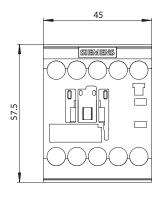
Note:

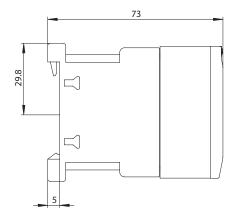
- 1) Mounting Dimensions remain the same for 1 to 12 Poles
- 2) Line and Load terminals are inter-changeable
- 3) Up to 2NO and 2NC auxiliary contacts can be added onto the base product
- 4) Same Power Pole can be configured as NO type or NC type

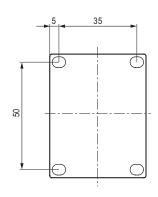
Lighting & Heating Contactors Open Contactors, Class LE

Dimensions

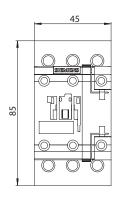
LEN00B (20A 3 Pole and 4 Pole)

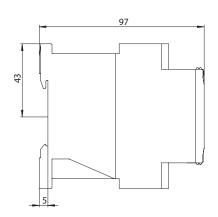


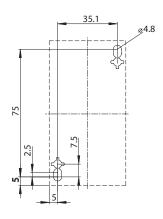




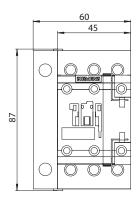
LEN00C003 (30A 3 Pole)

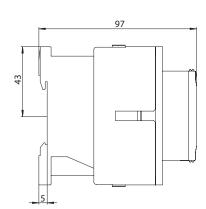


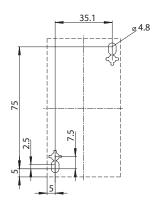




LEN00C004 (30A 4 Pole)







Lighting & Heating Contactors

Open Contactors, Class LE

Dimensions

2

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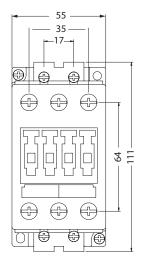
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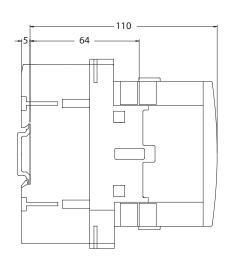
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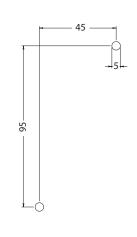
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9

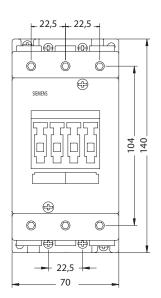
LEN00D003 (60A 3 Pole)

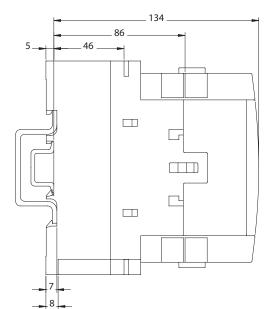


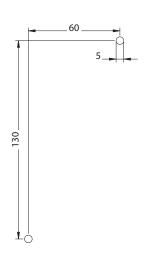




LEN00E003 (100A 3 Pole)

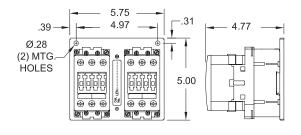


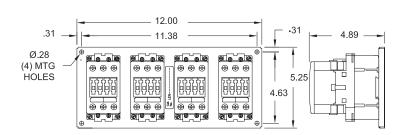




LEN00C006 (30A 6 Pole) LEN00D006 (60A 6 Pole)

LEN00C009 (30A 9 Pole) and LEN00D009 (60A 9 Pole) LEN00C012 (30A 12 Pole) and LEN00D012 (60A 12 Pole)



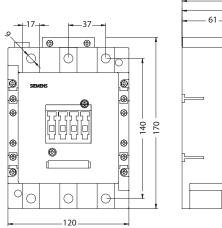


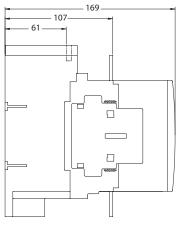
Note - Only the 12 pole contactor is shown. However, the dimensions of the mounting plate are the same for the 9 pole contactor.

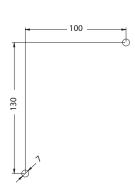
Lighting & Heating Contactors Open Contactors, Class LE

Dimensions

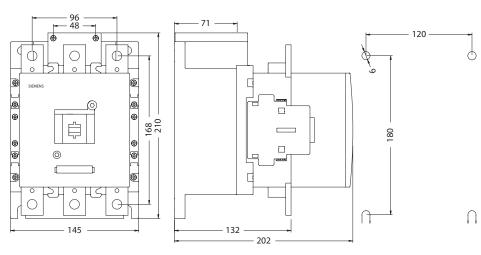
LEN00F003 (200A 3 Pole)



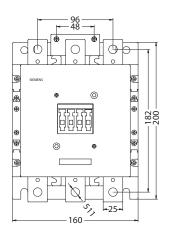


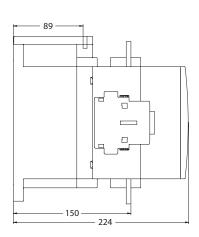


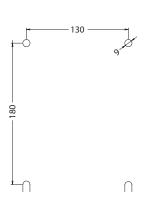
LEN00G003 (300A 3 Pole)



LEN00H003 (400A 3 Pole)



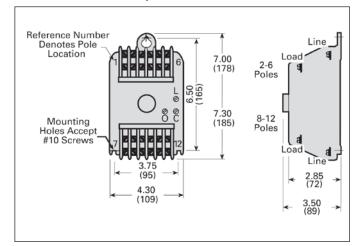


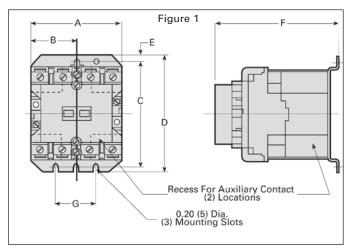


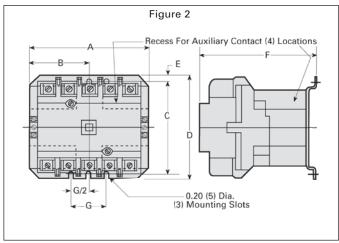
Lighting & Heating Contactors Mechanically / Magnetically Held Lighting Contactors, Class CLM

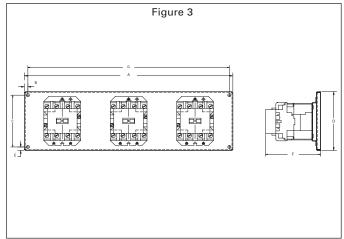
Dimensions

CLM Contactor, 20 Amp







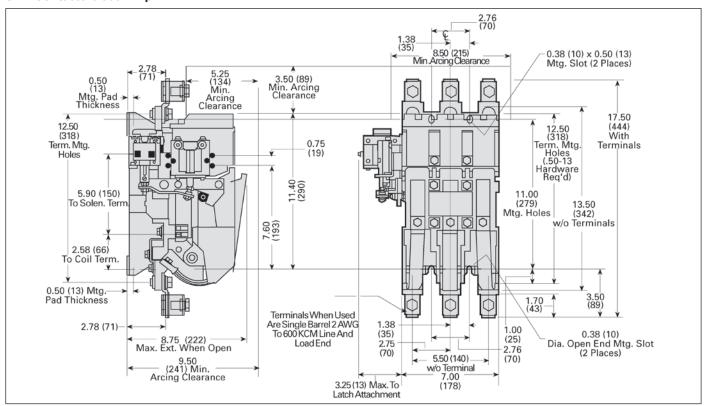


Open Type Lighting and Heating Contactors

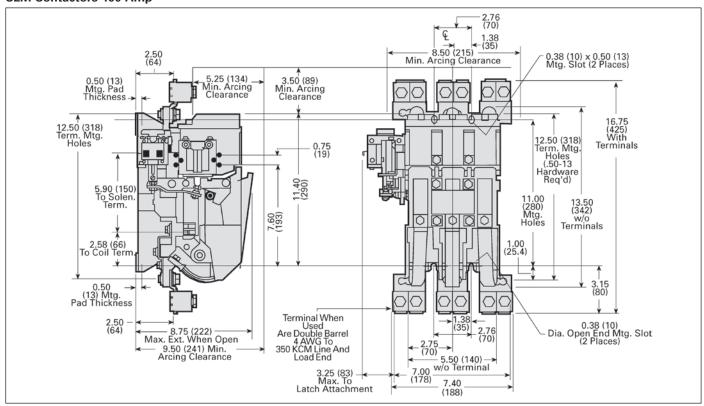
Class	Figure Number	Amp Rating	Number of Poles	A	В	С	D	E	F	G
	1	30	2-4	3.31 (84)	1.65 (42)	3.95 (100)	4.38 (111)	0.23 (6)	4.61 (117)	1.50 (38)
	1	30	5	4.19 (106)	2.09 (53)	3.95 (100)	4.38 (111)	0.23 (6)	4.61 (117)	1.50 (38)
	2	60	2, 3	3.31 (84)	1.65 (42)	3.95 (100)	4.38 (111)	0.23 (6)	4.94 (125)	1.50 (38)
CLM	2	60	4, 5	5.06 (129)	2.53 (64)	3.95 (100)	4.38 (111)	0.23 (6)	4.94 (125)	1.50 (38)
	2	100	2, 3	4.62 (117)	2.31 (59)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	2	100	4, 5	7.25 (184)	3.62 (92)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	2	200	2, 3	4.62 (117)	2.31 (59)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	2	200	4, 5	7.25 (184)	3.62 (92)	6.00 (152)	6.62 (168)	0.38 (10)	6.75 (171)	1.88 (48)
	3	30, 60	6-12	18.62	0.312	4.62	5.25	0.312	4.98	18.00

Note: Dimensions for reference, not for construction. Dimensions in inches (mm).

CLM Contactors 300 Amp



CLM Contactors 400 Amp



Note: Dimensions for reference, not for construction. Dimensions in inches (mm). • Revised • 03/25/15

Industrial Control Power Transformers

Class MT

Dimensions

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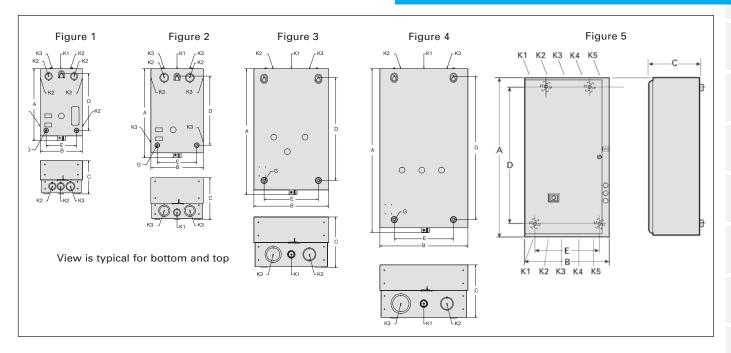
For the latest CAD or PDF dimension drawings, look on our website at www.industry.usa.siemens.com/automation/us/en/industrial-controls/products/control-power-transformers/Pages/dimensional-drawings.aspx

Industrial Control Power Transformers Class MTG

• Revised • 03/25/15

Dimensions

For the latest CAD or PDF dimension drawings, look on our website at www.industry.usa.siemens.com/automation/us/en/industrial-controls/products/control-power-transformers/Pages/dimensional-drawings.aspx



NEMA 1 General Purpose Enclosure (Standard width for use with or without $\mathsf{CPT})^{^{^{\circ}}}$

	Max CPT		Outline Dim	ensions		Mounting D	imensions	Mounting Screw	Conduit S	Size				Approx Ship Wt	
Size	Size	Figure	Α	В	C	D	E	G	K1	K2	К3	K4	K5		Ref Dwg
00-13/4	w/o CPT	1	10 ³¹ / ₃₂ (279)	613/32 (163)	51/32 (128)	8 1/32 (209)	4% (117)	1/4	1/2	1/2-3/4	3/4-1	_	_	10 (5)	D68870
2-21/2	w/o CPT	2	1317/32 (344)	731/32 (202)	6% (162)	101/4 (260)	6 (152)	1/4	1/2-3/4	3/4-1	1-11/4		_	15 (7)	D68870
3-31/2	(100VA)	3	191/8 (486)	11% (289)	711/16 (195)	15% (397)	81/4 (210)	1/4	1/2-3/4	1-11/4	1½-2		_	26 (12)	D68870
4	(300VA)	4	241/8 (632)	13% (340)	81/6 (206)	21¾ (552)	9 (229)	1/4	1/2-3/4	11/4-11/2	2-21/2		_	37 (17)	D68870
5	(300VA)	5	40 (1016)	20 (508)	11 (279)	37% (956)	151/4 (387)	1/4	2-3	11/4-11/2	1/2-3/4	11/4-11/2	2-3	135 (36)	D65608
6, 7	(300VA)	5	48 (1219)	20 (508)	12½ (317)	45¾6 (1148)	10 (254)	1/4	2-21/2	11/4-11/2	1/2-3/4	11/4-11/2	2-21/2	150 (44)	D65608013
8		5	79 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)							275 (125)	D56032006

NEMA 1 General Purpose Enclosure (Extra wide for use with ${\bf CPT)}^{\odot}$

	Max CPT		Outline Dim	ensions		Mounting D	imensions	Mounting Screw	Conduit	Size				Approx Ship Wt	
Size	Size	Figure	Α	В	C	D	E	G	K1	K2	К3	K4	K5	Lbs (Kg)	Ref Dwg
00-13/4	(200VA)	3	191/8 (486)	11% (289)	711/16 (195)	15% (397)	81/4 (210)	1/4	1/2-3/4	1-11/4	1½-2	_	_	26 (12)	D68870
2-21/2	(200VA)	3	191/8 (486)	11% (289)	711/16 (195)	15% (397)	81/4 (210)	1/4	1/2-3/4	1-11/4	1½-2	_		26 (12)	D68870
$3-3\frac{1}{2}$	(250VA)	4	241//8 (632)	13% (340)	81/4 (206)	21¾ (552)	9 (229)	1/4	1/2-3/4	1-11/4-11/2	2-21/2	_		37 (17)	D68870

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

9/151

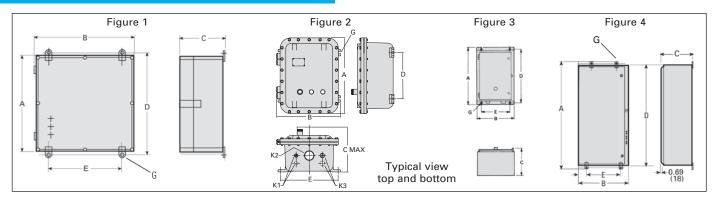
Siemens Industry, Inc. Industrial Controls Catalog

① Clamshell enclosure Size 00 - 4; Standard width and Extra wide.

Heavy Duty Motor Starters & Contactors

Enclosed, Class 14, 40

Dimensions



NEMA 4X Fiberglass Enclosures (Standard width for use with or without CPT)

		Outline Dim	ensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0-21/2	1	14.620 (371)	11.880 (302)	6.890 (175)	15.000 (381)	9.750 (248)	1/4	_	_	_	11 (4.9)	24-139-861-001
3–4	1	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (612.7)	21.250 (539.7)	1/4	_	_	_	28 (12.7)	24-139-861-003

NEMA 7/9/3/4 Hazardous Location Enclosure (Standard width for use with or without CPT)

		Outline Dim	ensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0-13/4 w/o CPT	2	15.250 (387)	10.688 (272)	10.000 (254)	8.500 (216)	9.125 (132)	3/8	1/2	1½	3/4	33 (14.9)	24-139-865-002
2-21/2 (0-13/4 w/ CPT)	2	17.750 (451)	14.688 (373)	10.375 (264)	10.625 (270)	13.250 (337)	3/8	1/2	2	3/4	60 (27.0)	24-139-865-003
3	2	17.750 (451)	14.688 (373)	10.375 (264)	10.625 (270)	13.250 (337)	3/8	1/2	2	3/4	60 (27.0)	24-139-865-003
31/2-4	2	28.688 (729)	17.750 (451)	11.750 (298)	18.375 (467)	15.750 (400)	1/2	1/2	3	3/4	140 (63.5)	24-139-865-004
5	2	48.875 (1038)	22.875 (581)	14 7/8 (377)	29 (373)	21% (533)	5/8	1/2	3	3/4	352 (159)	24-139-865-006

NEMA 7/9/3/4 Hazardous Location Enclosure (Extra wide for use with CPT)

ſ			Outline Dim	ensions		Mounting D	imensions	Mtg Screw	Conduit Size	е		Approx Ship Wt	
	Size	Figure	Α	В	C	D	Е	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
	0-2½ [®]	2	17.750 (451)	14.688 (373)	10.375 (264)	10.625 (270)	13.250 (337)	3/8	1/2	2	3/4	60 (27.0)	24-139-865-003

NEMA 12/3/3R Industrial Use Enclosure (Standard width for use without CPT)

		Outline Dim	ensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0-13/4	3	13.000 (330)	7.750 (197)	5.438 (138)	12.250 (311)	5.000 (127)	1/4	_	_	_	12 (5)	D41547
2-21/2	3	16.000 (406)	8.125 (206)	6.063 (154)	15.250 (387)	5.000 (127)	1/4	l —	_	_	18 (8)	D41547
3-4	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	1/4	_	_	_	49 (22)	D41552

NEMA 12/3/3R Industrial Use Enclosure (Extra wide for use with CPT)

		Outline Dimensions			Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0-13/4	3	13.000 (330)	12.625 (321)	5.375 (137)	12.250 (311)	10.000 (254)	1/4	_	_	_	30 (14)	D17150
2-2 1/2	3	16.000 (406)	13.250 (337)	6.125 (156)	15.250 (387)	11.000 (279)	1/4	_	_	_	33 (15)	D17150
3-3 1/2	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	1/4	—	_	_	49 (22)	D41552
4	3	29.063 (738)	23.188 (589)	9.250 (235)	27.563 (700)	20.000 (508)	3/8	_	_	_	64 (29)	D17150
5	4	40.000 (1016)	20.000 (508)	11.000 (279)	41.000 (1041)	10.000 (254)	3/8	_	_	_		D65608007
6, 7	4	48.000 (1219)	20.000 (508)	12.500 (317)	49.000 (1244)	10.000 (254)	3/8	—	_	_		D65608009
8	5	79.000 (2010)	22.000 (559)	13.000 (330)	78.000 (1981)	18.000 (457)	3/8	_	_	_	275 (125)	D65632006

NEMA 4/4X Stainless Steel Enclosure (Standard width for use without CPT)

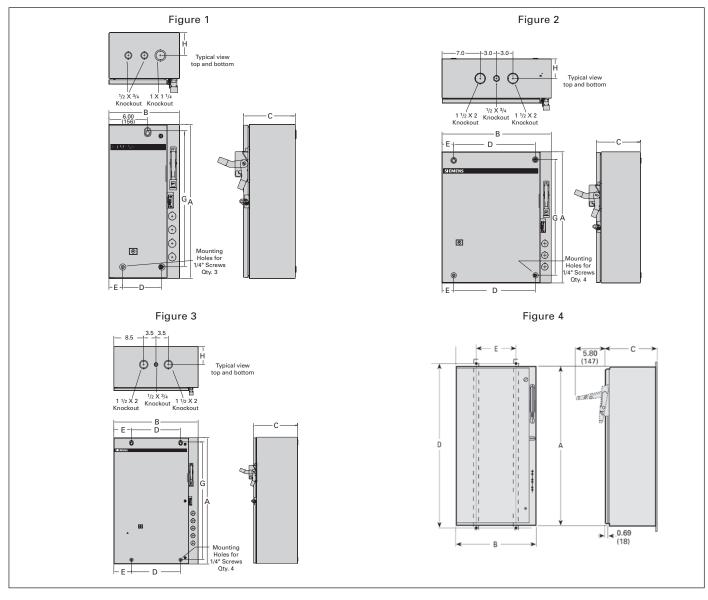
		Outline Dimensions			Mounting D	imensions	Mtg Screw	Conduit Size	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
0-13/4	3	13.000 (330)	7.750 (197)	5.438 (138)	12.250 (311)	5.000 (127)	1/4	_	_	_	17.5 (8)	D41546
2-21/2	3	16.000 (406)	8.125 (206)	6.063 (154)	15.250 (387)	5.000 (127)	1/4	_	_	_	36 (16)	D41546
3-4	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	1/4	_	_	_	67 (30)	D41551

NEMA 4/4X Stainless Steel Enclosure (Extra wide for use with CPT)

		Outline Dimen	sions		Mounting D	Mounting Dimensions M		Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
0-13/4	3	13.000 (330)	12.625 (321)	5.375 (137)	12.250 (311)	10.000 (254)	1/4	_	_	_	30 (14)	D41917
2-21/2	3	16.000 (406)	13.250 (337)	6.000 (152)	15.250 (387)	11.000 (279)	1/4	_	_	_	33 (15)	D42935
3-31/2	3	26.000 (660)	13.125 (333)	7.563 (192)	25.250 (641)	10.000 (254)	1/4	l —	_	_	67 (30)	D41551
4	3	29.000 (737)	23.188 (589)	9.250 (235)	27.500 (699)	20.000 (508)	5/16	_	_	_	64 (29)	D43292
5 (Painted)	4	40.000 (1016)	20.000 (508)	11.000 (279)	41.000 (1041)	10.000 (254)	3/8	_	_	_		D65608007
6, 7 (Painted)	4	48.000 (1219)	20.000 (508)	12.500 (317)	49.000 (1244)	10.000 (254)	3/8	l —	_	_		D65608009
8 (Painted)	5	79.000 (2010)	22.000 (559)	13.000 (330)	78.000 (1981)	18.000 (457)	3/8	_	_	_	275 (125)	D65632006

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

① Used for addition of only CPT on size 2½. If pilot devices are needed, use size 3-3½ enclosure.



NEMA 1 Standard Width 0-6

		Outline Dime	ensions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	Н	Lbs (Kg)	Ref Dwg
0–2	1	24 (610)	11 (279)	8 (203)	6.125 (156)	2.125 (54)	21.00 (533)	3.50 (90)	35 (16)	D68774001
2 1/2, 3 (except 200A Disc)	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	48 (22)	D68774002
3 (200A Disc.), 3 1/2, 4	3	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	101 (46)	D68774003
5	4	72.156 (1833)	20 (508)	11.031 (280)	71 (1803)	16 (406)	T —	_	250 (113)	D56032005
6	4	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	_	_	275 (125)	D56032006

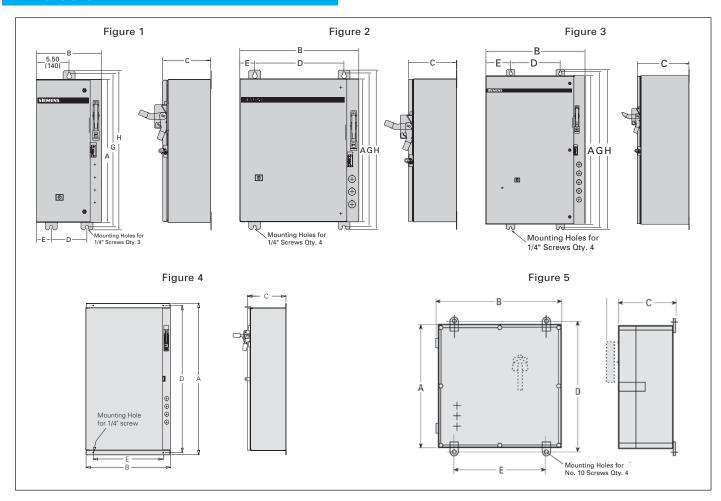
NEMA 1 Extra Wide 0-3

		Outline Dime	ensions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	Н	Lbs (Kg)	Ref Dwg
0-2	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	48 (22)	D68774002
21/2, 3	3	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	101 (46)	D68774003

Combination Heavy Duty Starters

Enclosed, Class 17, 18

Dimensions



NEMA 12/3/3R/4 (Painted), 4/4X (Stainless) Standard Width 0-6

		Outline Dimen	sions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	Н	Lbs (Kg)	Ref Dwg
0-2	1	24 (610)	11 (279)	8 (203)	6.00 (152)	2.50 (64)	25.75 (654)	26.75 (680)	35 (16)	D56033
2 1/2, 3 (except 200A Disc)	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	48 (22)	D56033
3 (200A Disc.), 3 1/2, 4	3	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	101 (46)	D56033
5 (Painted)	4	72.156 (1833)	20 (508)	11.031 (280)	71 (1830)	16 (406)	_	_	250 (113)	D56032005
6 (Painted)	4	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	_	_	275 (125)	D56032006

NEMA 12/3/3R/4 (Painted), 4/4X (Stainless) Extra Wide 0-3

		Outline Dimen	sions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	Н	Lbs (Kg)	Ref Dwg
0–2	2	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (654)	49 (22)	D56033
21/2, 3	3	36 (914)	24 (610)	8 (203)	12.00 (305)	6.00 (152)	37.75 (959)	38.75 (984)	102 (46)	D56033

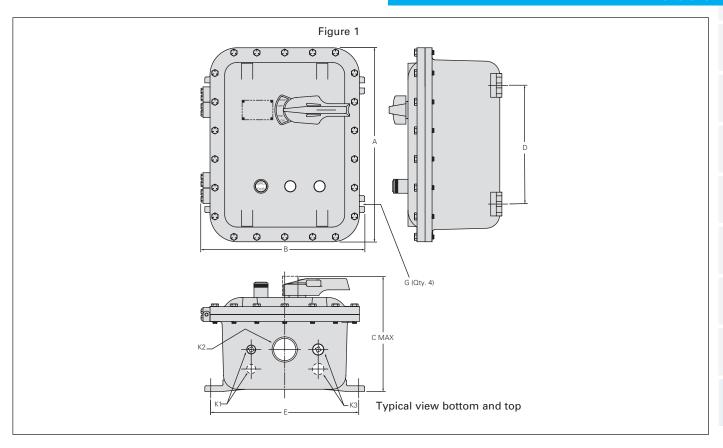
NEMA 4X Fiberglass Standard Width 0-4

		Outline Dimen	sions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	Н	Lbs (Kg)	Ref Dwg
0-13/4	5	23.75 (603)	14.62 (371)	7.12 (181)	24.09 (612)	12.20 (310)	_	_	42 (19)	_
2-31/2	5	23.75 (603)	23.75 (603)	8.50 (216)	24.06 (611)	21.30 (541)	_	_	44 (20)	_
4	5	39.37 (1000)	29.52 (750)	12.20 (310)	40.94 (1040)	27.95 (710)	_	_	55 (25)	_

Note: Dimensions in inches (mm).

Dimensions for reference, not for construction.

Contact sales office for dimensions not listed.



NEMA 7 & 9, 3, 4 Standard Width 0-4

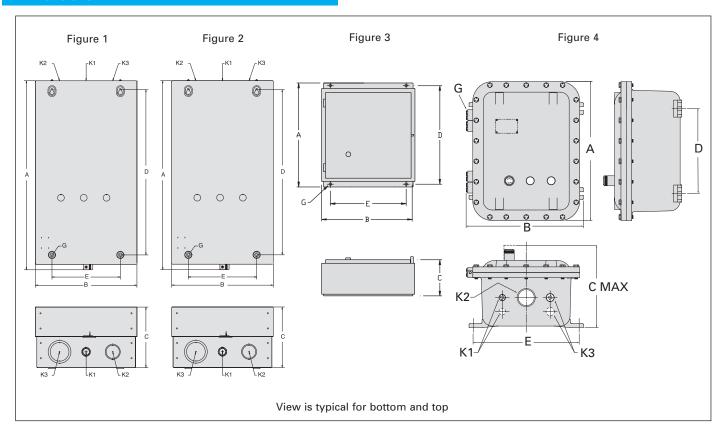
	, , ,	o, 4 Otali	daid vvic	0 -								
		Outline Di	mensions		Mounting Dimension		Mounting Screw	Conduit Size			Approx Ship	
Size	Figure	Α	B C D E G K1 K2 K3		Wt Lbs (Kg)	Ref Dwg						
0-13/4	1	17.38 (441)	14.69 (373)	10.38 (264)	10.63 (270)	13.25 (337)	3/8	3/4	2	1/2	60 (27)	24-139-865-003
2-31/2	1	28.25 (718)	17.75 (451)	11.19 (284)	18.38 (467)	15.75 (400)	3/8	3/4	2½	1/2	160 (72)	24-139-865-004
4	1	32.25 (819)	20.00 (508)	11.50 (292)	22.50 (572)	17.75 (451)	5/8	3/4	2½	1/2	250 (113)	24-139-865-005
5	1	40.875 (1038)	22.875 (581)	14.875 (378)	29 (737)	21.75 (552)	5/8	1/2	3	3/4	360 (163)	_

Note: Dimensions in inches (mm). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Reversing Heavy Duty Starters & Contactors

Enclosed, Class 22, 43

Dimensions



NEMA 1 General Purpose Enclosure (Standard width for use with and without CPT)

iieiai	i uiposi	E LIIGIOS	uie (Sta	iiuaiu vv	iutii ioi	use witi	i aliu witi	iout Ci i,				
	Outline Di	mensions		Mounting I							Approx Ship Wt	
Figure	Α	В	С	D	E	G	K1	K2	К3	K4	Lbs (Kg)	Ref Dwg
1	191/8 (486)	11% (289)	711/16 (195)	15% (397)	81/4 (210)	1/4	1/2-3/4	1-11/4	1½-2	_	30 (14)	D68870
2	24% (632)	13% (340)	81/4 (206)	21¾ (552)	9 (229)	1/4	1/2-3/4	11/4-11/2	2-21/2	_	52 (24)	D68870
	40 (1016)	20 (508)	11 (279)	37% (956)	15¼ (387)	1/4	2–3	11/4-11/2	1/2-3/4	11/4-11/2	135 (36)	D65608
	48 (1219)	20 (508)	12½ (317)	45¾6 (1148)	10 (254)	1/4	2-21/2	11/4-11/2	1/2-3/4	11/4-11/2	150 (44)	D65608013
		Outline Di Figure A 1 19½ (486) 2 24½ (632) 40 (1016)	Figure A B 1 19% (486) 11% (289) 2 24% (632) 13% (340) 40 (1016) 20 (508)	Outline Dimensions Figure A B C 1 19½ (486) 11½ (289) 7½ (195) 2 24½ (632) 13½ (340) 8½ (206) 40 (1016) 20 (508) 11 (279)	Outline Dimensions Mounting I Figure A B C D 1 19½ (486) 11½ (289) 7½ (195) 15% (397) 2 24½ (632) 13¾ (340) 8½ (206) 21¼ (552) 40 (1016) 20 (508) 11 (279) 37% (956)	Outline Dimensions Mounting Dimensions Figure A B C D E 1 19½ (486) 11½ (289) 7¹⅓ (195) 15½ (397) 8½ (210) 2 2½% (632) 13¾ (340) 8½ (206) 21¼ (552) 9 (229) 40 (1016) 20 (508) 11 (279) 37½ (956) 15¼ (387)	Mounting Dimensions Mounting Dimensions Mounting Dimensions Mounting Screw Figure A B C D E G 1 19½ (486) 11½ (289) 7½6 (195) 15½ (397) 8½ (210) ½ 2 2½½ (632) 13½ (340) 8½ (206) 2½ (552) 9 (229) ½ 40 (1016) 20 (508) 11 (279) 37½ (956) 15¼ (387) ½	Outline Dimensions Mounting Dimensions Mounting Dimensions Conduit Size Figure A B C D E G K1 1 19½ (486) 11½ (289) 7½ (195) 15½ (397) 8½ (210) ½ ½-¾ 2 2½ (632) 13½ (340) 8½ (206) 21½ (552) 9 (229) ¼ ½-¾ 40 (1016) 20 (508) 11 (279) 37½ (956) 15¼ (387) ¼ 2-3	Outline Dimensions Screw Conduit Size Figure A B C D E G K1 K2 1 19½ (486) 11½ (289) 7¹½ (195) 15½ (397) 8½ (210) ¼ ½-¾ 1-1½ 2 2½% (632) 13¾ (340) 8½ (206) 21½ (552) 9 (229) ¼ ½-¾ 1½-1½ 40 (1016) 20 (508) 11 (279) 37½ (956) 15¼ (387) ¼ 2-3 1½-1½	Figure A B C D E G K1 K2 K3 1 19½ (486) 11½ (289) 7¹½ (195) 15½ (397) 8¼ (210) ¼ ½-¾ 1-1½ 1½-2 2 2¼ (632) 13½ (340) 8½ (206) 21½ (552) 9 (229) ¼ ½-¾ 1¼-1½ 2-2½ 40 (1016) 20 (508) 11 (279) 37½ (956) 15¼ (387) ¼ 2-3 1¼-1½ ½-¾	Figure A B C D E G K1 K2 K3 K4 1 19½ (486) 11½ (289) 7¹½ (195) 15½ (397) 8¼ (210) ¼ ½-¾ 1-1¼ 1½-2 2 2¼ (632) 13½ (340) 8½ (206) 21½ (552) 9 (229) ¼ ½-¾ 1¼-1½ 2-2½ 40 (1016) 20 (508) 11 (279) 37½ (956) 15¼ (387) ¼ 2-3 1¼-1½ ½-¾ 1¼-1½ ½-¾ 1¼-1½	Figure A B C D E G K1 K2 K3 K4 Kb(kg) 1 19½ (486) 11½ (289) 7½ (195) 15½ (397) 8½ (210) ½ 1-1½ 1½-2 - 30 (14) 2 2½ (632) 13½ (340) 8½ (206) 21½ (552) 9 (229) ½ 1½-3 1½-1½ 2-2½ - 52 (24) 40 (1016) 20 (508) 11 (279) 37½ (956) 15½ (387) ½ 2-3 1½-1½ ½-¾ 1½-1½ 1½-1½ 1½-1½ 1½-1½ 1½-1½ 135 (36)

NEMA 4/4X Stainless Steel Enclosure (with or without CPT)

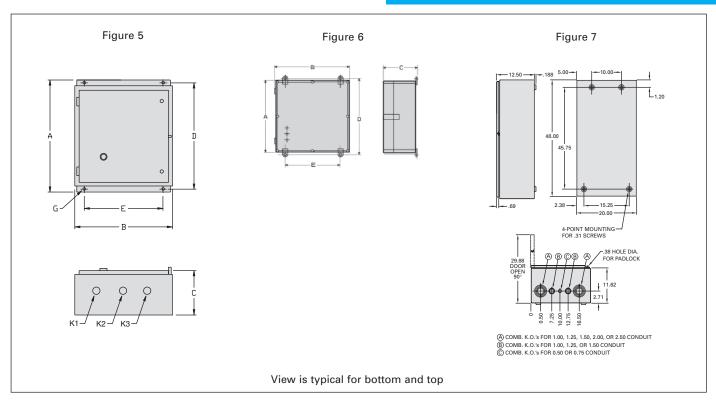
		Outline Din	nensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0-13/4	3	13 (330)	12% (321)	5% (137)	121/4 (311)	10 (254)	1/4	_	_	_	30 (14)	D41917
2-21/2	3	16 (406)	131/4 (337)	6 (152)	151/4 (387)	11 (279)	1/4	_	_	_	33 (15)	D42935
3-3½ (w/o CPT)	3	251/16 (637)	173/16 (437)	7% (187)	245/16 (618)	14 (356)	1/4	_	_	_	53 (24)	D17423
3–3½ (w/ CPT) 4	3	29 (737)	23¾16 (589)	91/4 (235)	27½ (699)	20 (508)	5/16	_	_	_	64 (29)	D43292
5 (Painted)		40 (1016)	20 (508)	11 (279)	41 (1041)	10 (254)	3/8	_	_	_		D65608007
6, 7 (Painted)		48(1219)	20 (508)	12½ (317)	49 (1244)	10 (254)	3/8	_	_	_		65608009

NEMA 7/9/3/4 Hazardous Location Enclosure (with or without CPT)

		Outline Dim	Outline Dimensions			imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
0-21/2	4	281/4 (718)	161/4 (413)	91/4 (235)	18% (467)	15¾ (400)	1/2	1/2	3	3/4	140	24-139-865-004
3–4	4	321/4 (819)	181/4 (464)	9% (243)	221/2 (572)	17¾ (451)	1/2	1/2	3	3/4	150	24-139-865-005

Note: Dimensions in inches (mm).

Dimensions for reference, not for construction. Contact sales office for dimensions not listed.



NEMA 12/3/3R Industrial Use Enclosure (with or without CPT)

		Outline Din	nensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0-13/4	5	13 (330)	12% (321)	5% (137)	121/4 (311)	10 (254)	1/4	_	_	_	30 (14)	D17150
2-21/2	5	16 (406)	131/4 (337)	61/8 (156)	151/4 (387)	11 (279)	1/4	_	_	_	33 (15)	D17150
3–3½ (w/o CPT)	5	251/16 (637)	17¾16 (437)	7% (187)	245/16 (618)	14 (356)	1/4	_	_	_	53 (24)	D17150
3–3½ (w/ CPT) 4	5	291/16 (738)	23¾16 (589)	91/4 (235)	27%16 (700)	20 (508)	5/16	_	_	_	64 (29)	D17150
5	7	40 (1016)	20 (508)	11 (279)	41 (1041)	10 (254)	3/8	_	_	_		D65608007
6 (300 VA CPT max.)	7	48 (1219)	20 (508)	12½ (318)	45¾ (1162)	10 (254)	1/4	_	_	_		

NEMA 4X Fiberglass Enclosure (with or without CPT)

		Outline Dim	B C I .78 (604) 14.68 (373) 6.89 (175) 2		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
0-21/2	6	23.78 (604)	14.68 (373)	6.89 (175)	221/5 (579)	131/5 (351)	1/4	_	_	_	35	_
3-4	6	23.78 (604)	23.78 (604)	6.89 (175)	221/5 (579)	221/5 (579)	1/4	_	_	_	38	_

Note: Dimensions in inches (mm).

Dimensions for reference, not for construction.

Contact sales office for dimensions not listed.

3

4

6

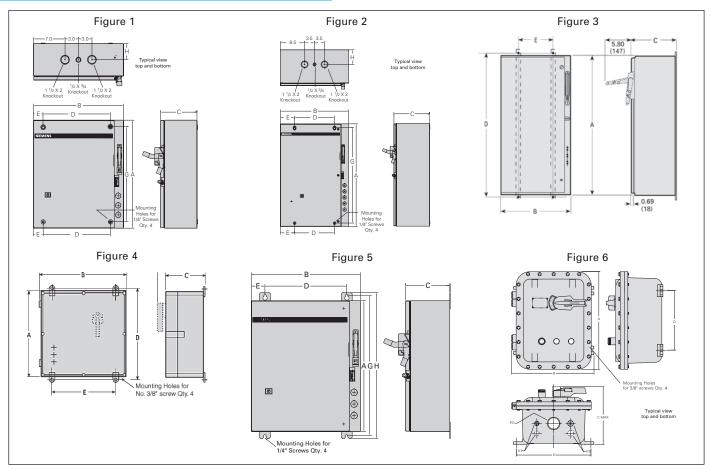
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9

Combination Reversing Heavy Duty Starters

Enclosed, Class 25, 26

Dimensions



NEMA 1 Standard Width 0-6

		Outline Dimen	sions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	Н	Lbs (Kg)	Ref Dwg
0-21/2	1	24 (610)	20 (508)	8 (203)	15.00 (381)	2.125 (54)	21.00 (533)	3.50 (90)	60 (27)	D68774002
3-4	2	36 (914)	24 (610)	8 (203)	14.00 (356)	5.00 (127)	33.50 (851)	5.00 (127)	121 (55)	D68774003
5 (Painted)	3	72.156 (1833)	20 (508)	11.031 (280)	71 (1803)	16 (406)	l —	<u> </u>	250 (113)	D56032005
6 (Painted)	3	79.125 (2010)	22 (559)	13 (330)	78 (1981)	18 (457)	—	l —	275 (125)	D56032006

NEMA 12/3/3R/4 (Painted), 4/4X (Stainless) Standard Width 0-6

		Outline Dimen	sions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	Α	В	C	D	E	G	Н	Lbs (Kg)	Ref Dwg
0-2½ 3-4	5	24 (610) 36 (914)	20 (508) 24 (610)	8 (203) 8 (203)	15.00 (381) 12 (305)	3.50 (90) 6.00 (152)	25.75 (654) 37.75 (959)	26.75 (654) 38.75 (984)	63 (29)	D68774005 D68774006
5 (Painted) 6 (Painted)	3	72.156 (1833) 79.125 (2010)	24 (610) 20 (508) 22 (559)	11.031 (280) 13 (330)	71 (1803) 78 (1981)	16 (406) 18 (457)		38.75 (984) — —	124 (56) 250 (113) 275 (125)	D56032005 D56032006

NEMA 4X Fiberglass 0-4

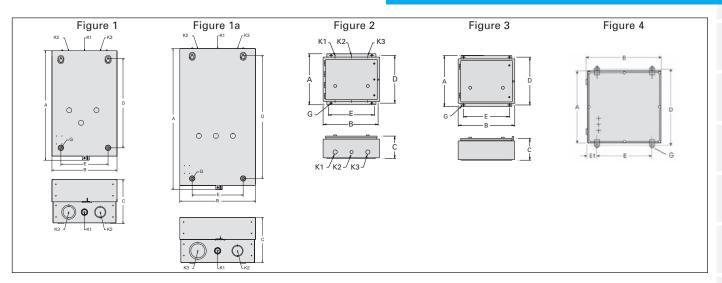
		Outline Dim	ensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
0-21/2	4	23.780 (604)	14.680 (373)	6.890 (175)	24.125 (612.7)	12.250 (311)	3/8	_		_	18 (8)	24-139-861-001
3–4	4	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (612.7)	21.250 (539.7)	3/8	_		_	28 (12.7)	24-139-861-003

NEMA 7/9/3/4 Hazardous Location 0-4

		Outline Dim	nensions		Mounting D	imensions	Mtg Screw	Conduit Siz	е		Approx Ship Wt		
Size	Figure	Α	В	С	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg	
0-21/2	6	28.688 (729)	17.750 (451)	11.750 (298)	18.375 (467)	15.750. (400)	3/8	1/2	3	3/4	140 (63.5)	24-139-865-004	
3-4			186 (729) 17.750 (451) 11.750 (288) 18.375 (407) 13.750. (400) 98 92 3 94 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5) 24-135-605-004 140 (03.5)										

Note: Dimensions in inches (mm).
Dimensions for reference, not for construction.

Contact sales office for dimensions not listed.



2 Speed 1 Winding

NEMA 1 General	Purpo	se Encl	osure (S	tandard v	width fo	r use w	ith or w	ithout (CPT)									
		Outline	e Dimen	sions				Mour	iting Dir	nensio	ns	Mtg Screw	Conduit Size				rox p Wt	
Size	Fig	Α		В		C		D		E		G	K1	K2	К3	Lbs	(Kg)	Ref Dwg
0-1 3/4 w/o CPT	1	19 1/4	(486)	11 ¾	(289)	7 11/16	(195)	15 %	(397)	8 1/4	(210)	1/4	1/2-3/4	1-11/4	1 ½-2	26	(12)	D68870
0-1 3/4 (200 VA)	1a	24 1/8	(632)	13 %	(340)	8 1/8	(206)	21 3/4	(552)	9	(229)	1/4	1/2-3/4	11/4-11/2	2-2 1/2	52	(24)	D68870
2-2 1/2	2	16	(406)	17.13	(435)	7.63	(194)	15.2	5 (387)	14	(355)	1/4	1/2-3/4	11/4-11/2	1 1/4-1 1/2	39	(20)	D42932001
3-3 ½	2	18.31	l (465)	21.19	(538)	7.38	(187)	17.5	6 (446)	18	(457)	1/4	11/4-11/2	1/2 -3/4	1 ½-2	60	(27)	D72956002
4	3	29	(737)	23 3/16	(589)	9 1/4	(235)	27 ½	(699)	20	(508)	5/16	_	_	_	61	(28)	D43292001
NEMA 4/4X Stain	less S	teel End	losure (Standard	width	or use v	with or v	without	CPT)									
0-1 3/4 w/o CPT	3	13	(330)	12 %	(321)	5 %	(137)	12 1/4	(311)	10	(254)	1/4	_	_	_	34	(15)	D41917000
0-1 3/4 w/ CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	47	(21)	
2-2 ½ w/o CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	47	(21)	
2-2 ½ w/ CPT	3	25 1/16	(637)	17 3/16	(437)	7 %	(187)	24 5/16	(618)	14	(355)	1/4	_	_	_	55	(25)	
3-3 ½	3	29	(737)	23 3/16	(589)	9 1/4	(235)	27 1/2	(699)	20	(508)	5/16	_	_	_	61	(28)	D43292001
4	3	29	(737)	23 3/16	(589)	9 1/4	(235)	27 ½	(699)	20	(508)	5/16	_	_	_	61	(28)	D43292001
NEMA 12/3/3R In	dustria	al Use E	nclosure	(Standa	rd widt	for use	with o	r witho	ut CPT)									
0-1 ¾ w/o CPT	3	13	(330)	12 %	(321)	5 3/8	(137)	12 1/4	(311)	10	(254)	1/4	_	_	_	34	(15)	
0-1 3/4 w/ CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	47	(21)	D17150010
2-2 ½ w/o CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	47	(21)	D17150010
2-2 ½ w/ CPT	3	25 1/16	(637)	17 3/16	(437)	7 3/8	(187)	24 5/16	(618)	14	(355)	1/4	_	_	_	55	(25)	
3–4	3	29	(737)	23 3/16	(589)	9 1/4	(235)	27 ½	(699)	20	(508)	5/16	_	_	_	61	(28)	D19673000
NEMA 4X Fibergl	ass E	iclosure	, - ,				, ,		1/		1/						,	
0-2 1/2	4	23.780	•	23.780	(604)	_	(175)	Ι .	_	_		1/4	_	_		28	(13)	24139861003
3–4	4	39.37	(1000)	29.53	(750)	12.60	(320)		_	-	_	_	_	_	_		. ,	24139861004

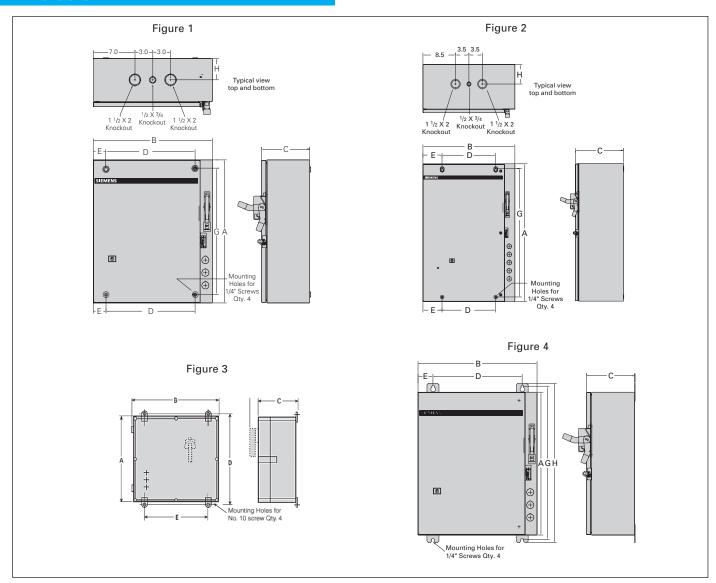
2 Speed 2 W																	
NEMA 1 General	Purpo	se Encl	sure (S	tandard v	vidth fo	r use w	ith or w	ithout (CPT)								
		Outline	Dimen	sions				Moun	iting Din	nensio	ns	Mtg Screw	Conduit Size			Approx Ship Wt	
Size	Fig	Α		В		C		D		E		G	K1	K2	К3	Lbs (Kg)	Ref Dwg
0–2 ½ w/o CPT	1	19 1/8	(486)	11 ¾	(289)	7 11/16	(195)	15 %	(397)	8 1/4	(210)	1/4	1/2-3/4	1-1 1/4	1 ½-2	30 (14)	D68870
0-2 ½ (200 VA)	1a	24 1/8	(632)	13 %	(340)	8 1/8	(206)	21 3/4	(552)	9	(229)	1/4	1/2-3/4	1 1/4-1 1/2	2-2 1/2	52 (24)	D68870
3–4 w/o CPT	1a	24 1/8	(632)	13 ¾	(340)	8 1/8	(206)	21 ¾	(552)	9	(229)	1/4	1/2-3/4	1 1/4-1 1/2	2-2 1/2	52 (24)	D68870
NEMA 4/4X Stain	ıless S	teel Enc	losure (Standard	width f	or use v	with or	without	CPT)								
0-1 3/4 w/o CPT	3	13	(330)	12 %	(321)	5 3/8	(137)	12 1/4	(311)	10	(254)	1/4	_	_	_	34 (15)	
0-1 3/4 w/ CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	l —	41 (19)	
2-2 1/2 w/o CPT	3	16	(406)	13 1/4	(337)	6	(152)	15 1/4	(387)	11	(279)	1/4	_	_	l —	41 (19)	
2-2 1/2 w/ CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	41 (19)	
3-3 ½ w/o CPT	3	25 1/16	(637)	17 3/16	(187)	7 3/8	(187)	24 5/16	(618)	14	(355)	1/4	_	_	_	55 (25)	
3-3 ½ w/ CPT	3	29	(737)	23 3/16	(589)	9 1/4	(235)	27 ½	(699)	20	(508)	5/16	_	_	l <u> </u>	61 (28)	D43292001
4	3	29	(737)	23 3/16	(589)	9 1/4	(235)	27 ½	(699)	20	(508)	5/16	_	_	l <u> </u>	61 (28)	D43292001
NEMA 12/3/3R In	dustri		closure						1 /		()	,		·		1 (==)	
0-1 3/4 w/o CPT	3	13	(330)	12 %	(321)	5 3/8	(137)	12 1/4	(311)	10	(254)	1/4	_	I —	_	34 (15)	
0-1 3/4 w/CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	41 (19)	D17150010
2-2 ½ w/o CPT	3	16	(406)	13 1/4	(337)	6 1/8	(156)	15 1/4	(387)	11	(279)	1/4	_	_	_	41 (19)	317100010
2-2 ½ w/CPT	3	16	(406)	17 1/8	(435)	7 %	(194)	15 1/4	(387)	14	(355)	1/4	_	_	_	41 (19)	D17150010
3–3 ½ w/o CPT	3	25 1/16	(637)	17 3/16	(187)	7 %	(187)	24 5/16	(618)	14	(355)	1/4				55 (25)	D17130010
3–4 w/CPT	2	29 1/16	(738)	23 3/16	(589)	9 1/4	(235)	27 %16	(700)	20	(508)	5/16				61 (28)	D19673000
NEMA 4X Fiberg	loop F		, ,		· ·		· ·		(700)		(300)	710				01 (20)	D13073000
	Iass E							T .				1/		1	1	20 /12\	24120001002
0-2 ½	4	23.780		23.780	, ,	6.890	, ,	-	_	-	_	1/4	_	_	_	28 (13)	24139861003
3–4	4	39.37	(1000)	29.53	(750)	12.60	(320)	_		-		_	_		_		24139861004

Note: Dimensions in inches (mm). Dimensions for reference, not for construction. Contact sales office for dimensions not listed.

Combination Two Speed Heavy Duty Starters

Enclosed, Class 32

Dimensions



NEMA 1 Standard Width 0-4

		Outline Dimen	sions		Mounting Dimensions				Approx Ship Wt	
Size	Figure	A	В	С	D	E	G	Н	Lbs (Kg)	Ref Dwg
0–1¾ (1 Winding) 2–4 (1 Winding) 0–2½. (2 Winding) 3–4 (2 Winding)	2	24 (610) 36 (914) 24 (610) 36 (914)	20 (508) 24 (610) 20 (508) 24 (610)	8 (203) 8 (203) 8 (203) 8 (203)	15.00 (381) 14.00 (356) 15.00 (381) 14.00 (356)	2.125 (54) 5.00 (127) 2.125 (54) 5.00 (127)	21.00 (533) 33.50 (851) 21.00 (533) 33.50 (851)	3.50 (90) 3.50 (90) 3.50 (90) 3.50 (90)	68 (31) 71 (32) 135 (61) 138 (63)	D68774 D68774 D68774 D68774

NEMA 12/3/3R/4 (Painted), 4/4X Stainless Standard Width 0-4

0-13/4 (1 Winding)	4	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	68 (31)	D68774
2-4 (1 Winding)	4	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	71 (32)	D68774
0-2½, (2 Winding)	4	24 (610)	20 (508)	8 (203)	15.00 (381)	2.50 (64)	25.75 (654)	26.75 (680)	135 (61)	D68774
3–4 (2 Winding)	4	36 (914)	24 (610)	8 (203)	12 (305)	6.00 (152)	37.75 (959)	38.75 (984)	138 (63)	D68774

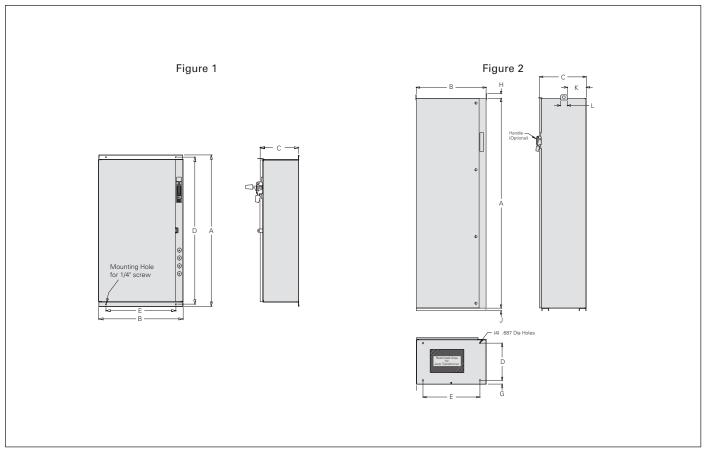
Nema 4X Fiberglass 0-4

		Outline Dim	nensions		Mounting D	imensions	Mtg Screw	Conduit Size	е		Approx Ship Wt	
Size	Figure	Α	В	С	D	E	G	K1	K2	K3	Lbs (Kg)	Ref Dwg
0-13/4	3	23.780 (604)	14.680 (373)	6.890 (175)	24.125 (613)	12.250 (311)	1/4	_	_	_	18 (8)	_
2-4	3	23.780 (604)	23.780 (604)	6.890 (175)	24.125 (613)	21.250 (540)	1/4	_	_	_	28 (13)	_

Note: Dimensions in inches (mm).

Dimensions for reference, not for construction.

Contact sales office for dimensions not listed.

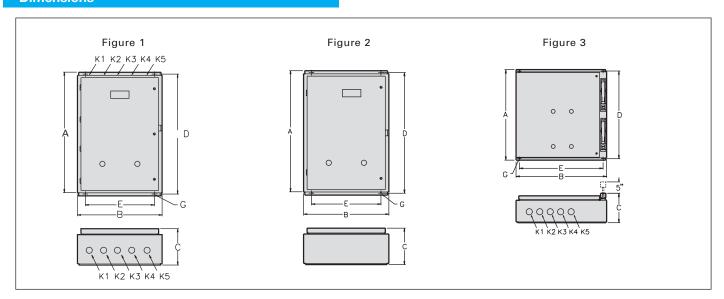


Class 36, 37, NEMA 1, 4, 4X, 12/3R, Combination and Non-combination

Reduced Voltage	Part Winding	& Wye Delta												
AutoTransformer Size	Disconnect	Circuit Breaker	Figure	A	В	С	D	E	G	н	1	J	к	L
1 3/4-2 1/2	0-2	0-2 1/2	1	43 5/16	24 ⁵ / ₃₂	11	42 11/32	20	_	_	_	_	_	
3-3 ¹ / ₂	2 1/2-3 1/2	3-3 1/2	1	55 ⁵ / ₁₆	28 ⁹ / ₃₂	11	54 ¹¹ / ₃₂	24	_	_	_	_	_	_
4	4	4	1	74 21/32	28 ⁹ / ₃₂	11	73 13/32	24	_	_	_	_	_	_
5, 6	5, 6	5, 6	2	90	29 ³⁰ / ₃₁	20	16	24 ⁷ / ₁₆	2 16/21	1 ²³ / ₄₀		1 ¹ /8	8 3/40	3

Duplex Heavy Duty Controllers Class 83, 84

Dimensions



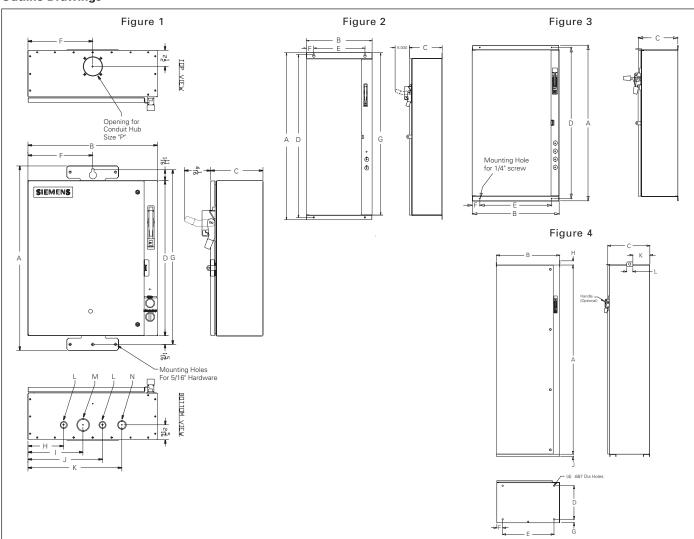
Class 83 Non-Combination Type

Enclosure		Outline	e Dimensio	ons		Mounting Dimension	s	Mounting Screw	Conduit Si	ze				Approx Ship Wt
Туре	Size	Figure	Α	В	C	D	E	G	K1	K2	K3	K4	K5	Lbs
	0-13/4	1	19½	161//8	6½	18¾	13	1/4	11/4-11/2	1/2-3/4	1/2	1/2-3/4	11/4-11/2	20
NEMA 1	2, 21/2	1	251/16	173/16	73/8	245/16	14	1/4	11/4-11/2	1/2-3/4	1/2-3/4	11/4-11/2	11/2-2	57
	3-4	1	2911/16	233/16	91/4	27%16	20	5/16	2-21/2	11/4-11/2	1/2-3/4	11/4-11/2	2-21/2-3	93
	0-13/4	2	19½	161//8	6½	18¾	13	1/4	_	I —	1—	_	_	20
NEMA 12	2, 21/2	2	251/16	173/16	7%	245/16	14	1/4	_	I —	<u> </u>	_	_	57
	3-4	2	231/2	233/16	111/4	27%16	20	5/16	_	1—	1—	_	 —	93
	0-13/4	2	19½	161//8	6½	18¾	13	1/4	_	1—	1—	_	 —	20
NEMA 4/4X ²	2, 21/2	2	251/16	173/16	7%	245/16	14	1/4	_	I —	1—	_	_	57
	3-4	2	291/16	233/16	91/4	27%16	20	5/16	_	1—	1—	_	 —	93

Class 84 Combination Type

Enclosure		Outline	e Dimension	18		Mounting Dimensions	3	Mounting Screw	Conduit Siz	e				Approx Ship Wt
Туре	Size	Figure	Α	В	C	D	E	G	K1	K2	K3	K4	K5	Lbs
NENAA	0-21/2	3	341//8	24%	79/16	33	20	3/8	½−1½	½−1½	11/8-123/64	11/8-123/64	123/64-123/32	70
NEMA 1	3-4	3	56	281/2	911/16	54 ¹³ ⁄16	241/4	3/8	_	_	_	_	_	106
NEMA 4/4X/12@	0-40	3	341//8	24%	79/16	33	20	3/8	_	_	_	_	_	_

Outline Drawings



Class 87 Standard and Vacuum Starter Pump Panel

						- p										
													Conduit K	nockout		Hub
Size	Figure	Α	В	C	D	E	F	G	Н	1	J	K	L	M	N	P
1 – 2½	1	28½	20	8 ¹ / ₁₆	24	_	10	27	51/2	81/2	111/2	14 ¹ / ₂	1/2 x 3/4	$1^{1}/_{4} \times 1$	3/ ₄ x 1	11/2
3 – 4	1	40½	24	83/32	36	_	12	39	8 ⁷ / ₁₆	11 ¹⁵ / ₁₆	15 ⁷ / ₁₆	l —	131/32 x 215/32	⁷ / ₈ x 1 ¹ / ₈	_	21/2
5	2	725/32	20	10	71	16	21/8	7029/32	—	l —	_	_		_ `	_	—
6	2	791/8	22	12 ¹⁵ / ₁₆	78	18	21/8	777/8	l —	—	_	l —	l—	_	_	l —
4 (Vac)	2	55 ³¹ / ₃₂	24 ³ / ₈	922/32	5426/32	201/4	21/8	5423/32	26 ³ / ₁₆	l —	5	2714/32		_	_	_

Class 88 Reduced Voltage Pump Panels

	Part Winding	& Wye Delta												
RVAT Size	Fusible Disconnect	Circuit Breaker	Figure	Α	В	С	D	E	F	н	1	J	к	L
2-21/2	1–2	1–2½	3	43 5/16	24 5/32	11	42 11/32	20	2 1/16	_	_	_	_	_
3-31/2	21/2-31/2	3–3½	3	55 ⁵ / ₁₆	28 9/32	11	54 11/32	24	2 1/8	_	_	_	_	_
4	4	4	3	74 21/32	28 %32	11	73 13/32	24	2 1/8	_	_	_	_	_
5, 6	5, 6	5, 6	4	90	30	20	16	24 ⁷ 16	2 3/4	1 1/2	_	1 1/ ₈	8 ¹ / ₁₆	3

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Lighting Contactors Enclosed Contactors, Class LC and LE

Dimensions

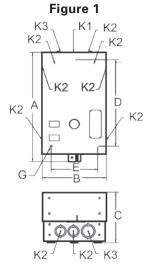


Figure 2

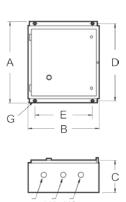
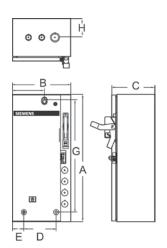


Figure 3



Enclosure	Contactor Rating	Fig.	Outline	Dimensio	ns	Mounti	ng	Conduit	Size			
Туре	(Class LC and LE)		Α	В	С	D	E	K1	K2	К3	K4	K5
	LE 20/30A 3-4P	1	10.97	6.41	5.03	8.22	4.62	0.5	0.50-0.75	0.75–1	_	-
1 with and ODT	LC 30A 2-12P, LE 60A 3P	1	13.53	7.97	6.38	10.25	6.00	0.50-0.75	0.75-1	1-1.25	_	-
1 without CPT	LE 30/60A 6-12P, LE 100A 3P	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5-2	_	-
	LE 200-400A 3P	2	26.00	17.62	12.50	25.19	15.50	0.50-0.75	1.25-1.5	1.25-1.5	_	-
1 with CPT	LC 30A 2-12P, LE 20A 3-4P, LE 30A 3-9P, LE 60A 3-9P, LE 100A 3P	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5–2	_	_
I WILLI GFT	LE 30/60A 12P	1	24.88	13.38	8.12	21.75	9.00	0.50-0.75	1.25-1.5	2-2.5	_	-
	LE 200-400A 3P	2	26.00	17.62	12.50	25.19	15.50	_	1.25-1.5	1.25-1.5	_	-
12/3R & 4/4X	LE 20/30A 3-4P, LC 30A 2-12P, LE 60A 3P	2	16.00	13.25	6.12	15.25	11.00	_	_	_	_	_
without CPT	LE 30/60A 6-12P, LE 100A 3P	2	26.00	13.12	7.56	25.25	10.00	_	_	_	_	-
	LE 200-400A 3P	2	26.00	17.62	12.50	23.19	15.50	_	_	_	_	-
	LE 20/30A 3-4P, LE 60A 3P	2	16.00	13.25	6.12	15.25	11.00	_	_	_	_	-
12/3R & 4/4X	LC 30A 2-12P	2	16.00	17.13	7.63	15.25	11.00	_	_	_	_	-
with CPT	LE 30/60A 6-12P, LE 100A 3P	2	26.00	13.12	7.56	15.25	14.00	_	_	_	_	-
	LE 200-400A 3P	2	26.00	17.62	12.50	25.19	15.50	_	_	_	_	-

Enclosure		Contactor		Outline	Dimensio	ns
Туре	Type (Class LE)	Rating	Fig.	Α	В	С
		20-60A	3	24	11	8
1, 12 & 4/4X	Fusible and Non-fusible	100A	3	24	20	8
with and	Disconnect	200A	3	46	20	10
without CPT		300A	3	76	22	13
	Circuit Breaker	200-100A	3	24	11	8

Dimensions are in inches.

¹⁾ G designates 0.25" mounting screw.

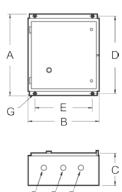
²⁾ Enclosures shown in figure 1 have lift-off covers. All other enclosures have hinged covers.

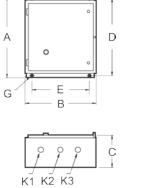
Figure 3

0 0 0

0 .







Enclosure	Contactor Rating	Fig.	Outline	Dimensio	ns	Mountii	ng	Conduit	Size			
Туре	(Class CLM)		Α	В	С	D	E	K1	K2	К3	K4	K5
	30-60A (2-5p)	1	10.97	6.41	5.03	8.22	4.62	0.5	0.50-0.75	0.75-1	_	_
	20A (2-12p)	1	13.53	7.97	6.38	10.25	6.00	0.50-0.75	0.75-1	1-1.25	_	_
1	30-60A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	0.50-0.75	1.25-1.5	1.25-1.5	_	<u> </u>
1 without CPT	100A (2-5p)	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5-2	_	<u> </u>
	200A (2-5p)	1	24.88	13.38	8.12	21.75	9.00	0.50-0.75	1.25-1.5	2.5	_	<u> </u>
	300-400A (2-5p)	2	48.00	20.00	12.50	45.19	10.00	2.00-2.50	1.25-1.5	0.5-0.75	1.25-1.5	2-2.5
	20A (2-12p), 30A (2-5p)	1	19.12	11.38	7.69	15.62	8.25	0.50-0.75	1-1.25	1.5–2	_	-
1 with CPT	30-60A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	0.50-0.75	1.25-1.5	1.25-1.5	_	<u> </u>
I WILLI CPI	100-200A (2-5p)	2	26.00	17.62	12.50	25.19	15.50	_	1.25-1.5	1.25-1.5	_	<u> </u>
	300-400A (2-5p)	2	48.00	20.00	12.50	45.19	10.00	2.00-2.50	1.25-1.5	0.5-0.75	1.25-1.5	2-2.5
	20A (2-12p), 30A (2-5p)	2	16.00	13.25	6.12	15.25	11.00	_	_	_	_	
	30A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	_	_	_	_	-
12/3R & 4/4X	60-100A (2-5p)	2	16.00	13.00	9.50	15.12	11.00	_	_	_	_	
without CPT	60A (6-12p)	2	19.00	22.00	8.00			_	_	_	_	<u> </u>
	200A (2-5p)	2	26.00	17.62	12.50	23.19	15.50	_	_	_	_	
	300A -400A (3p),	2	48.00	20.00	12.50	49.00	10.00	_	_	_	_	
	20A (2-12p), 30A (2-5p)	2	16.00	13.25	6.12	15.25	11.00	_	_	_	_	-
	30A (6-12p)	2	16.00	17.12	7.62	15.25	14.00	_	_	_	_	
12/3R & 4/4X	60-100A (2-5p)	2	16.00	13.00	9.50	15.12	11.00	_	_	_	_	_
with CPT	60A (6-12p)	2	19.00	22.00	8.00			_	_	_	-	
	200A (3p)	2	26.00	17.62	12.50	25.19	15.50	_	_	_	_	-
	300-400A (3p)	2	48.00	20.00	12.50	49.00	10.00	_	_	_	_	_

Enclosure		Contactor		Outline	Dimensio	ns
Туре	Type (Class CM)	Rating	Fig.	Α	В	С
		20-60A	3	24	11	8
1, 12 & 4/4X	Fusible and Non-fusible	100A	3	24	20	8
with and	Disconnect	200A	3	46	20	10
without CPT		300A	3	76	22	13
	Circuit Breaker	200-100A	3	24	11	8

Dimensions are in inches.

Figure 1

K2 K2

K3

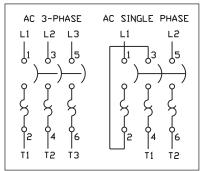
¹⁾ G designates 0.25" mounting screw.
2) Enclosures shown in figure 1 have lift-off covers. All other enclosures have hinged covers.

Manual Control

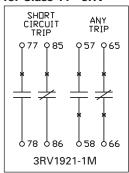
Class 11 - 3RV, SMF, MMS

Wiring Diagrams

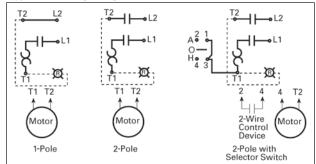
Class 11 - 3RV



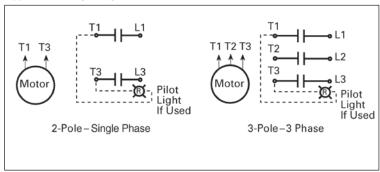
Signaling Contact for Class 11 - 3RV



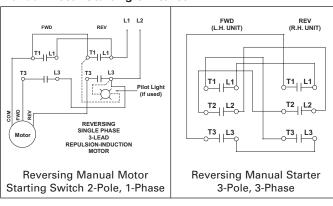
Typical Wiring Diagrams—Class SMF



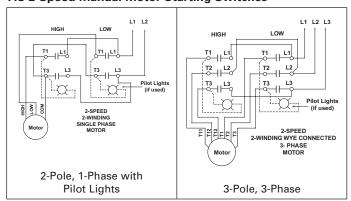
Typical Wiring Diagrams—MMS



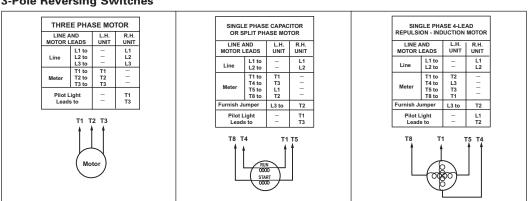
AC Reversing Manual Starter and Manual Motor Starting Switches



AC 2-Speed Manual Motor Starting Switches



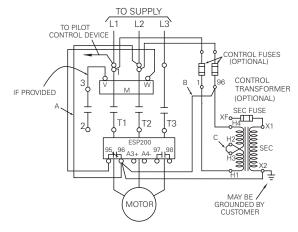
3-Pole Reversing Switches



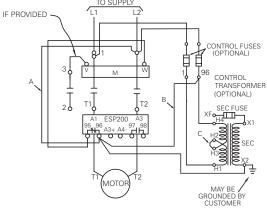


3-Phase and Single Phase Magnetic Starters

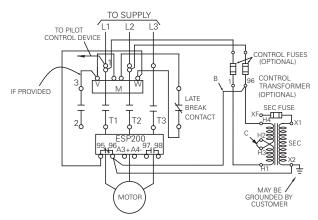
Three Phase Magnetic Starter, Size 00-4



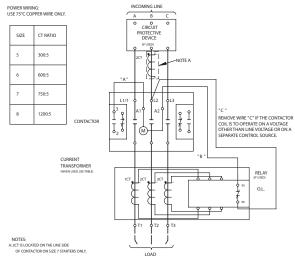
Single Phase Magnetic Starter 02



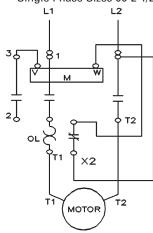
Three Phase Magnetic Starter with DC Coil, Sizes 00-4



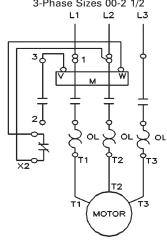
Solid State Overload 3-Phase Sizes 5-8



Ambient Compensated Single Phase Sizes 00-2 1/2



Ambient Compensated 3-Phase Sizes 00-2 1/2



Ambient Compensated 3-Phase Sizes 3-4 12 L3 MOTOR

① Warning: The ESP200 Starter and Single Phase Motor must be wired as shown above. For L1, L2 do not use the middle terminal or hole.

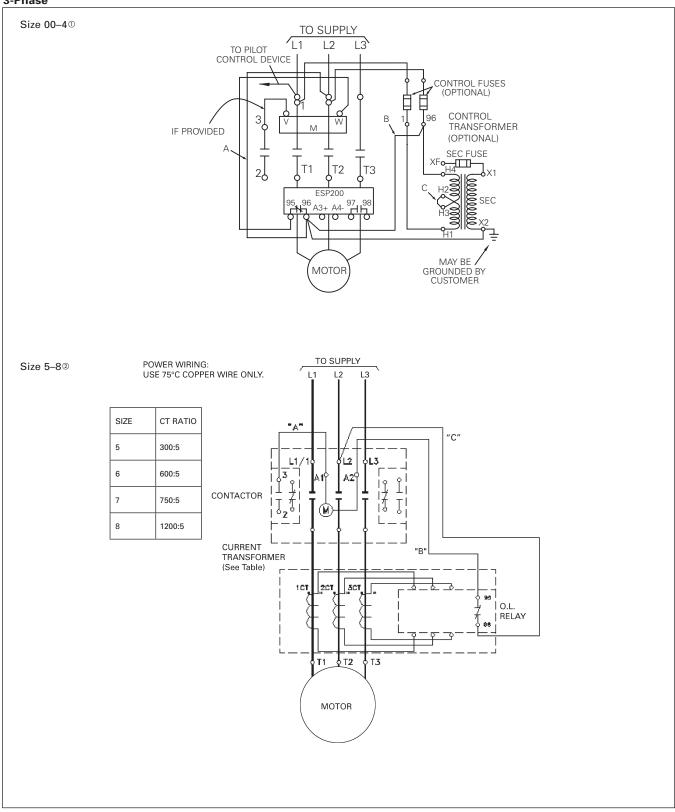
[@] Full Load Amps (FLA): Adjustment of the ESP200 solid state overload relay accommodates the single phase motor.

Combination Heavy Duty Starters

Class 17, 18

Wiring Diagrams

3-Phase



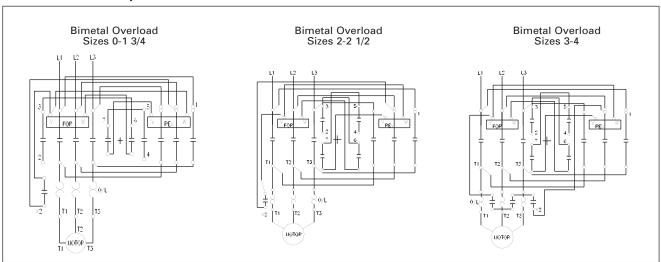
① Remove wire "C" if control transformer is used. For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse line terminals.

② Remove wire "C" if the contactor coil is to operate on a voltage other than line voltage or in a separate control source.

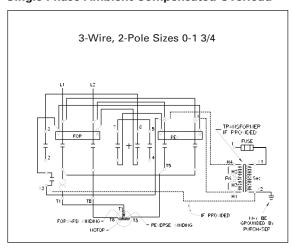
Class 22

Wiring Diagrams

3-Phase Ambient Compensated Overload



Single Phase Ambient Compensated Overload



2

3

1

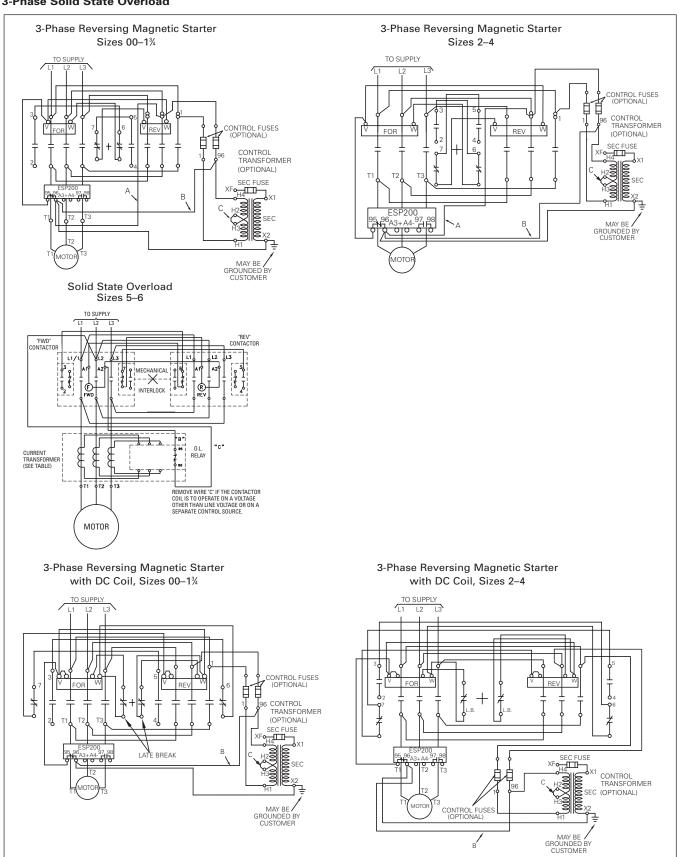
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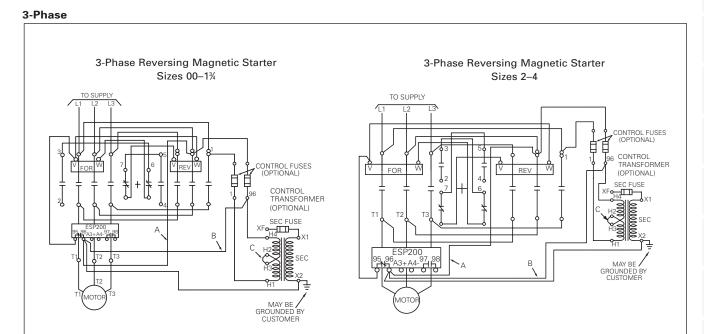
6

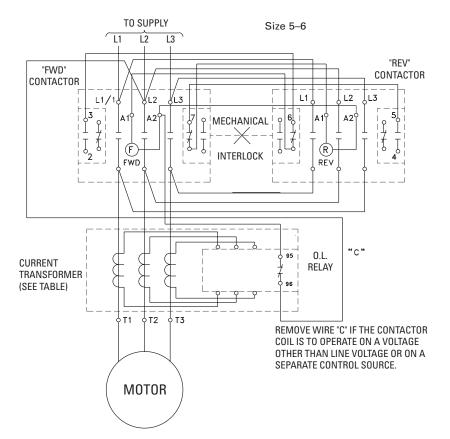
<u>်</u>

Wiring Diagrams

3-Phase Solid State Overload







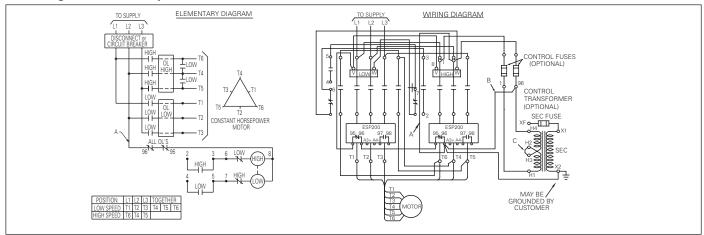
SIZE	CT RATIO
5	300:5
6	600:5

Two Speed Heavy Duty Starters

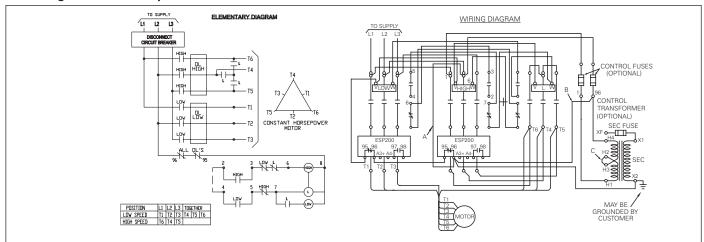
Class 30 & 32 Non-Combination and Combination Starters

Wiring Diagrams

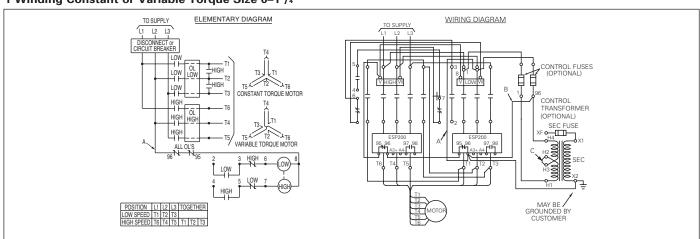
1 Winding Constant Horsepower Size 0-13/4



1 Winding Constant Horsepower Size 2-4



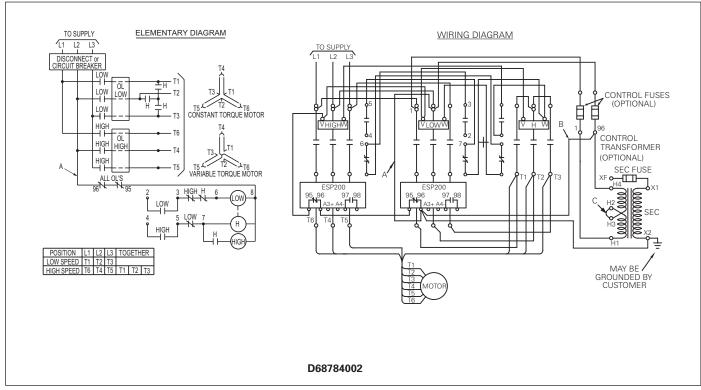
1 Winding Constant or Variable Torque Size 0-13/4



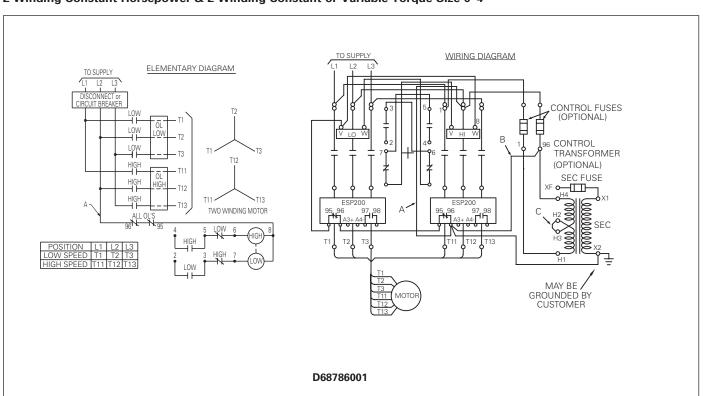
Note: For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

Wiring Diagrams

1 Winding Constant or Variable Torque Size 2-4



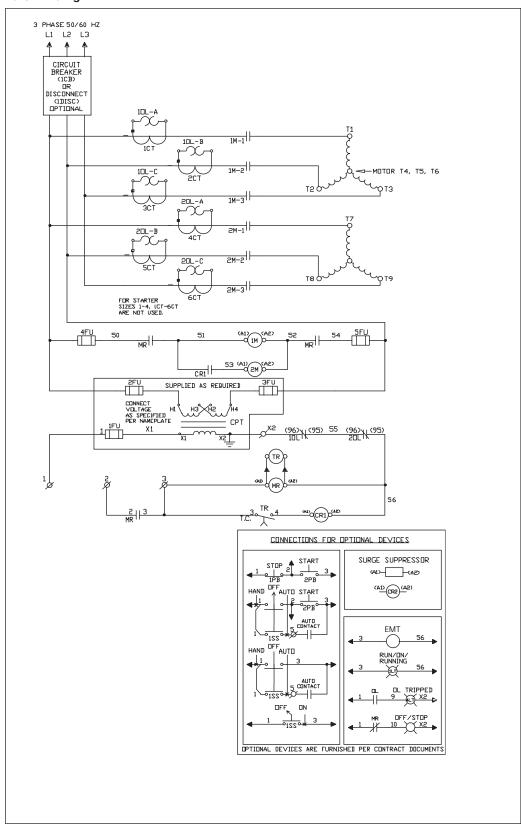
2 Winding Constant Horsepower & 2 Winding Constant or Variable Torque Size 0-4



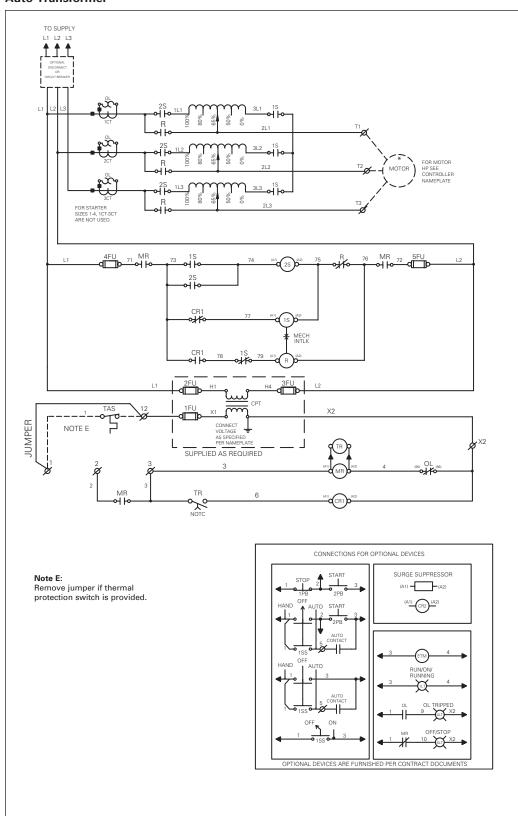
Note: For separate control voltage source, remove jumpers "A" and "B" and connect source to control fuse terminal. Remove jumper "C" if control transformer is used.

Wiring Diagrams

Part Winding



Auto Transformer



2

3

4

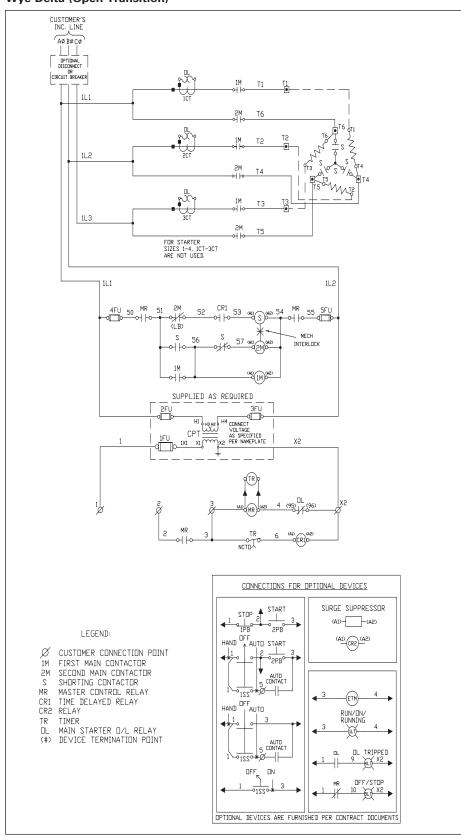
5

6

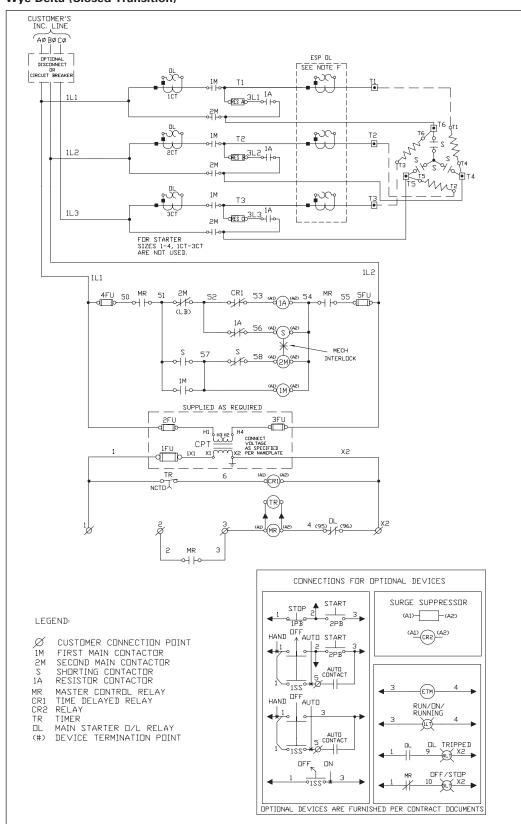
8

9

Wye Delta (Open Transition)



Wye Delta (Closed Transition)



2

3

4

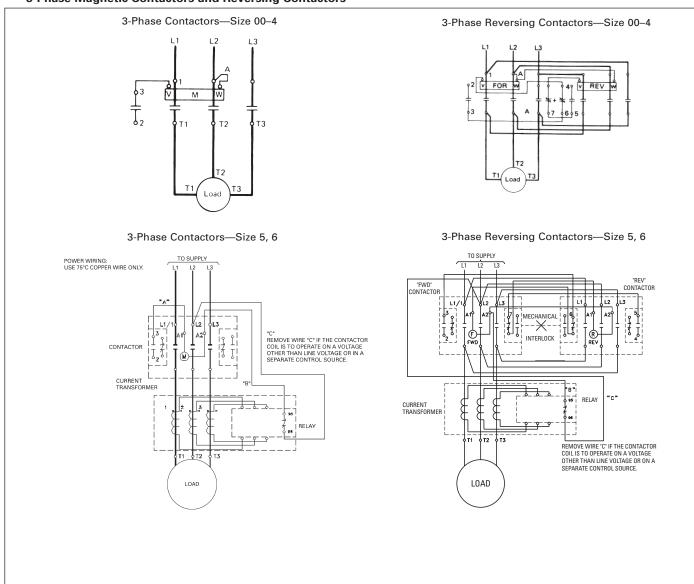
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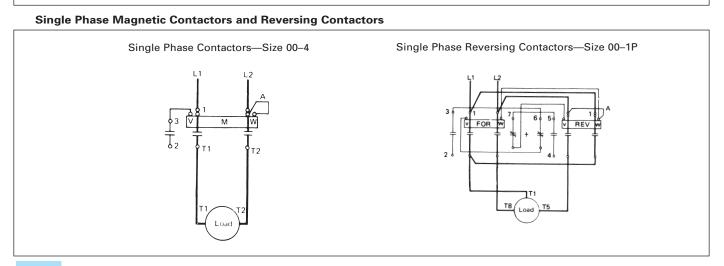
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g

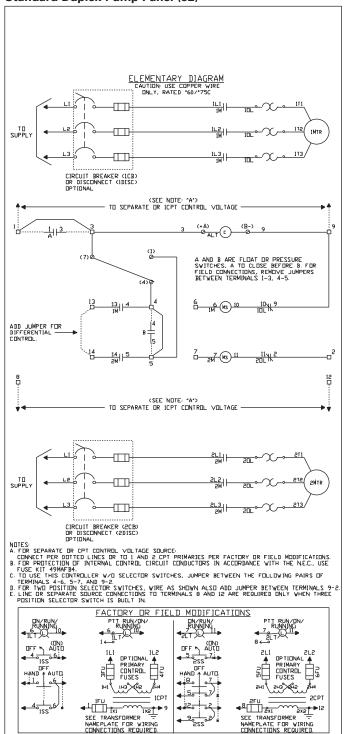
9

3-Phase Magnetic Contactors and Reversing Contactors



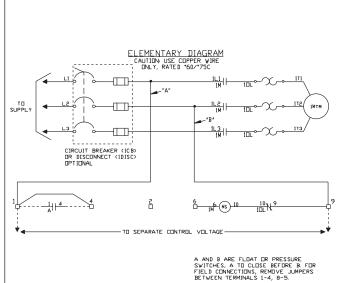


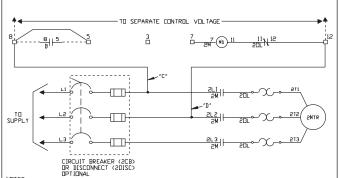
Standard Duplex Pump Panel (92)



TB LAYDUT 1 2 3 4 5 6 7 8 9 12 13 14

Duplex Panel w/o alternator (95)





NOTES

A THE SEPARATE DE OFF CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A" "B" "C", AND "D" AND

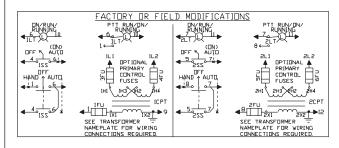
THE SEPARATE DE OFF CONTROL VOLTAGE SOURCE, REMOVE JUMPERS "A" "B" "C", AND "D" AND

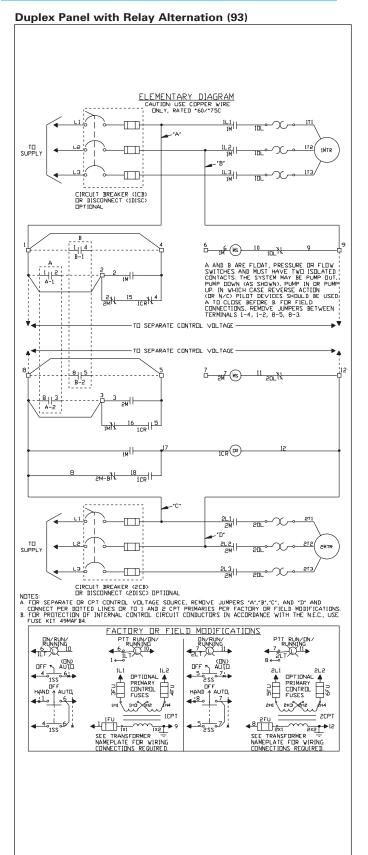
THE SEPARATE DE OFF CONTROL OF THE AND 2 CPT PRIMARIES PER FACTORY OR FIELD MODIFICATIONS.

B TOP REPOTECTION DE INTERNAL CONTROL CIRCUIT CONDUCTORS IN ACCORDANCE WITH THE NEC., USE
FUSE KIT 49MAPS

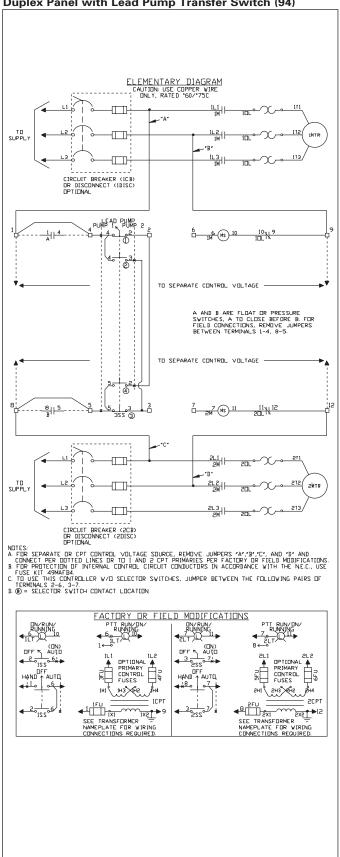
TO USE THIS CONTROLLER V/O SELECTOR SVITCHES, JUMPER BETWEEN THE FOLLOWING PAIRS OF

TERMINALS 4-6, 5-7.





Duplex Panel with Lead Pump Transfer Switch (94)

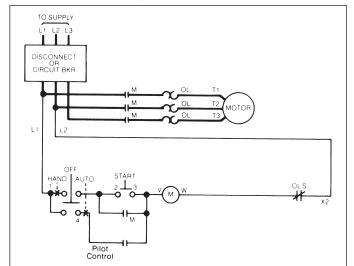


Standard & Irrigation Pump Panels

Class 87

Wiring Diagrams

Standard Class 87 Pump Panel



2

3

4

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O

9

Duplex Heavy Duty Controllers Class LC and LE Electrically Held Contactors

Wiring Diagrams

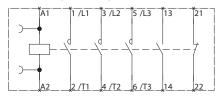
LEN00B003 (20A 3 Pole) 3 /L2



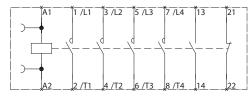
LEN00B004 (20A 4 Pole)



LEN00C003 (30A 3 Pole)



LEN00C004 (30A 4 Pole)



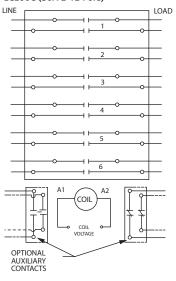
LEN00D003 (60A 3 Pole) LEN00E003 (100A 3 Pole)



LEN00F003 (200A 3 Pole) LEN00G003 (300A 3 Pole) LEN00H003 (400A 3 Pole)

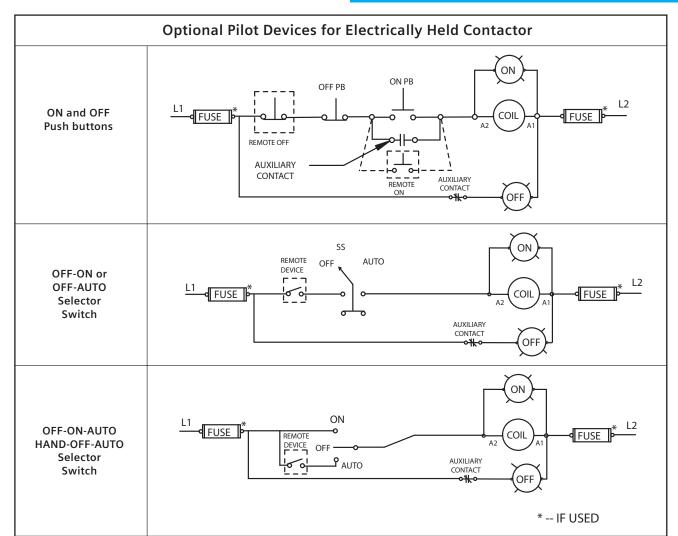


LCE00C (30A 2-12 Pole)



Duplex Heavy Duty ControllersClass LC and LE Electrically Held Contactors

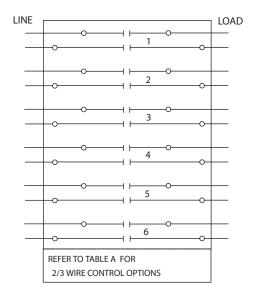
Wiring Diagrams

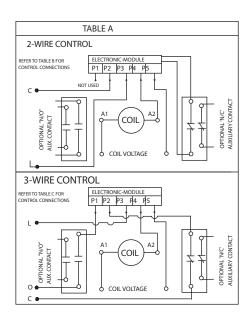


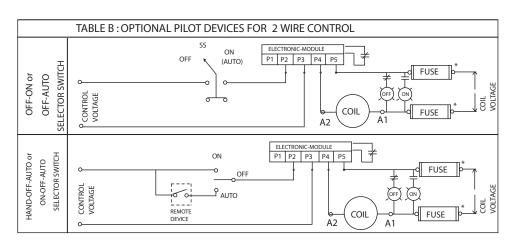
Lighting and Heating Contactors

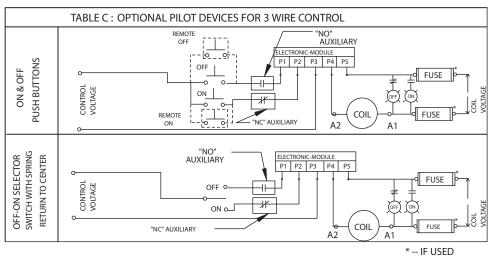
Class LC (converted to mechanically held)

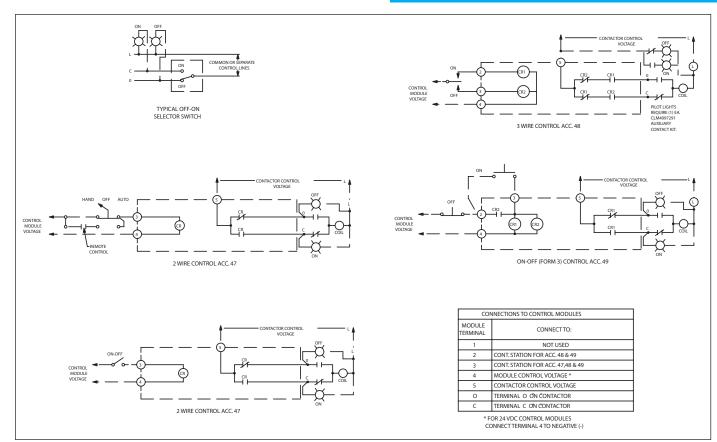
Wiring Diagrams









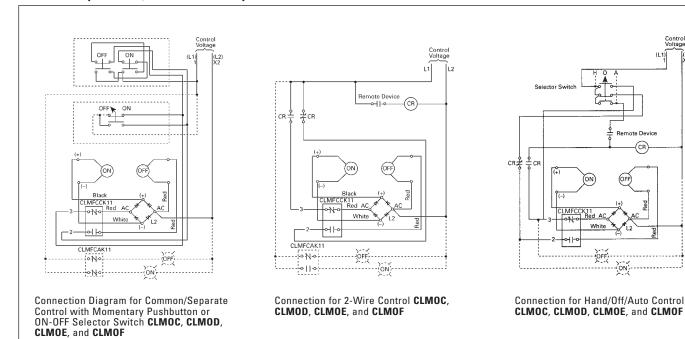


Lighting and Heating Contactors

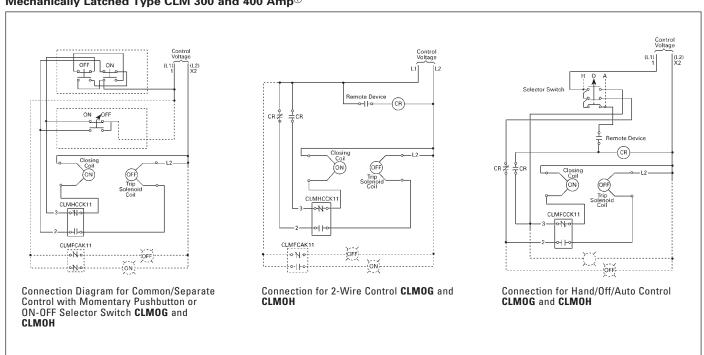
Mechanically Latched 30-400 Amps, Class CLM

Wiring Diagrams

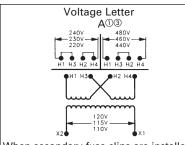
Mechanically Latched, CLM 30-200 Amps^①



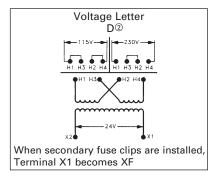
Mechanically Latched Type CLM 300 and 400 Amp[®]

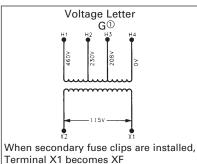


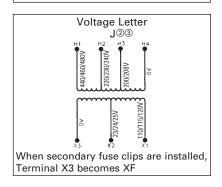
① Control relay is required for 2-wire and Hand/Off/Auto Control, as shown in diagram.

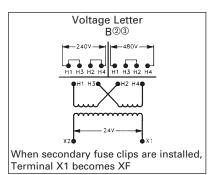


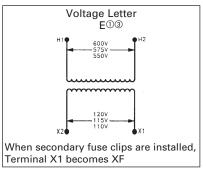
When secondary fuse clips are installed, Terminal X1 becomes XF

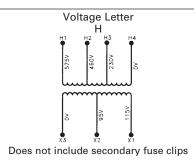


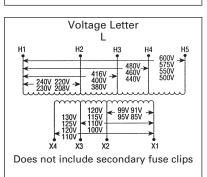


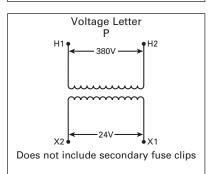


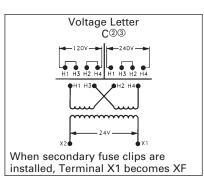


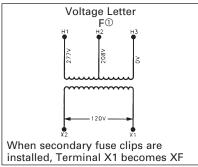


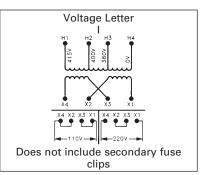


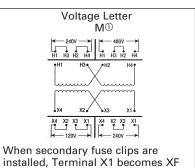












① Includes secondary fuse clips on sizes 50-750VA ② Includes secondary fuse clips on sizes 50-500VA

Secondary fuse clips are not included on MTG transformers.

Notes

Control Circuit Components Push Button Units and Indicator Lights

Contents	Pages	Contents	Pages
Section Overview	10/2 - 10/3	Sirius Signal Columns	
3SB2, 16mm Mounting Diameter Pilot		Introduction	10/110 - 10/111
Introduction		Technical Specifications	10/112
Technical Specifications	10/5	8WD42 signaling columns, 50 mm diameter and accessories	10/113 - 10/114
PCB Mounting Instructions	10/6	8WD44 signaling columns, 70 mm diameter	
Complete Units		and accessories	10/115 - 10/118
Key-operated Switches and Indicator Lig		8WD53 beacons, 70 mm diameter	
Holders, Lampholders and Contact Blocks		Dimensional Drawings	10/120 - 10/122
Holders, Lampholders and Contact Blocks		3SE2, 3SE3 Foot Switches	
with Solder Pins		Introduction	
Inserts, Legend Plates, and Accessories Dimension Drawings			10/109
		Class 50 Standard Duty Control Stations	10/100
Sirius 3SB3 22mm Mounting Diamete Introduction		Introduction	
Technical Specifications	10/24 - 10/25	Heavy Duty Type 4 Stations	
3SB3 Metal Round		Class 50 Accessories	
Complete Units	10/26 - 10/30	Dimension Drawings	10/131
Pushbutton Operators		Class 51 NEMA Type 7/9 Hazardous Locat	tion Pilot
Emergency-stop Mushroom Pushbuttor Indicator Lights		Devices	
Selector Switch Operators		Introduction	
Key Operated Switch Operators		Pushbutton and Push-pull Operators Indicator Lights	
3SB3 Plastic Round		Push to Test/Illuminated Pushbutton Complete	
Complete Units		Selector Switch Operators	10/136
Pushbutton Operators Emergency-stop Mushroom Pushbutto		Keyed Selector Switch Operators	
Indicator Lights		Cam Selection Guide for Selector Switch	
Selector Switch Operators	10/50	Stations and Enclosures	10/140 - 10/142
Key Operated Switch Operators			
Joystick Switches		Class 52 30.5mm Mounting Diameter Pilo	
Twin Pushbutton Operators 3SB3 Plastic Square	10/54 - 10/55	Introduction	
Complete Units	10/59 - 10/60	2 & 3 Position Push-Pull Mushroom Head De	
Pushbutton Operators	10/61	Non-Illuminated	10/146 - 10/147
Selector Switch Operators		2 & 3 Position Push-Pull Mushroom Head De	
Key Operated Switches		Illuminated	
Emergency-stop Mushroom Pushbutto Indicator Lights	ons10/64 10/64	Non-Illuminated	10/150
3SB3 Contact Blocks and Lampholders .	10/65 - 10/68	2 Position Twist-to-Release Mushroom Head	
3SB3 Special Key Operated Switches		Illuminated	
3SB3 Contact Block Position Chart for	40/70	Indicator Light	
Selector Switches		Push Button Mushroom Head Devices, Illumi	
3SB3 Accessories and Spare Parts		Selector Switches, Illuminated	
Sirius 3SB3 22mm Enclosed Pushbutt		Selector Switch Short & Long Lever,	10/150 10/150
Introduction		Non-Illuminated	
Assembled Metal and Plastic Enclosures		Selector Push Button	
with Standard Devices		Special Devices	10/163
Empty Enclosures		Cam Selection Guide for Selector Switch, Key	red
Customized Enclosures		Selector Switch and Selector Pushbutton	
Enclosure Accessories		Custom Selector Switch Designs	
Enclosure Labelling with Inscription Plate		Dimensional Drawings	
Dimension Drawings	10/100 - 10/106	Class 52 30.5mm Enclosed Pushbutton St	
Wiring Schematic for Lampholders with Separate Lamp Test Function	10/107	Assembled Enclosures with	
·		Standard Devices	
22mm Communication Capable Netw		P30 Empty Enclosures Only	
As Interface Adapter For E-Stop Assembled Enclosures		Enclosure Legend Plates	
Field Assembled Components for Enc	losures 10/99	Technical Specifications	

Siemens Industry, Inc. Industrial Controls Catalog

Control and Signaling DevicesPush Button Units and Indicator Lights

16 mm mounting diameter, molded-plastic



3SB2	Page
Selection and ordering data	
3SB22 complete units	10/7
• 3SB20 pushbuttons and lens assemblies	10/9
3SB2 holders, lampholders and contact blocks	10/11
• 3SB29 inserts, legend plates,	

Introduction	10/4
Technical specifications	10/5
Dimension drawings	10/21

10/13

22 mm mounting diameter,



Selection and ordering data	
3SB36 complete units	10/26
• 3SB35 pushbuttons and lens assemblies with holder	10/31
 3SB34 contact blocks and, lampholders 	10/65
3SB3 accessories	10/79

Page

SIRIUS 3SB3, metal round

Introduction	10/22
Technical specifications	10/24
Dimension drawings	10/100

22 mm mounting diameter, molded-plastic



SIRIUS 3SB3, plastic round	Page
Selection and ordering data	
3SB32 complete units	10/41
• 3SB30 pushbuttons and lens assemblies with holder	10/48
3SB3 twin pushbuttons	10/54
3SB19, 36B39 accessories	10/54, 10/79
3SB34 contact blocks and lampholders	10/65

Introduction	10/22
Technical specifications	10/24
Dimension drawings	10/100

26 mm x 26 mm mounting cutout, molded-plastic

and accessories



SIRIUS 3SB3, plastic square Page Selection and ordering data

•	3SB33 complete units	10/59
•	3SB31 pushbuttons and lens assemblies with holder	10/61
•	3SB34 contact blocks and lampholders	10/65
•	3SB19 accessories	10/79

Introduction	10/22
Technical specifications	10/24
Dimension drawings	10/100

Enclosed devices, 22 mm mounting diameter



SIRIUS 3SB3, plastic square Page

Selection and ordering data

3SB38 enclosures with standard equipment 10/7	78
 3SB34 contact blocks and lampholders 	20
iampholders 10/3	90
• 3SB38 empty enclosures 10/9	90
 3SB38 enclosures with choice 	
of equipment 10/9	91
• 3SB19 accessories, labels 10/9	95

Introduction	10/87
Dimension drawings	10/100

Communication-capable switching devices





SIRIUS 3SB3, plastic square Page

Selection and ordering data

 Assembled enclosures 10/97 Field assembled components for enclosures

Control and Signaling Devices

Push Button Units and Indicator Lights

SIRIUS signal columns, built-in signal beacons and foot switches



3SE2, 3SE3 Foot Switches Page

Selection and ordering data

•Plastic and metal enclosures 10/109

Lamp & LED version, enclosure diameters 50 and 70 mm

- •8WD42 selection and accessories 10/113
- 8WD44 selection and accessories 10/115
- 8WD53 beacons 10/119

Introduction	10/110
Technical Specifications	10/112
Dimension drawings	10/120

Standard duty control stations



Class 50 Page

Selection and ordering data

- Standard duty Type 1 and 1B 10/124 Heavy duty Type 4 10/129 • Class 50 accessories 10/130

Introduction	10/123
Technical Specifications	10/123
Dimension drawings	10/131

Type 7/9 hazardous location— 3/4"-14 NPSM



Class 51 Page

Selection and ordering data

 Push pull complete units 	10/133
Pilot lights	10/134
 Selector switches 	10/136
 Push to test/illuminated 	
push buttons	10/135
 Cam selection guide 	10/138
 Stations and enclosures 	10/139
 Accessories 	10/140

10/132 Introduction **Technical Specifications** 10/132

NEMA 30.5 mm mounting diameter, corrosion resistant, watertight & oiltight

10/150

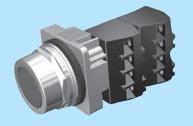


Class 52 Page

Selection and ordering data

- Momentary Push Button, Non-Illuminated 10/144-145
- 2 & 3 Position Push-Pull Mushroom Head Devices, Non-Illuminated 10/146-147
- 2 & 3 Position Push-Pull Mushroom Head Devices,
- 10/148-149 Illuminated • 2 Position Twist-to-Release
- Mushroom Head Devices, Non-Illuminated • 2 Position Twist-to-Release
- Mushroom Head Devices, Illuminated 10/151 • Indicator Light 10/152-153

Introduction 10/143 10/178 **Technical Specifications** 10/169 Dimension drawings



Class 52 Page

Selection and ordering data

- Push Button & Push-to-Test, Illuminated 10/154-155
- Push Button Mushroom Head Devices, Illuminated 10/156
- Selector Switches, Illuminated 10/157
- Selector Switch Short & Long Lever, Non-Illuminated 10/158-159
- 10/160-161 • Keyed Selector Switch
- Selector Push Button 10/162

30.5 mm heavy duty control stations, Type 4/4X/12/13 enclosures



Class 52 Selection and ordering data

• Class 52 assembled stations with standard offerings

• P30 enclosures only 10/175 Custom station order form

10/175 Legend plates 10/176

Page

10/173

3SB2, Mounting Diameter 16 mm

General data

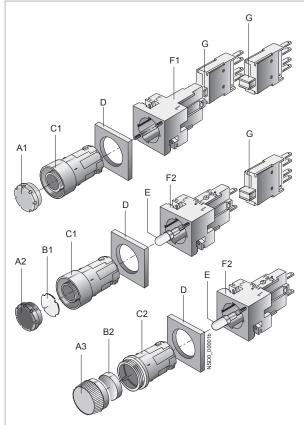
Overview

The 3SB2 push buttons and indicator lights are provided for front plate mounting and rear connection with flat connectors. For use on printed circuit boards, contact blocks and lamp holders with solder pins are also available.

Standards

IEC 60947-1, EN 60947-1, IEC 60947-5-1, EN 60947-5-1, IEC 60947-5-5, EN 60947-5-5 for EMERGENCY-STOP mush-room push buttons.

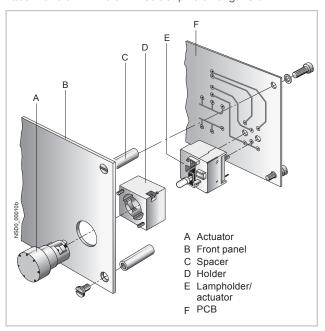
Version with flat connector



- A1 Button, flat
- A2 Illuminated button, flat
- A3 Screw lens for indicator light
- B1 Insert label, for labeling
- B2 Insert cap, for labeling
- C1 Collar with extruded front ring
- C2 Collar for indicator light
- D Frame for rectangular design
- E Wedge base lamp, W2 x 4.6d
- F1 Holders
- F2 Lampholder with holder
- G Contact blocks (1NO or 1NC) for snapping onto the holder or onto the lampholder

For PCB mounting

For use on printed circuit boards, special contact blocks and lamp holders for soldering into the printed circuit board are available. For this purpose, the contact blocks and lamp holders are fitted with $0.8~\text{mm} \times 0.8~\text{mm}$ solder pins of length 3.5~mm.



Connection methods

Flat connectors

Solder pin connections

The terminals are indicated in the corresponding tables by the symbols shown on blue backgrounds.

Application

The devices are climate-proof and suitable for marine applications.

Safety EMERGENCY-STOP push buttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the mushroom push buttons of the 3SB2 series are suitable for use as safety EMERGENCY-STOP push buttons.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol \oplus .

Category 4 according to EN 954-1 can be attained with the EMERGENCY-STOP mushroom push buttons if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

General data

Technical specifications		
Туре		3SB2
Contact blocks and lamp holders		
Standards		IEC 60947-5-1, EN 60947-5-1 IEC 60947-5-5, EN 60947-5-5
Rated insulation voltage U _i	V	250
Conventional thermal current I _{th}	А	10
Rated operational current I_e at rated operational voltage U_e		
 Alternating current AC-12 At U_e = 24 230 V 	А	10
 Alternating current AC-15 At U_e = 24 230 V 	А	4
Direct current DC-12		
- At $U_{e} = 24 \text{ V}$	Α	6
- At $U_{\rm e} = 60 \rm V$	A	5
- At $U_e = 110 \text{ V}$ - At $U_e = 230 \text{ V}$	A A	2.5
• Direct current DC-13		'
- At $U_{\rm p} = 24$ V	Α	3
- At $U_{\rm e} = 60 \text{ V}$	A	1.5
- At $U_{\rm e} = 110 \rm V$	Α	0.7
- At U _e = 230 V	Α	0.3
Contact stability		
Test voltage/test current		5 V/1 mA
Lamps		
• Bases		Wedge base W2×4.6 d
Rated voltage	V	6, 12, 24, 30, 48, 60
Rated power, max.	W	1
Short-circuit protection weld-free according to IEC 60947-5-1		40 A TD 40 A D
DIAZED fuse links, utilization category gG Ministers already by a plant with Contract a link and the LEC COORD		10 A TDz, 16 A Dz
Miniature circuit breaker with C characteristic according to IEC 60898		10 A
Electrical endurance		10 × 10 ⁶ operating cycles
For utilization category AC-15 with 3RT10 15 to 3RT10 26 contactors		, , ,
Mechanical endurance		10×10^6 operating cycles
Degree of protection acc. to IEC 60529 Connection of contact blocks and lamp holders behind the front panel Contact chambers of the contact blocks behind the front panel		IP00 IP40
Finger-safe according to IEC 61140 and BGV A3		With voltages $>$ 50 V AC or 120 V DC, insulation sleeves must be fitted to the unassigned tab connections.
Data according to UL and CSA		
Rated voltage		
Contact blocks	V	250 AC
 Indicator light (lamp with wedge base W2×4.6 d) 	V	60; 1 W
Uninterrupted current	Α	5
Switching capacity		B 300, R 300
Actuators and indicators		
Mechanical endurance		
Push Buttons		10×10^6 operating cycles
Actuators, rotary or maintained		3×10^{5} operating cycles
Illuminated push buttons		3×10^6 operating cycles
Climatic withstand capability		Climate-proof; suitable for marine applications
Ambient temperature		
During operation, non-illuminated devices and complete with LED	°C	-25 +70
During operation, devices with incandescent lamp	°C	-25 +60
During storage, transport	°C	-40 +80
Degree of protection acc. to IEC 60529		lane.
Actuators and indicators Actuators and indicators with protective con-		IP65
Actuators and indicators with protective cap		IP67
Protective measures • For mounting in metal front plates and enclosures		The actuators and lens assemblies must not be included in the protective measures.
For fitting into enclosures with total insulation		The protective measure "Total insulation" is retained.
Shock resistance acc. to IEC 60068-2-27		
Shock amplitude		≤50 <i>g</i>
Shock duration	ms	11
Shock form		Half-sine

More technical information see Reference manual "Commanding and Signaling Devices".

3SB2, Mounting Diameter 16 mm

General data

Configuration

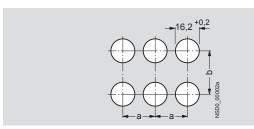
Design

Two design versions can be mounted:

- Round design: The 3SB2 push buttons and indicator lights are assembled with the modules – actuator, holder, contact block and lamp holder. Depending on the specific application, various versions can be assembled. Complete units are offered for the most commonly used applications.
- Square design: With square, black frames the round units can be given a square look. The frames are inserted underneath the round actuators. Further mounting is the same as for the round version.

Mounting and fixing:

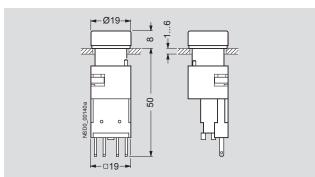
Mounting dimensions according to EN 50007 (not applicable to EMERGENCY-STOP mushroom push buttons)



Minimum clearance	а	b
Round version	19	19
Square version without inscription label	21	21
Round and square version with inscription label	21	32
For 2 selector switches with 3 switch positions, maintained, side by side	21	21

For mounting, the actuator or the lens assembly is inserted from the front into the hole in the front plate. Four small nubs ensure a secure fitting in the hole. The holder is plugged on from the back and snaps automatically into place. The module is fixed to the holder with 2 screws so that it is immune to vibrations.

One or two contact blocks can be mounted on the holder. They are inserted into the holder with slide slots and held down with two snap brackets.



Push button (flat) with holder and contact block

If a command point is fitted with an indicator light or illuminated push button, a lamp socket with lamp holder must be used instead of a holder. It is suitable for incandescent lamps or LEDs with bases of type $W2 \times 4.6d$.

For PCB mounting

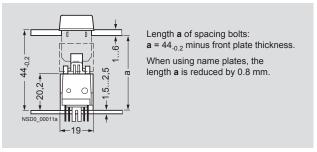
The command point comprises the actuator – e.g. 3SB2 push button, illuminated push button or indicator light –, which is mounted in the front plate, and a contact block and a lamp holder which are soldered to the PCB. For this purpose, the contact blocks and lamp holders are fitted with 0.8 mm \times 0.8 mm solder pins of length 3.5 mm.

Mounting and fixing:

Mounting dimensions according to EN 50007.

The actuators are mounted in the same way as 3SB2 front plate mounting devices.

The contact blocks and lamp holders are plugged into the printed circuit board by means of their solder pins and can be flow-soldered. After soldering, the devices must be flush with the board and perpendicular to it. The printed circuit board must be supported on spacing bolts so that it cannot sag or bend more than 0.1 mm.

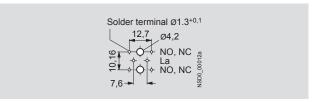


Illuminated push button with solder pin connection

To avoid bending the PCB when the control device is operated, sufficient spacing bolts must be provided as shown in the table below:

PCB thickness	Max. distance between spacing bolts
1.5 mm	80 mm
2.5 mm	150 mm
When using EMERGENCY-STOP push buttons	always 50 mm

These details are based on epoxy resin glass fiber mat.



Solder pin spacing

10/6

3SB2, Mounting Diameter 16 mm

Complete units

Selection and ordering data

	Version	Contact blocks	DT Color of handle	Flat connectors	PS
				Order No.	
	Push buttons with flat button	1 NO 1 NC 1 NC 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO	Black Black Red Yellow Green Blue White Clear ¹⁾	3SB22 02-0AB01 3SB22 03-0AB01 3SB22 03-0AC01 3SB22 02-0AD01 3SB22 02-0AE01 3SB22 02-0AF01 3SB22 02-0AG01 3SB22 02-0AH01	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Pushbutton with flat button	Illuminated push buttons with flat button Lamp holder W2 x 4.6 d ²⁾	1 NC 1 NO 1 NO 1 NO 1 NO	Red Yellow ¹⁾ Green Blue Clear ¹⁾	3SB22 07-0AC01 3SB22 06-0AD01 3SB22 06-0AE01 3SB22 06-0AF01 3SB22 06-0AH01	1 unit 1 unit 1 unit 1 unit 1 unit
Illuminated push button with raised button	Illuminated push buttons with flat button Lamp holder W2 x 4.6 d with incandescent lamp 24 V	1 NC 1 NO 1 NO 1 NO 1 NO	Red Yellow ¹⁾ Green Blue Clear ¹⁾	3SB22 27-0AC01 3SB22 26-0AD01 3SB22 26-0AE01 3SB22 26-0AF01 3SB22 26-0AH01	1 unit 1 unit 1 unit 1 unit 1 unit
	Push buttons with raised button	1 NO 1 NC 1 NO 1 NO 1 NO	Black Red Yellow Blue Clear ¹⁾	3SB22 02-0LB01 3SB22 03-0LC01 3SB22 02-0LD01 3SB22 02-0LF01 3SB22 02-0LH01	1 unit 1 unit 1 unit 1 unit 1 unit
	Illuminated push buttons with raised button Lamp holder W2 x 4.6 d ²⁾	1 NC 1 NO 1 NO 1 NO 1 NO	Red Yellow ¹⁾ Green Blue Clear ¹⁾	3SB22 07-0LC01 3SB22 06-0LD01 3SB22 06-0LE01 3SB22 06-0LF01 3SB22 06-0LH01	1 unit 1 unit 1 unit 1 unit 1 unit
	Illuminated push buttons with raised button Lamp holder W2 x 4.6 d with incandescent lamp 24 V	1 NC 1 NO 1 NO 1 NO 1 NO	Red Yellow ¹⁾ Green Blue Clear ¹⁾	3SB22 27-0LC01 3SB22 26-0LD01 3SB22 26-0LE01 3SB22 26-0LF01 3SB22 26-0LH01	1 unit 1 unit 1 unit 1 unit 1 unit
	EMERGENCY-STOP mushroom push buttons acc. to ISO 13850, maintained ³⁾	1 NC → 4)	Red	3SB22 03-1AC01	1 unit



EMERGENCY-STOP mushroom push button

maintained"
Latches automatically when pressed;
unlatches by turning the mushroom head
anticlockwise,
with yellow name plate,
with inscription "NOT-HALT"

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¹⁾ Inscription is possible by inserting a label.

 $^{^{2)}}$ For wedge base lamps see "Accessories", page 10/18.

³⁾ The mushroom push button cannot be combined with 3SB29 02-0AB name plate or 3SB29 02-0AA single frame.

⁴⁾ Positive opening according to IEC 60947-5-1, Appendix K.

Push Button Units and Indicator Lights 3SB2, Mounting Diameter 16 mm

Complete units

	Version		Contact blocks	Color of handle	DT	Flat connectors o	PS
						Order No.	
Selector switch	Selector switches, 2 switch positions Switching sequence O-I, 62° operating angle, maintained O I		1 NO 1 NO 1 NO 1 NO	Black Red Green White		3SB22 02-2AB01 3SB22 02-2AC01 3SB22 02-2AE01 3SB22 02-2AG01	1 unit 1 unit 1 unit 1 unit
	Selector switches, 3 switch positions Switching sequence I-O-II, 2 × 62° operating angle, maintained		1 NO, 1 NO 1 NO, 1 NO 1 NO, 1 NO 1 NO, 1 NO 1 NO, 1 NO	Black Red Green White		3SB22 10-2DB01 3SB22 10-2DC01 3SB22 10-2DE01 3SB22 10-2DG01	1 unit 1 unit 1 unit 1 unit
	Selector switches, 3 switch positions Switching sequence I-O-II, 2 × 50° operating angle, moment Spring return from left and right	ary,	1 NO, 1 NO 1 NO, 1 NO 1 NO, 1 NO 1 NO, 1 NO	Black Red Green White		3SB22 10-2EB01 3SB22 10-2EC01 3SB22 10-2EE01 3SB22 10-2EG01	1 unit 1 unit 1 unit 1 unit
	Version	Contact	Lock No.	Key removal position	DT	Flat connectors	PS
						Order No.	
	CES key-operated switches, 2 switch positions Switching sequence O-I, 62° operating angle, maintained	1 NO 1 NO	SB2 SB2	O O + I		3SB22 02-4LA01 3SB22 02-4LB01	1 unit 1 unit
CES key-operated switch	CES key-operated switches, 3 switch positions Switching sequence I-O-II, 2 × 62° operating angle, maintained	1 NO, 1 NO 1 NO, 1 NO		O I + O + II		3SB22 10-4PA01 3SB22 10-4PB01	1 unit 1 unit
	CES key-operated switches, 3 switch positions Switching sequence I-O-II, 2 × 50° operating angle, momentary, Spring return from left and right	1 NO, 1 NO) SB2	0		3SB22 10-4QA01	1 unit
	Version	Color of screw lens			DT	Flat connectors	PS
		22.31.10110				Order No.	
	Indicator lights Lamp holder W2 x 4.6 d without lamp ¹⁾	Red Yellow Green White Clear				3SB22 04-6BC06 3SB22 04-6BD06 3SB22 04-6BE06 3SB22 04-6BG06 3SB22 04-6BH06	1 unit 1 unit 1 unit 1 unit 1 unit
Indicator light	Indicator lights Lamp holder W2 x 4.6 d with incandescent lamp 24 V	Red Yellow Green White Clear				3SB22 24-6BC06 3SB22 24-6BD06 3SB22 24-6BE06 3SB22 24-6BG06 3SB22 24-6BH06	1 unit 1 unit 1 unit 1 unit 1 unit

¹⁾ For wedge base lamps see "Accessories", page 10/18.

Actuators and indicators

Selection and orderin	g data				
	Version	Color of handle	DT	Order No.	PS
Push buttons					
	Push buttons with flat button	Black Red Yellow Green Blue White Clear ¹⁾		3SB20 00-0AB01 3SB20 00-0AC01 3SB20 00-0AD01 3SB20 00-0AE01 3SB20 00-0AF01 3SB20 00-0AG01 3SB20 00-0AH01	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Push button and illuminated push button with flat button	Illuminated push buttons with flat button	Red Yellow ¹⁾ Green Blue White Clear ¹⁾		3SB20 01-0AC01 3SB20 01-0AD01 3SB20 01-0AE01 3SB20 01-0AF01 3SB20 00-0AG01 3SB20 00-0AH01	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Push buttons with raised button	Black Red Yellow Blue White Clear ¹⁾		3SB20 00-0LB01 3SB20 00-0LC01 3SB20 00-0LD01 3SB20 00-0LF01 3SB20 00-0LG01 3SB20 00-0LH01	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Push button and illuminated push button with raised button	Illuminated push buttons with raised button	Red Yellow ¹⁾ Green Blue Clear ¹⁾		3SB20 01-0LC01 3SB20 01-0LD01 3SB20 01-0LE01 3SB20 01-0LF01 3SB20 00-0LH01	1 unit 1 unit 1 unit 1 unit 1 unit
	EMERGENCY-STOP mushroom push buttons acc. to ISO 13850, maintained ²⁾ Latches automatically when pressed; unlatches by turing the mushroom head anticlockwise	Red rn-		3SB20 00-1AC01	1 unit

¹⁾ Inscription is possible by inserting a label.

EMERGENCY-STOP mushroom push button

The mushroom push button cannot be combined with 3SB29 02-0AB name plate or 3SB29 02-0AA single frame.

	Version		Color of handle	DT	Order No.	PS
Selector switches						
	Selector switches with 2 switch positions Switching sequence O-I, 62° operating angle, maintained	°√l	Black Red Green White		3SB20 00-2AB01 3SB20 00-2AC01 3SB20 00-2AE01 3SB20 00-2AG01	1 unit 1 unit 1 unit 1 unit
Selector switch	Selector switches with 2 switch positions Switching sequence O-I, 50° operating angle, momentary, spring return from right	O^A	Black Red Green		3SB20 00-2BB01 3SB20 00-2BC01 3SB20 00-2BE01	1 unit 1 unit 1 unit
Selector Switch	Selector switches with 2 switch positions Switching sequence O-I, 90° operating angle, maintained		Black Red Green White		3SB20 00-2HB01 3SB20 00-2HC01 3SB20 00-2HE01 3SB20 00-2HG01	1 unit 1 unit 1 unit 1 unit
	Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 62° operating angle, maintained		Black Red Green White		3SB20 00-2DB01 3SB20 00-2DC01 3SB20 00-2DE01 3SB20 00-2DG01	1 unit 1 unit 1 unit 1 unit
	Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle, momentary, spring return from left and right		Black Red Green White		3SB20 00-2EB01 3SB20 00-2EC01 3SB20 00-2EE01 3SB20 00-2EG01	1 unit 1 unit 1 unit 1 unit
	Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 90° operating angle, maintained		Black		3SB20 00-2JB01	1 unit

Push Button Units and Indicator Lights 3SB2, Mounting Diameter 16 mm

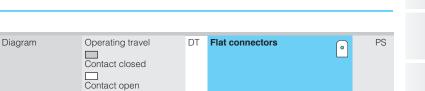
Actuators and indicators

	Version		Lock No.	Key removal position	DT	Order No.	PS
Key-operated switches							
Key-operated switches	CES key-operated switches with 2 keys, 2 switch positions Switching sequence O-I, 62° operating angle, maintained	°√ I	SB2	O+I O		3SB20 00-4LB01 3SB20 00-4LA01	1 unit 1 unit
CES key-operated switch	CES key-operated switches with 2 keys, 2 switch positions Switching sequence O-I, 50° operating angle, momentary, spring return from right	ON!	SB2	0		3SB20 00-4MA01	1 unit
	CES key-operated switches with 2 keys, 3 switch positions Switching sequence I-O-II, 2 x 62° operating angle, maintained		SB2	I+O+II O		3SB20 00-4PB01 3SB20 00-4PA01	1 unit 1 unit
	CES key-operated switches with 2 keys, 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle, momentary, spring return from left and right		SB2	0		3SB20 00-4QA01	1 unit
	Version		Color of screw len	S	DT	Order No.	PS
Indicator lights							
	Indicator lights with concentric rings (inscription by inserting a cap is not po	ossible)	Red Yellow Green Blue White Clear			3SB20 01-6BC06 3SB20 01-6BD06 3SB20 01-6BE06 3SB20 01-6BF06 3SB20 01-6BG06 3SB20 01-6BH06	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Indicator light	Indicator lights, smooth for inscription by inserting a cap 1)		Red Yellow Green Blue Clear			3SB20 01-6CC06 3SB20 01-6CD06 3SB20 01-6CE06 3SB20 01-6CF06 3SB20 01-6CH06	1 unit 1 unit 1 unit 1 unit 1 unit

¹⁾ Insert caps, see "Accessories", page 10/15

3SB2, Mounting Diameter 16 mm

Contact blocks and lampholders



Order No.

3SB23 04-2A

Contact blocks and lamp holders with flat connectors 2 x 2.8 - 0.8 mm according to IEC 60760

Lamp holders W2 x 4.6 d

without lamp

Version

Holders for fixing the actuator and the contact blocks

Selection and ordering data

Holders for 2 contact blocks Inscription with identification number 1-2

3SB29 08-0AA

5 units

1 unit

1 unit

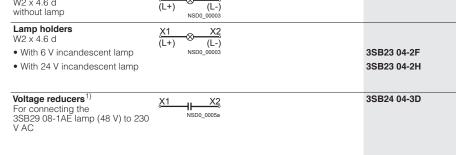
1 unit

1 unit

Holder







Lamp holders with holder for fixing the actuator and the contact blocks





Contact block

Contact blocks for fixing in the holder or lamp holder

Contact blocks with one contact²⁾

1 NO

1 NC → 3)

3SB24 04-0B

3SB24 04-0C

1 unit

1 unit

¹⁾ Use fixpoint terminal according to IEC 60439-1.

²⁾ For plug-in and insulation sleeves see "Accessories", page 10/19.

³⁾ Positive opening according to IEC 60947-5-1, Appendix K.

Push Button Units and Indicator Lights 3SB2, Mounting Diameter 16 mm

Contact blocks and lamp holders

	Version		Diagram	Operating travel Contact closed Contact open	DT	Solder pin LLI connections	PS			
						Order No.				
Contact blocks and	lamp holders with solder	pins_								
omarim semar semar	Holders for contact block w der pins For fixing the actuators in the panel	ith sol-				3SB29 08-0AB	5 units			
	Lamp holders Wedge base W2 x 4.6 d ¹⁾		(L+) X1			3SB24 55-2A	1 unit			
Holder					_					
	Contact blocks									
-1/	1 NO		⊢-\\	3-4 NSD0_00015 0 1 2 3 4 mm———————————————————————————————————		3SB24 55-0B	1 unit			
Contact block with solder pins	1 NC	→ 2)	.1 	1-2 NSD0_00017 0 1 2 3 4 mm		3SB24 55-0C	1 unit			
with solder pins	1 NO + 1 NC	→ 2)	13 21 	21-22 NSD0_00019 0 1 2 3 4 mm 1,6		3SB24 55-0J	1 unit			
	1 NO + 1 NO		13 23 	13-14 NSD0_00021 23-24		3SB24 55-0E	1 unit			
	1 NC + 1 NC	→ 2)	11 21 	21-22 11-12 0 1 2 3 4 mm 1,6		3SB24 55-0F	1 unit			
	Contact blocks and lamp holders, wedge base W2 x 4.6 d ¹⁾									
	1 NO		13 X1 	13-14 NSD0_01082 0 1 2 3 4 mm———————————————————————————————————		3SB24 55-1B	1 unit			
Contact block and lamp holder	1 NC	→ 2)	21 X1 /	21-22 NSD0_01083 0 1 2 3 4 mm 1,6		3SB24 55-1C	1 unit			
with solder pins	1 NO + 1 NC	→ 2)	13 21 X1 	21-22 NSD0_00019 0 1 2 3 4 mm 1,6		3SB24 55-1J	1 unit			
	1 NO + 1 NO		13 23 X1 	13-14 NSD0_00021 23-24 Nmm		3SB24 55-1E	1 unit			
	1 NC + 1 NC	→ 2)	11 21 X1 	21-22 11-12 0 1 2 3 4 mm 1,6		3SB24 55-1F	1 unit			

¹⁾ The lamp is not included in the scope of supply.

3SB2, Mounting Diameter 16 mm

Insert labels and insert caps

Overview

Clear push buttons, illuminated push buttons and indicator lights can be fitted with insert labels and caps for identification purposes.

The insert labels and insert caps are made of a milky-transparent plastic with black lettering; they can be fitted in any 90° angle.

Inscriptions

The inscriptions have upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

For customized inscriptions see "Options".

Selection and ordering data

	9 *****					
	Inscription/Symbol		Symbol No.	DT	Insert labels For push buttons and illuminated push buttons, flat	PS
					Order No.	
For self-inscription						
	Blank				3SB29 01-4AA	10 units
With inscription						
Ein	On Start Stop Reset Test				3SB29 01-4EB 3SB29 01-4EK 3SB29 01-4EL 3SB29 01-4EM 3SB29 01-4EN	10 units 10 units 10 units 10 units 10 units
	0 1 2 3 4				3SB29 01-4RA 3SB29 01-4RB 3SB29 01-4RC 3SB29 01-4RD 3SB29 01-4RE	10 units 10 units 10 units 10 units 10 units
	5 6 7 8 9				3SB29 01-4RF 3SB29 01-4RG 3SB29 01-4RH 3SB29 01-4RJ 3SB29 01-4RK	10 units 10 units 10 units 10 units 10 units
Graphic ON/OFF syr	mbols					
	O (Off)	\bigcirc	5008 IEC		3SB29 01-4MB	10 units
	I (On)		5007 IEC		3SB29 01-4MC	10 units
	II (On)				3SB29 01-4MD	10 units

2

3

4

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8

Push Button Units and Indicator Lights 3SB2, Mounting Diameter 16 mm

Insert labels and insert caps

	Inscription/Symbol		Symbol No.	DT	Insert labels For push buttons and illuminated push buttons, flat Order No.	PS
Graphic equi	pment symbols					
	Electric motor	4	0011 ISO		3SB29 01-4PA	10 units
	Horn		5014 IEC		3SB29 01-4PB	10 units
	Pump		0134 ISO		3SB29 01-4PD	10 units
		\bigcirc				
	Coolant pump		0355 ISO		3SB29 01-4PE	10 units
Graphic motion	on symbols					
	Motion in direction of arrow (straight)	\rightarrow	5022 IEC		3SB29 01-4NA	10 units
	Motion in direction of arrow (diagonal)	K			3SB29 01-4NB	10 units
	Clockwise rotation	~	0004 ISO		3SB29 01-4NC	10 units
	Anticlockwise rotation	K			3SB29 01-4ND	10 units
	Fast motion	ላሌ	0266 ISO		3SB29 01-4NE	10 units
	Increase (plus)		5005 IEC		3SB29 01-4NG	10 units
	Decrease (minus)	_	5006 IEC		3SB29 01-4MC	10 units
Graphic cont						
5	Clamp	→ ←			3SB29 01-4QB	10 units
	Release	↔			3SB29 01-4QC	10 units
	Brake off	≪ ○	0021 ISO		3SB29 01-4QE	10 units
	Lock	դ₿բ	0022 ISO		3SB29 01-4QF	10 units
	Unlock	1	0023 ISO		3SB29 01-4QG	10 units
	On/Off, momentary contact	\Box	5011 IEC		3SB29 01-4QJ	10 units
	Manual operation	The state of	0096 ISO		3SB29 01-4QK	10 units
	Automatic sequence	0	0017 ISO		3SB29 01-4QL	10 units
Customized i	nscriptions					
	Any inscription				3SB29 01-4AZ	
	1 line of text with up to 6 characters of 3 mm in Please add the appropriate order code to the		specify the line of	f	KOY	1 unit
	text required.				K1Y or K2Y K5Y	1 unit 1 unit
	Other graphic symbols				3SB29 01-4AZ	1 unit
	Please add the order code "K3Y" to the Order ber and the applied standard (ISO 7000 or IEC		КЗҮ			
	Any inscription or symbol	•			3SB29 01-4AZ	1 unit
	Please add the order code "K9Y" to the Order the symbol required.	No. and spec	ify the inscription o	or	К9Ү	

Push Button Units and Indicator Lights 3SB2, Mounting Diameter 16 mm

Insert labels and insert caps

	Inscription/Symbol		Symbol No.	DT	Insert caps For push buttons and illuminated push buttons, raised	PS
					Order No.	
For self-inscr	•					
	Blank				3SB29 01-5AA	10 units
With inscription						
Aus	On				3SB29 01-5EB	10 units
Ads	0 1				3SB29 01-5RA 3SB29 01-5RB	10 units 10 units
	2				3SB29 01-5RC	10 units
	3 4				3SB29 01-5RD 3SB29 01-5RE	10 units 10 units
	5				3SB29 01-5RF	10 units
	6 7				3SB29 01-5RG 3SB29 01-5RH	10 units 10 units
	8				3SB29 01-5RJ	10 units
Cuarkia ON/O	9				3SB29 01-5RK	10 units
Graphic ON/C			5008 IEC		20D20 04 FMD	10
	O (Off)	\bigcirc	5008 IEC		3SB29 01-5MB	10 units
	I (On)	1	5007 IEC		3SB29 01-5MC	10 units
	II (On)	\parallel			3SB29 01-5MD	10 units
Graphic motion	on symbols					
	Motion in direction of arrow	\rightarrow	5022 IEC		3SB29 01-5NA	10 units
	Motion in direction of arrow	K			3SB29 01-5NB	10 units
	Increase (plus)	+	5005 IEC		3SB29 01-5NG	10 units
	Decrease (minus)	<u> </u>	5006 IEC		3SB29 01-5MC	10 units
Graphic contr	ol symbols					
	Clamp	→ ←			3SB29 01-5QB	10 units
	Release	< >			3SB29 01-5QC	10 units
Customized in	nscriptions					
	Any inscription				3SB29 01-5AZ	
	1 line of text with up to 6 characters of 3 mm in I Please add the appropriate order code to the O		specify the line of	f	KOY	1 unit
	text required.	1401 140. 4114	opeony the inte c		K1Y or K2Y K5Y	1 unit
	Other graphic symbols				3SB29 01-5AZ	1 unit 1 unit
		Please add the order code "K3Y" to the Order No. and specify the serial num-				T GITTE
	Any inscription or symbol				3SB29 01-5AZ	1 unit
	Please add the order code "K9Y" to the Order N the symbol required.	lo. and speci	fy the inscription	or	К9Ү	

3SB2, Mounting Diameter 16 mm

Insert labels and insert caps

	Inscription/Symbol		Symbol No.	DT	Insert caps For indicator lights	PS
					Order No.	
For self-inscription						
	Blank				3SB29 01-7AA	10 units
Graphic symbols						
	Pump	\bigcirc	0134 ISO		3SB29 01-7PD	10 units
	Manual operation	Lul.	0096 ISO		3SB29 01-7QK	10 units
Customized inscript	tions					
	Any inscription				3SB29 01-7AZ	
	1 line of text with up to 6 characters of 3 mm in height Please add the appropriate order code to the Order N		accifu the line of		KOY	1 unit
	text required.	vo. and sp	becity the line of		K1Y or K2Y	1 unit
					K5Y	1 unit
	Other graphic symbols				3SB29 01-7AZ	1 unit
	Please add the order code "K3Y" to the Order No. arber and the applied standard (ISO 7000 or IEC 60417		the serial num-		КЗҮ	
	Any inscription or symbol	3SB29 01-7AZ	1 unit			
	Please add the order code "K9Y" to the Order No. and the symbol required.	d specify	the inscription or		К9Ү	

Options

Customized inscriptions

Labels and caps can be inscribed with text and symbols not listed in the ordering data. Append the following codes to the Order No:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift"): KOY
- Text line in upper case (e.g. "LIFT"): K1Y
- Text line in lower case (e.g. "lift"): K2Y
- Text line in upper/lower case, all words begin with upper case letters (e.g. "Lift"): K5Y
- Symbol with number according to ISO 7000 or IEC 60417:
 K3Y
- Any inscription or symbols according to order form supplement: K9Y

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

One line with up to 6 characters with 3 mm letter height is possible for the inscription (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example 1

3SB29 01-4AZ

K1YZ = pump

Ordering example 2

3SB29 01-4AZ

K3Y

Z = 5008 IEC

Ordering example 3

3SB29 01-4AZ

<3Y

Z = 1118 ISO

3SB2, Mounting Diameter 16 mm

Name plates

Overview

The name plates consist of a black plastic label holder and an inscription label (silver with black print) for sticking in place.

Note mounting dimensions!

Inscriptions

The inscriptions (also special inscriptions) are lower case with upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

Selection and ordering data

	Inscription/Symbol		Symbol No.	DT	Order No.	PS
Inscription labe	els, self-adhesive, 9.5 mm × 18.5 mm					
	Blank				3SB29 01-2AA	10 units
	On Off				3SB29 01-2EB	10 units
	On Start				3SB29 01-2EC 3SB29 01-2EL	10 units 10 units
	Reset				3SB29 01-2EM	10 units
	Fault				3SB29 01-2EW	10 units
	Hand Auto Manual 0 Auto				3SB29 01-2BA 3SB29 01-2BE	10 units 10 units
	Man 0 Auto				3SB29 01-2ET	10 units
	Graphic symbols					
	O (Off)	\bigcirc	5008 IEC		3SB29 01-2MB	1 unit
	I (On)		5007 IEC		3SB29 01-2MC	1 unit
	O I (horizontal)				3SB29 01-2MF	1 unit
	Motion in direction of arrow	\rightarrow	5002 IEC		3SB29 01-2NA	1 unit
	Customized inscriptions or symbols				3SB29 01-2XZ	
	(see Options)				K0Y	1 unit
					K1Y, K2Y or K3Y	1 unit
					K5Y	1 unit
					K9Y	1 unit
Label holders						
	Label holders for inscription labels				3SB29 02-0AB	1 unit
	The label holders must not be used with the 3S	B21AC01				
	EMERGENCY-STOP mushroom push button.					

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data. Append the following codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): K0Y
- Text line(s) in upper case (e.g. "LIFT OFF"): K1Y
- Text line(s) in lower case (e.g. "lift off"): K2Y
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): K5Y
- Symbol with number according to ISO 7000 or IEC 60417:
 K3Y
- Any inscription or symbols according to order form supplement: K9Y

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

Two lines of 11 characters are permitted with 4 mm letter height (1 line) or 3 mm (2-line).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

3SB29 01-2XZ K3Y

Z = 1118 ISO

10/17

Push Button Units and Indicator Lights 3SB2, Mounting Diameter 16 mm

Mounting parts and components

	Version	Lamp voltage	Color	DT	Order No.	PS
		V				
Buttons and lenses ¹			Di i			
SB29 10-0AF	Buttons, flat For push buttons		Black Red Yellow Green Blue White Clear		3SB29 10-0AB 3SB29 10-0AC 3SB29 10-0AD 3SB29 10-0AE 3SB29 10-0AF 3SB29 10-0AG 3SB29 10-0AH	1 ur 1 ur 1 ur 1 ur 1 ur 1 ur
SB29 10-0CF	Buttons, flat For illuminated push buttons		Red Yellow Green Blue White Clear		3SB29 10-0CC 3SB29 10-0CD 3SB29 10-0CE 3SB29 10-0CF 3SB29 10-0AG 3SB29 10-0AH	1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
SB29 10-0BD	Buttons, raised For push buttons		Black Red Yellow Clear		3SB29 10-0BB 3SB29 10-0BC 3SB29 10-0BD 3SB29 10-0BH	1 ui 1 ui 1 ui 1 ui
SB29 10-0DD	Buttons, raised For illuminated push buttons		Red Yellow Clear		3SB29 10-0DC 3SB29 10-0DD 3SB29 10-0BH	1 ur 1 ur 1 ur
SB29 10-1AD	Screw lenses With concentric rings		Red Yellow Green Blue White Clear		3SB29 10-1AC 3SB29 10-1AD 3SB29 10-1AE 3SB29 10-1AF 3SB29 10-1AG 3SB29 10-1AH	1 ur 1 ur 1 ur 1 ur 1 ur 1 ur
SB29 10-1BE	Screw lenses Smooth, for inscription with insert cap		Red Yellow Green Blue Clear		3SB29 10-1BC 3SB29 10-1BD 3SB29 10-1BE 3SB29 10-1BF 3SB29 10-1BH	1 ui 1 ui 1 ui 1 ui 1 ui
Key for actuators SB29 08-2AJ	Keys For CES key-operated switch, lock No. SB2				3SB29 08-2AJ	1 u
amps, wedge bases	,2)					
SB29 08-1AE	Incandescent lamps Wedge base W2 × 4.6 d, 1.0 W	AC/DC 6 12 24 30 48 60	Clear		3SB29 08-1AA 3SB29 08-1AB 3SB29 08-1AC 3SB29 08-1AD 3SB29 08-1AE 3SB29 08-1AF	1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
SB39 01-1SB	LED lamps, super-bright Wedge base W2 × 4.6 d	24 AC/DC	Red Yellow Green White Blue		3SB39 01-1SB 3SB39 01-1RB 3SB39 01-1TB 3SB39 01-1UB 3SB29 08-1BD	1 ur 1 ur 1 ur 1 ur 1 ur
SB29 08-1BD		28 AC/DC	Red Yellow Green White Blue		3SB39 01-1SE 3SB39 01-1RE 3SB39 01-1TE 3SB39 01-1UE 3SB39 01-1VE	1 ui 1 ui 1 ui 1 ui 1 ui
	Lamp extractors For lamps with bases W2 × 4.6 d				3SB29 08-2AB	1 u

¹⁾ Included in the scope of supply of actuators or indicator lights.

²⁾ Included in the scope of supply of some complete units.

3SB2, Mounting Diameter 16 mm

Mounting parts and components

	Version	DT	Order No.	PS
				. 0
Accessories for com	mand points			
3SB29 02-0AA	Single frames for square design ¹⁾		3SB29 02-0AA	1 unit
NOT-HAZA	Name plates, yellow, Ø 50 mm			
	As backing plate for EMERGENCY-STOP, self-adhesive Blank With German inscription "NOT-HALT" With German inscription "NOT-AUS"		3SB29 08-2AF 3SB29 08-2AG 3SB29 08-2AK	1 unit 1 unit 1 unit
3SB29 08-2AG	Blanking plugs		3SB29 08-3AA	1 unit
	Black plastic (degree of protection IP65)			, G.i.i.
3SB29 08-3AA	Protective caps, clear		3SB29 08-3AB	1 unit
3SB29 08-1	Silicone, for push buttons with flat and raised button		33523 00-3A5	Turiit
Flat connectors				
3SB29 08-8AA	Plug-in sleeves For flat connectors 2.8×0.8 mm, cross-section $0.5 \dots 1.5$ mm ²		3SB29 08-8AA	1unit
A STATE OF THE STA	Insulation sleeves For flat connectors, connection from the front		3SB29 08-8AB	1 unit
8				
3SB29 08-8AB	2)		20000 00 040	
	Complete connectors ²) For connecting contact blocks and lamp holders (up to 10 connections). Guaranteed finger-safe acc. to IEC 61140 and BGV A3.		3SB29 08-8AD	1 unit
3SB29 08-8AD	Phon in all and		00000000000	050
	Plug-in sleeves For flat connectors 2.8 × 0.8 mm, with locating spring for maintained in complete connector		3SB29 08-8AE	250 units
3SB29 08-8AE				
Tools				
7	Dismantling tools For holders and lamp holders with holder		3SB29 08-2AA	1 unit
3SB29 08-2AA				
	Mounting tools For buttons and screw lenses		3SB29 08-2AC	1 unit
00000000000				

 $^{^{\}rm 1)}$ Not suitable for EMERGENCY-STOP mushroom push buttons.

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3SB29 08-2AC

 $^{^{2)}}$ Required 3SB29 08-8AE plug-in sleeves for flat connectors 2.8 \times 0.8 mm are not included in the scope of supply.

3SB2, Mounting Diameter 16 mm

Dimension drawings (mm)

Actuators

Pushbutton or illuminated pushbutton

with flat button



Pushbutton or illuminated pushbutton

with raised button



Selector switch



CES key-operated switch



* with key

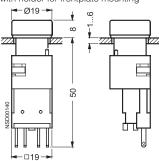
EMERGENCY-STOP mushroom pushbutton



Indicator light

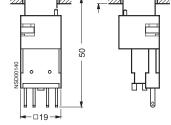


Contact blocks with push-on connection



Pushbutton and contact block

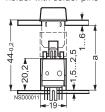
with holder for frontplate mounting



Contact blocks with soldering pins for use on printed circuit boards Mounting dimensions

Illuminated pushbutton unit

with contact block and lampholder with solder pins



Solder pin spacing Solder terminal \varnothing 1.3 $^{+0.1}$ Length $\bf a$ of spacers: $\bf a=44^{-0.2}$ minus front plate thickness. When using backing plates, the length $\bf a$ is

reduced by 0.8 mm.

To avoid bending of the PCB when the actuator is operated, sufficient spacers must be provided spaced as shown in the table below:

Maximum PCB	Max. distance between
hickness	spacers

1.5 mm	80 mm
2.5 mm	150 mm
When using	generally 50 m

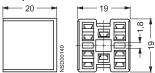
(These details are based on epoxy resin glass fibre

))	16,2	
NSD000002		9)	9	اً

Minimum clearance	а	b
Round design	19	19
Square design without inscription plate	21	21
Round and square designs with inscription plates	21	32
For 2 selector switches and 3 switching positions, maintained contact, side by side	21	21

Accessories

Complete connector



NO, NC La

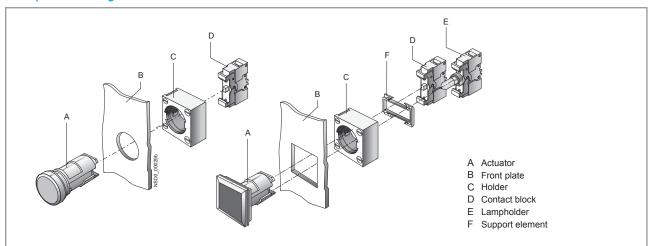
NO, NC

3SB3 Push Buttons and Indicator Lights, 22 mm

General data

Overview

Front plate mounting

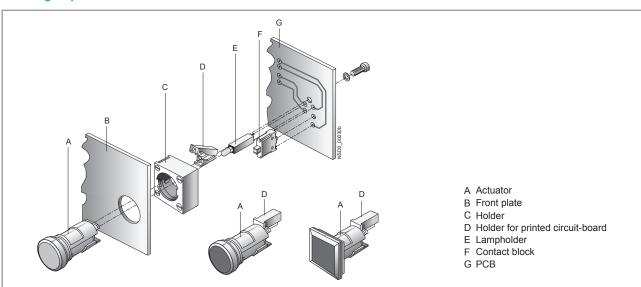


For actuators see page 10/26 to 10/64.

For contact blocks and lamp holders see page 10/65 to 10/67.

For holders see page 10/68.

Mounting on printed circuit boards

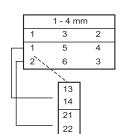


For contact blocks for use on printed circuit boards see page 10/68.

Contact assignment

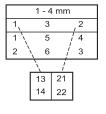
Mounting surface depth
Depth for contact blocks
with 1 contact
Depth for contact blocks
with 2 contacts

Carrier for 3 blocks Contact blocks, lamp holders

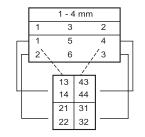


For one contact block

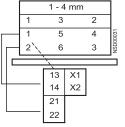
with 2 contacts, e.g. 1 NO + 1 NC For 2 contact blocks each with 1contact, e.g. 1 NO, 1 NC



For 2 contact blocks each with 2 contacts, e.g. 1 NO + 1 NC, 1 NO + 1 NC



For one contact block with 2 contacts, e.g. 1 NO + 1 NC and a lampholder



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3SB3 Push Buttons and Indicator Lights, 22 mm

General data

Design

The 3SB3 series is a modular range of commanding and signaling devices for front panel mounting and rear conductor connection. As an alternative, individual elements can also be supplied for use on printed circuit boards. Complete units are offered for the most commonly used applications.



Actuators and indicators and complete units

The 3SB3 series is available:

- Made of molded plastic in flat, round and square design
- · Made of metal in round design.

The devices are of modern industrial design and can be mounted rapidly by a single person. The operating surfaces of the push buttons and illuminated push buttons are concave. The lenses of the indicator lights are convex.

The metal version with a high degree of protection according to IP67 and NEMA 4X is available for the world market.

One command point comprises:

- An actuator or lens assembly in front of the control panel
- A holder for mounting behind the control panel
- Up to 3 contact blocks and/or 1 lamp holder behind the control panel
- A comprehensive range of accessories for inscription

Two contact blocks can be snapped onto the actuator in the standard version.

When three contact blocks or illuminated actuators are required, an additional holder must be plugged onto the actuator from the rear

- 3SB39 01-0AB holder for 3 contact blocks or for 2 contact blocks and 1 lamp holder
- 3SB39 01-0AC holder with pressure plates for actuating a central contact block when using a selector switch, key-operated switch and twin push button with 3 contact blocks.

For illuminated push buttons, illuminated switches and illuminated selector switches the holder is included in the scope of supply as standard.

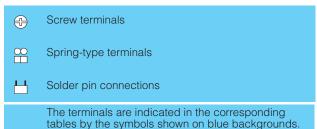
The contact blocks are fitted with slow-action contacts with double operating contacts. These ensure a high switching reliability even with small voltages and currents, such as 5 V/1 mA. They are suitable for use in solid-state systems as well as conventional controls.

Standards

IEC 60947-1, EN 60947-1, IEC 60947-5-1, EN 60947-5-1, IEC 60947-5-5, EN 60947-5-5 for EMERGENCY-STOP mush-room push buttons.

Connection methods

The devices are available with screw terminals (box terminals), spring-type terminals or solder pins.



Application

The devices are climate-proof (KTW 24) and suitable for standard industrial applications and operation in marine applications. For operation in oily atmospheres (organic oils/lubricants) we recommend actuators which are marked as "solvent-resistant".

AS-Interface solutions

The 3SB3 commanding and signaling devices can be connected to the AS-Interface communication system quickly and safely with the help of various solutions.

The following solutions are available:

- ASIsafe EMERGENCY-STOP mushroom push buttons (see page 10/97)
- AS-Interface enclosures with 1 to 6 command points (see page 10/96).
- AS-Interface front panel modules for 4 command points (see Catalog IK PI)

"Intrinsic safety" type of protection EEx i according to ATEX directive 94/9/EC

The push buttons and indicator lights in round design can also be used in hazardous areas. The 3SB34 ..-0. contact blocks and the 3SB34 ..-1A lamp holders (with 3SB39 01-1.A LED lamp) with screw terminals or spring-type terminals can be used.

See www.siemens.com/sirius/atex.

Safety EMERGENCY-STOP push buttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the mushroom push buttons of the 3SB3 series are suitable for use as safety EMERGENCY-STOP push buttons.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol \oplus .

Category 4 according to EN 954-1 can be attained with the EMERGENCY-STOP mushroom push buttons if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

General data

Configuration

Mounting and fixing

The 3SB3 devices can be easily and quickly mounted:

- Actuators or indicator lights are positioned in the opening of the front panel from the front
- · Position the holder from the rear
- Tighten the screw on the holder
- Snap on the contact block or the lamp holder directly onto the actuator from the back

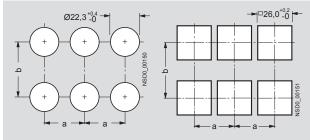
The holder for the round versions is set to a switchboard thickness of 1 to 4 mm when delivered and is placed in the direction of the arrow ↑ 1–4 mm ↑ on the actuator/indicator from the back. The fixing screw is located underneath, on the right.

For a switchboard thickness of 3 to 6 mm, the holder is reversed and mounted in the direction of the arrow at \uparrow 3–6 mm \uparrow and the fixing screw is located on the upper right. In this case, the fixing screw must be rotated anticlockwise to its limit before mounting the holder

The control panel depth of 1 to 4 mm can be compensated with the holder for the square version.

When label holders, protective caps or similar accessories are used, the greatest permissible control panel thickness must be reduced by the wall thickness of the accessory part.

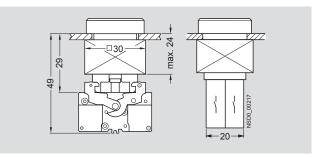
Mounting dimensions on front plates



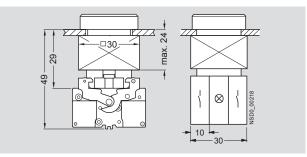
Minimum clearance	а	b
Contact blocks (1 contact) and lamp holder For front plate mounting, with screw terminals For front plate mounting with spring-type terminals For use on PCB, with solder pin connections	30 ¹⁾ 30 ¹⁾ 30 ¹⁾	45 30 ¹⁾ 30 ¹⁾
Contact blocks with 2 contacts • for front plate mounting	30 ¹⁾	50
When using holders for inscription labels 12.5 mm × 27 mm 27.0 mm × 27 mm	30 ¹⁾ 30 ¹⁾	45 ²⁾ 60

¹⁾ For mushroom push button, EMERGENCY-STOP and push-pull button: Note mushroom diameter d = 40 mm or 60 mm.

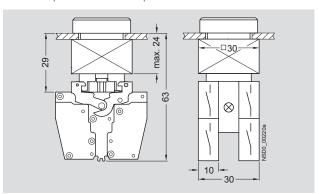
Mounting depth



Push button with two contact blocks

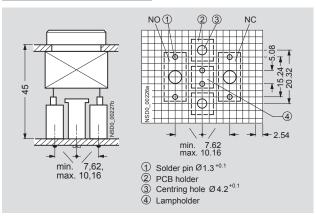


Illuminated push button with lamp holder and two contact blocks



Illuminated push button with lamp holder and two contact blocks with two contacts

Used on printed circuit boards



Illuminated push button with solder pins

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²⁾ 60 mm with contact blocks having two contacts.

Push Button Units and Indicator Lights 3SB3 Push Buttons and Indicator Lights, 22 mm

General data

Туре		3SB34 00-0, 3SB34 20-0	3SB14 00-0J	3SB34 00-1, 3SB34 20-1	3SB34 03-0, 3SB34 23-0	3SB34 03-1, 3SB34 23-1	3SB34 11-0	3SB34 11-1		
Contact blocks and lamp holders					•					
Standards		IEC 60947-5-	1, IEC 60947-5	-5, EN 60947-	-5-1, EN 60947-5-5					
Connection type		Screw to	erminals	Spring-type terminals			Solder pins			
Rated insulation voltage U _i	V	400		250	400		250	60		
For pollution degree according to IEC 60947-1		Class 3		Class 3	Class 3		Class 3	Class 3		
Rated impulse withstand voltage <i>U</i> _{imp}	kV	4		4	4	4	4	1.5		
Conventional thermal current I _{th}	Α	10		—	10	_	10	_		
Rated operational current $I_{ m e}$ at rated operational voltage $U_{ m e}$										
 Alternating current 50/60 Hz, AC-12 		10		_	10	_	10			
- At $U_e = 24 \dots 230 \text{ V}$	A	10		_	10	_	10	_		
- At $U_e = 400 \text{ V}$	Α	10		_	10	_	_	_		
 Alternating current 50/60 Hz, AC-15 At U_B = 24 230 V 	Α	6	6		6		4			
- At $U_e = 24 250 \text{ V}$ - At $U_e = 400 \text{ V}$	A	3	4	_	3		-			
Direct current DC-12		_								
- At $U_e = 24 \text{ V}$	Α	10	10	_	10	_	10	_		
- At $U_{\rm e} = 48 \text{ V}$	Α	5	_	_	5	_	5	_		
- At $U_{e} = 110 \text{ V}$	Α	2.5	2	_	2.5	_	2.5	_		
- At U _e = 230 V	Α	1	0.5	—	1	_	1	_		
Direct current DC-13			-							
- At $U_e = 24 \text{ V}$	A	3	5	_	3	_	3	_		
- At <i>U</i> _e = 48 V - At <i>U</i> _e = 110 V	A A	1.5 0.7	0.5		1.5 0.7		1.5 0.7			
- At $U_e = 230 \text{ V}$	A	0.3	0.2	_	0.3		0.3			
Contact stability										
Test voltage	V	5			5	_	5	_		
Test current	mΑ	1			1	_	1	_		
Lamp holders		_		BA 9s	_	BA 9s	_	Wedge bases		
Lamps		_		Incandes- cent lamps, glow lamps and LED lamps	-	Incandes- cent lamps, glow lamps and LED lamps	_	Incandes- cent lamps and LED lamps		
Short-circuit protection, weld-free, acc. to IEC 60947-5-1 • DIAZED fuse links, utilization category gG acc. to IEC 60269-3-1 • DIAZED fuse links, quick according to DIN VDE 0635 • Miniature circuit breaker with C characteristic according to IEC 60898	А	Dz10 A Dz 16 A 10								
Mechanical endurance		10 × 10 ⁶ ope	rating cycles							
Electrical endurance • For utilization category AC-15 with 3RT20 15 to		10 × 10 ⁶ ope								
3RT20 26 contactors • With utilization category DC-12, DC-13			urrent it depend		ational voltage,	the breaking of	current, the circ	cuit inductanc		
Switching frequency	1/h	1000 operatir	0 1 ,							
Degree of protection acc. to IEC 60529	.,	TTT Sporatii	5 -, 50							
Connections Contact chambers		IP20 IP40		_	IP40	_	IP40	_		
Touch protection according to EN 61140 and BGV A3		Finger-safe			Finger-safe		_			
SolidSolid with end sleeves to DIN 46228	mm ²	 2× (0.5 1.5 2× (1 1.5) 2× (0.5 0.7 2× AWG 18 .	7 5)		2 × (0.25 ° 2 × (0.25 ° 2 × (0.25 °).75) 1.5)	_ _ _ _			
AWG cables, solid or stranded		2, 11101101								
AWG cables, solid or stranded Tightening torque, terminal screw	Nm mm ²	0.8			_		_			

¹⁾ For standard screwdriver size 2 or Pozidriv 2.

Push Button Units and Indicator Lights 3SB3 Push Buttons and Indicator Lights, 22 mm

General	

Туре		3SB34 00-0, 3SB34 20-0	3SB34 00-1, 3SB34 20-1	3SB34 03-0, 3SB34 23-0	3SB34 03-1, 3SB34 23-1	3SB34 11-0	3SB34 11-1
Data according to UL and CSA							
Rated operational voltage	V AC	300	_	300	_	300	_
Conventional thermal current (uninterrupted current)	Α	10	_	10	_	10	_
Switching capacity		A 300, R 300, A 600 same polarity					
Rated voltage (lamps)							
Lamp with BA 9s base	V AC	_	125	_	125	_	_
Lamp with wedge base	V AC	_	60	_	60	_	60
Lamp holders with integrated LED	V	_	24 AC/DC, 110 AC, 230 AC	_	24 AC/DC, 110 AC, 230 AC	_	_
Rated power (lamps)	W	_	2.5	_	2.5	_	1

Туре		3SB30, 3SB32 (3SB31)	3SB31, 3SB33	3SB35, 3SB36
Actuators and indicators				
Enclosure material		Plastic		Metal
Design		Round	Square	Round
Terminal designation acc. to EN 50013		Identification number on the ho function digit on the contact blo		
Device identification		Snap-on label		
Tightening torques				
Screw on holder	Nm	max. 1		
Mechanical endurance				
Push buttons		10×10^6 operating cycles		
Illuminated push buttons		3×10^6 operating cycles		
Actuators, rotary or maintained		3×10^5 operating cycles		
Key-operated switch with key monitoring		1×10^5 operating cycles		
Switching frequency	1/h	1000 operating cycles		
Climatic withstand capability acc. to EN ISO 6270-2		Climate-proof KTW24; suitable for marine applications	S	
Ambient temperature				
 During operation, non-illuminated and with LED 	°C	-25 + 70		
During operation, devices with incandescent lamp	°C	-25 + 60		
During storage, transport	°C	-40 +80		
Degree of protection acc. to IEC 60529 and NEMA Standards				
 Actuators and indicators, standard 		IP66; NEMA Type 1,3,4,4X, 12	IP65; NEMA Type 1,3,4,4X, 12	IP67; NEMA Type 1,3,4,4X, 12
- with protective caps		IP67; NEMA Type 1,3,4,4X, 12	IP67; NEMA Type 1,3,4,4X, 12	—
 Key-operated switch with key monitoring 		IP54; NEMA Type 1,3,4,4X, 12	—	—
Twin push buttons (3SB31)		IP65; NEMA Type 1,3,4,4X, 12	—	—
Protective measures		Protective measures are met at and lens assemblies are moun enclosures.	utomatically when the actuators ted on metal front plates and	Grounding is necessary for operation with protective extra- low voltage (PELV).
		When mounted in insulated encorrective measures are met.	closures, the "total insulation"	
Shock resistance according to IEC 60068-2-27 for half-sine shock type, 11 ms shock duration				
Devices without incandescent lamp		≤50 g		
Devices with incandescent lamp		≤30 g		
Vibration resistance acc. to IEC 60068-2-6				
 Acceleration at frequency 20 200 Hz 		5 g		

Туре	3SB38 00, 3SB38 01	_	3SB38 02, 3SB38 03
Enclosures			
Enclosure material	Plastic		Metal
Actuators and indicators	Plastic, round		Metal, round
Degree of protection acc. to IEC 60529	IP65		IP67 and NEMA Type 4
Resistance to extreme climates acc. to DIN 50017	KTW 24		KTW 24

3SB3, Metal, Round, 22 mm

Complete Units

Selection and ordering data

	Rated voltage of lamp	Color of handle	Contacts for front plate	DT	Screw terminals	•	DT	Spring-type terminals	$\overset{\infty}{\sqcup}$
			mounting		Configurator	£03		Configurator	ર્્ે
	V				Order No.			Order No.	
Push buttons									
	Push buttons with	flat button							
		Black Black Red Yellow Green Blue White	1 NO 1 NC 1 NC 1 NO 1 NO 1 NO 1 NO		3SB36 02-0AA11 3SB36 03-0AA11 3SB36 03-0AA21 3SB36 02-0AA31 3SB36 02-0AA41 3SB36 02-0AA51 3SB36 02-0AA61			3SB36 02-0AA11-0CC0 3SB36 03-0AA11-0CC0 3SB36 03-0AA21-0CC0 3SB36 02-0AA31-0CC0 3SB36 02-0AA41-0CC0 3SB36 02-0AA51-0CC0 3SB36 02-0AA61-0CC0	
Push button with flat button		Black Red Yellow Green Blue White Clear	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 01-0AA11 3SB36 01-0AA21 3SB36 01-0AA31 3SB36 01-0AA41 3SB36 01-0AA51 3SB36 01-0AA61 3SB36 01-0AA71			3SB36 01-0AA11-0CC0 3SB36 01-0AA21-0CC0 3SB36 01-0AA31-0CC0 3SB36 01-0AA41-0CC0 3SB36 01-0AA51-0CC0 3SB36 01-0AA61-0CC0	
	Push button unit v								
		Black Black Red Yellow Blue White	1 NO 1 NC 1 NC 1 NO 1 NO 1 NO		3SB36 02-0BA11 3SB36 03-0BA11 3SB36 03-0BA21 3SB36 02-0BA31 3SB36 02-0BA51 3SB36 02-0BA61			_ _ _	
		Black Red Yellow Green Blue White	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 01-0BA11 3SB36 01-0BA21 3SB36 01-0BA31 3SB36 01-0BA41 3SB36 01-0BA51 3SB36 01-0BA61				
	Illuminated push be momentary with inter- (incl. holder for 3 el	egrated LED	flat button	-					
	24 AC/DC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB36 46-0AA21 3SB36 45-0AA31 3SB36 45-0AA41 3SB36 45-0AA51 3SB36 45-0AA61 3SB36 45-0AA71			3SB36 46-0AA21-0CC0 3SB36 45-0AA31-0CC0 3SB36 45-0AA41-0CC0 3SB36 45-0AA51-0CC0 3SB36 45-0AA61-0CC0 3SB36 45-0AA71-0CC0	
Illuminated push button with flat button		Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 47-0AA21 3SB36 47-0AA31 3SB36 47-0AA41 3SB36 47-0AA51 3SB36 47-0AA61 3SB36 47-0AA71			3SB36 47-0AA21-0CC0 3SB36 47-0AA31-0CC0 3SB36 47-0AA41-0CC0 3SB36 47-0AA51-0CC0 3SB36 47-0AA61-0CC0 3SB36 47-0AA71-0CC0	
	110 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB36 50-0AA21 3SB36 57-0AA31 3SB36 57-0AA41 3SB36 57-0AA51 3SB36 57-0AA61 3SB36 57-0AA71			_ _ _ _	
		Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 51-0AA21 3SB36 51-0AA31 3SB36 51-0AA41 3SB36 51-0AA51 3SB36 51-0AA61 3SB36 51-0AA71			_ _ _ _	
	230 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB36 54-0AA21 3SB36 53-0AA31 3SB36 53-0AA41 3SB36 53-0AA51 3SB36 53-0AA61 3SB36 53-0AA71			3SB36 54-0AA21-0CC0 3SB36 53-0AA31-0CC0 3SB36 53-0AA41-0CC0 3SB36 53-0AA51-0CC0 3SB36 53-0AA61-0CC0 3SB36 53-0AA71-0CC0	
		Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 55-0AA21 3SB36 55-0AA31 3SB36 55-0AA41 3SB36 55-0AA51 3SB36 55-0AA61 3SB36 55-0AA71			3SB36 55-0AA21-0CC0 3SB36 55-0AA31-0CC0 3SB36 55-0AA41-0CC0 3SB36 55-0AA51-0CC0 3SB36 55-0AA61-0CC0 3SB36 55-0AA71-0CC0	

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Inscription is possible by inserting a label.

Push Button Units and Indicator Lights 3SB3, Metal, Round, 22 mm

Complete Units

	Rated voltage of	Color of	Contacts for	DT	Screw terminals		T Spring-type terminals	\sim
	lamp	handle	front plate		Coron tommulo	⊕ L	opining type terminate	
			mounting		Configurator	£03	Configurator	ર્ેટ્રે
	V				Order No.		Order No.	
Push buttons	V							
	Illuminated push b with BA 9s lamp hol (incl. holder for 3 ele	der, without la			3SB36 07-0AA21 3SB36 06-0AA01 3SB36 06-0AA31 3SB36 06-0AA41		3SB36 07-0AA21-0CC0 	
Illuminated push button with flat button		Blue ¹⁾ White Clear ¹⁾	1 NO 1 NO 1 NO		3SB36 06-0AA51 3SB36 06-0AA61 3SB36 06-0AA71		3SB36 06-0AA51-0CC0 3SB36 06-0AA61-0CC0 3SB36 06-0AA71-0CC0	
with flat button		Red ¹⁾ Amber ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 05-0AA21 3SB36 05-0AA01 3SB36 05-0AA31 3SB36 05-0AA41 3SB36 05-0AA51 3SB36 05-0AA61 3SB36 05-0AA71		3SB36 05-0AA21-0CC0	
	Illuminated push be solvent-resistant be with integrated LED	utton ²⁾ ,	*					
	24 AC/DC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB36 46-0AA21-0PA0 3SB36 45-0AA31-0PA0 3SB36 45-0AA41-0PA0 3SB36 45-0AA51-0PA0 3SB36 45-0AA61-0PA0 3SB36 45-0AA71-0PA0		_ _ _ _	
Illuminated push button with flat button		Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB36 47-0AA21-0PA0 3SB36 47-0AA31-0PA0 3SB36 47-0AA41-0PA0 3SB36 47-0AA51-0PA0 3SB36 47-0AA61-0PA0 3SB36 47-0AA71-0PA0		_ _ _ _	
Mushroom push butt								
	Mushroom push-pu tained with pull-to-unlatch r —	•	7 40 mm , main- 1 NC 1 NO + 1 NC		3SB36 03-1CA21 3SB36 01-1CA21		3SB36 03-1CA21-0CC0 3SB36 01-1CA21-0CC0	
Mushroom push-pull								

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

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¹⁾ Inscription is possible by inserting a label.

²⁾ Not suitable for laser inscription.

Push Button Units and Indicator Lights 3SB3, Metal, Round, 22 mm

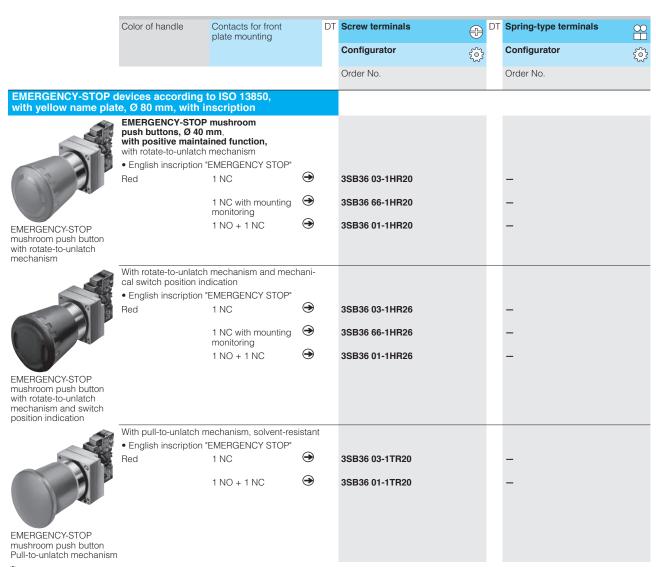
Complete Units

	Version	Color of	Contacts for	DT	Screw terminals	DT e	Spring-type terminals	\cong
		handle/ Lock No.	front plate mounting		Configurator	Configurator	£03	
					Order No.		Order No.	
Selector switches								
Tolly	Selector switches, Switching sequence							
	Latching O I	Black, Standard	1 NO 1 NO + 1 NC		3SB36 02-2KA11 3SB36 01-2KA11		3SB36 02-2KA11-0CC0 3SB36 01-2KA11-0CC0	
	V	Black, Heavy duty	1 NO 1 NO + 1 NC		3SB36 02-2PA11 3SB36 01-2PA11		_	
	Selector switches, switching sequence			!				
Selector switch	Latching O I I	Black, Standard	1 NO, 1 NO 1 NO + 1 NC, 1 NO + 1 NC		3SB36 10-2DA11 3SB36 08-2DA11		3SB36 10-2DA11-0CC0 3SB36 08-2DA11-0CC0	
	\checkmark	Black, Heavy duty	1 NO, 1 NO 1 NO + 1 NC, 1 NO + 1 NC		3SB36 10-2SA11 3SB36 08-2SA11		-	
	Momentary, spring return from the left and right	Black, Standard	1 NO, 1 NO 1 NO + 1 NC, 1 NO + 1 NC		3SB36 10-2EA11 3SB36 08-2EA11		3SB36 10-2EA11-0CC0 3SB36 08-2EA11-0CC0	
		Black, Heavy duty	1 NO, 1 NO 1 NO + 1 NC, 1 NO + 1 NC		3SB36 10-2TA11 3SB36 08-2TA11		_ _	
Key-operated switche	es							
	RONIS key-operate with 2 keys, removal switching sequence Latching	position O + I	٠,		3SB36 02-4AD11 3SB36 01-4AD11		3SB36 02-4AD11-0CC0 3SB36 01-4AD11-0CC0	
RONIS key-operated switch								

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

3SB3, Metal, Round, 22 mm

Complete Units



 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3TK28 safety relays.

Certificate:



Push Button Units and Indicator Lights 3SB3, Metal, Round, 22 mm

	Rated voltage of lamp	Color of lens DT	Screw terminals	⊕ DT	Spring-type terminals	$\stackrel{\infty}{\sqcup}$
			Configurator	£03	Configurator	£0.3
	V		Order No.		Order No.	
Indicator lights						
	Indicator lights with lens with concentric rings ¹⁾ with integrated LED					
	24 AC/DC	Red Yellow Green Blue White Clear Amber	3SB36 44-6BA20 3SB36 44-6BA30 3SB36 44-6BA40 3SB36 44-6BA50 3SB36 44-6BA60 3SB36 44-6BA70 3SB36 44-6BA00		3SB36 44-6BA20-0CC0 3SB36 44-6BA30-0CC0 3SB36 44-6BA40-0CC0 3SB36 44-6BA50-0CC0 3SB36 44-6BA60-0CC0 3SB36 44-6BA70-0CC0	
Indicator light	110 AC	Red Yellow Green Blue White Clear Amber	3SB36 48-6BA20 3SB36 48-6BA30 3SB36 48-6BA40 3SB36 48-6BA50 3SB36 48-6BA60 3SB36 48-6BA70 3SB36 48-6BA00		3SB36 48-6BA20-0CC0 3SB36 48-6BA30-0CC0 3SB36 48-6BA40-0CC0 3SB36 48-6BA50-0CC0 3SB36 48-6BA60-0CC0 3SB36 48-6BA70-0CC0	
	230 AC	Red Yellow Green Blue White Clear	3SB36 52-6BA20 3SB36 52-6BA30 3SB36 52-6BA40 3SB36 52-6BA50 3SB36 52-6BA60 3SB36 52-6BA70		3SB36 52-6BA20-0CC0 3SB36 52-6BA30-0CC0 3SB36 52-6BA40-0CC0 3SB36 52-6BA50-0CC0 3SB36 52-6BA60-0CC0 3SB36 52-6BA70-0CC0	
	With BA 9s lamp holder, without la —	mp Red Yellow Green Blue White Clear	3SB36 04-6BA20 3SB36 04-6BA30 3SB36 04-6BA40 3SB36 04-6BA50 3SB36 04-6BA60 3SB36 04-6BA70		3SB36 04-6BA20-0CC0 3SB36 04-6BA30-0CC0 3SB36 04-6BA40-0CC0 3SB36 04-6BA50-0CC0 3SB36 04-6BA60-0CC0 3SB36 04-6BA70-0CC0	

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Inscription by inserting a label is not possible.

	Version	Inscriptions	Color of	DT	Configurator	کہرم	PS
			handle			£03	
Push buttons with holder ¹⁾					Order No.		
The state of the s	Push buttons with flat button		Black Red Yellow Green Blue White Gray Clear ²⁾		3SB35 00-0AA11 3SB35 00-0AA21 3SB35 00-0AA31 3SB35 00-0AA41 3SB35 00-0AA61 3SB35 00-0AB51 3SB35 00-0AB51 3SB35 00-0AA71		1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
Push button with flat button		Up Down Forward Reverse On Start	Black Black Black Black Green Green		3SB35-00-0AA11-ZED 3SB35-00-0AA11-ZEE 3SB35-00-0AA11-ZEF 3SB35-00-0AA11-ZEG 3SB35 00-0AA41-ZEB 3SB35 00-0AA41-ZEL		1 u 1 u 1 u 1 u 1 u
Push button with raised button		I O I O R	Green Red White Black Blue		3SB35 00-0AA81 3SB35 00-0AB01 3SB35 00-0AB11 3SB35 00-0AB21 3SB35 00-0AC81		1 u 1 u 1 u 1 u 1 u
	Push buttons with flat solvent-resistant button ³⁾		Black Red Yellow Green Blue White		3SB35 00-0AA11 3SB35 00-0AA21-0PA0 3SB35 00-0AA31-0PA0 3SB35 00-0AA41-0PA0 3SB35 00-0AA51-0PA0 3SB35 00-0AA61-0PA0		1 u 1 u 1 u 1 u 1 u
Push button with raised front ring	Push buttons with raised button	Off Stop	Black Red Yellow Green Blue White Red Red		3SB35 00-0BA11 3SB35 00-0BA21 3SB35 00-0BA31 3SB35 00-0BA41 3SB35 00-0BA61 3SB35 00-0BA61 3SB35-00-0BA21-ZEC 3SB35-00-0BA21-ZEK		1 u 1 u 1 u 1 u 1 u
Illuminated push button with flat button	Push buttons with raised front ring (height 15.5 mm)		Black Red Yellow Green Blue White		3SB35 00-0AA12 3SB35 00-0AA22 3SB35 00-0AA32 3SB35 00-0AA42 3SB35 00-0AA52 3SB35 00-0AA62		1 u 1 u 1 u 1 u 1 u
	Illuminated push buttons with flat button (incl. holder for 3 elements)		Amber ²⁾ Red ²⁾ Yellow ²⁾ Green ²⁾ Blue ²⁾ White Clear ²⁾		3SB35 01-0AA01 3SB35 01-0AA21 3SB35 01-0AA31 3SB35 01-0AA41 3SB35 01-0AA61 3SB35 01-0AA61 3SB35 01-0AA71		1 u 1 u 1 u 1 u 1 u 1 u
Illuminated push button with raised button	Illuminated push buttons with flat, solvent-resistant button ³⁾ (incl. holder for 3 elements)		Red ²⁾ Yellow ²⁾ Green ²⁾ Blue ²⁾ White Clear ²⁾		3SB35 01-0AA21-0PA0 3SB35 01-0AA31-0PA0 3SB35 01-0AA41-0PA0 3SB35 01-0AA51-0PA0 3SB35 01-0AA61-0PA0 3SB35 01-0AA71-0PA0		1 u 1 u 1 u 1 u 1 u
Push button with flat button	Illuminated push buttons with raised button (incl. holder for 3 elements)		Amber Red Yellow Green Blue White Clear		3SB35 01-0BA01 3SB35 01-0BA21 3SB35 01-0BA31 3SB35 01-0BA41 3SB35 01-0BA51 3SB35 01-0BA61 3SB35 01-0BA71		1 u 1 u 1 u 1 u 1 u
	Push buttons with flat button, maintained, unlatches by pressing again		Black Red Yellow Green Blue White Gray		3SB35 00-0DA11 3SB35 00-0DA21 3SB35 00-0DA31 3SB35 00-0DA41 3SB35 00-0DA51 3SB35 00-0DA61 3SB35 00-0DB51		1 u 1 u 1 u 1 u 1 u 1 u
	Illuminated push buttons with flat button, maintained, unlatches by pressing again		Amber ²⁾ Red ²⁾ Yellow ²⁾ Green ²⁾		3SB35 01-0DA01 3SB35 01-0DA21 3SB35 01-0DA31 3SB35 01-0DA41		1 u 1 u 1 u

To ronline configurator see www.siemens.com/sirius/configurators .

unlatches by pressing again (incl. holder for 3 elements)

3SB35 01-0DA41

3SB35 01-0DA51 3SB35 01-0DA61 3SB35 01-0DA71

Green²⁾ Blue²⁾

White Clear²⁾

1 unit

1 unit

1 unit 1 unit

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

²⁾ Inscription is possible by inserting a label.

 $^{^{3)}}$ Not suitable for laser inscription.

3SB3, Metal, Round, 22 mm

Actuators and Indicators

Mushroom push buttons with holder					
Mushroom push buttons with holder		Version	Color of handle DT	10.5	PS
Mushroom push buttons, 0 30 mm Elack SSB35 00-1DA11 1 1 1 1 1 1 1 1 1				Order No.	
Red \$8833 00-10A21 1	Mushroom push buttons wit	th holder ¹⁾			
Red 38835 00-16A21 1		Mushroom push buttons, Ø 30 mm	Red Yellow	3SB35 00-1DA21 3SB35 00-1DA31	1 unit 1 unit 1 unit 1 unit
Mushroom push buttons, Ø 60 mm	Mushroom push button	Mushroom push buttons, Ø 40 mm	Red Yellow	3SB35 00-1GA21 3SB35 00-1GA31	1 unit 1 unit 1 unit 1 unit
Red 35835 00-10A21					
Mushroom push button, 2 40 mm		Mushroom push buttons, Ø 60 mm	Red Yellow	3SB35 00-1QA21 3SB35 00-1QA31	1 unit 1 unit 1 unit 1 unit
Illuminated mushroom push buttons,		Ø 30 mm	Yellow Green	3SB35 01-1DA31 3SB35 01-1DA41	1 unit 1 unit 1 unit 1 unit
Push-pull button, Ø 30 mm Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Red 3SB35 01-1EA31 1 unlatch 1 unlatch 2 unl	Ø 40 mm	Ø 40 mm	Yellow Green White	3SB35 01-1GA31 3SB35 01-1GA41 3SB35 01-1GA61	1 unit 1 unit 1 unit 1 unit 1 unit
Push-pull buttons, Ø 30 mm, maintained, pull to unlatch Push-pull buttons, Ø 40 mm, maintained, pull to unlatch Push-pull buttons, Ø 40 mm, maintained, pull to unlatch Push-pull buttons, Ø 40 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements)		Ø 60 mm	Yellow Green	3SB35 01-1QA31 3SB35 01-1QA41	1 unit 1 unit 1 unit 1 unit
Push-pull buttons, Ø 40 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm Push-pull buttons, Ø 30 mm, maintained, pull to unlatch can be illuminated (incl. holder for 3 elements) Push-pull button, Ø 40 mm Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements)					
Push-pull button, Ø 30 mm Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 30 mm, maintained, pull to unlatch, can be illuminated Push-pull button, Ø 40 mm Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated Push-pull button, Ø 40 mm Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated Push-pull buttons, Ø 60 mm, maintained, Push Push-pull buttons, Ø 60 mm, maintained, Push Push-pull buttons, Ø 60 mm, maintained, Push Push-pull buttons, Ø 60 mm, maintained, Push Push-pull buttons, Ø 60 mm, maintained, Push Push-pull buttons, Ø 60 mm, maintained, Push Push-pull buttons, Ø 60 mm, maintained, Push Push Push Push Push Push Push Push					1 unit 1 unit
Push-pull buttons, Ø 60 mm, maintained, pull to unlatch Push-pull buttons, Ø 30 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull button, Ø 40 mm Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull button, Ø 40 mm Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Blue 3SB35 01-1CA01 1 unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Blue 3SB35 01-1CA51 1 unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, Pull to unlatch, can be illuminated (incl. holder for 3 elements)			Red Yellow	3SB35 00-1CA21 3SB35 00-1CA31	1 unit 1 unit 1 unit 1 unit
pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull button, Ø 40 mm Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Push-pull buttons, Ø 60 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements)	Push-pull button, Ø 30 mm				1 unit 1 unit
Push-pull buttons, Ø 40 mm, maintained, pull to unlatch, can be illuminated (incl. holder for 3 elements) Amber Red 3SB35 01-1CA21 1 1 urgs (incl. holder for 3 elements) 3SB35 01-1CA21 1 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 3SB35 01-1CA31 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 3SB35 01-1CA31 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 4 mber Red 3SB35 01-1RA01 1 urgs (incl. holder for 3 elements) 3SB35 01-1RA01 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 4 mber Red 3SB35 01-1RA21 1 urgs (incl. holder for 3 elements) 3SB35 01-1RA31 1 urgs (incl. holder for 3 elements) 4 urgs (incl. holder for 3 elements) 3SB35 01-1RA41 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 3SB35 01-1RA41 1 urgs (incl. holder for 3 elements) 1 urgs (incl. holder for 3 elements) 3SB35 01-1RA41 1 urgs (incl. holder for 3 elements)	Push-pull button @ 40 mm	pull to unlatch, can be illuminated	Red Yellow Green Blue	3SB35 01-1EA21 3SB35 01-1EA31 3SB35 01-1EA41 3SB35 01-1EA51	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
pull to unlatch, can be illuminated (incl. holder for 3 elements)	. son pan batton, p 40 mm	pull to unlatch, can be illuminated	Red Yellow Green Blue	3SB35 01-1CA21 3SB35 01-1CA31 3SB35 01-1CA41 3SB35 01-1CA51	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		pull to unlatch, can be illuminated	Red Yellow Green Blue	3SB35 01-1RA21 3SB35 01-1RA31 3SB35 01-1RA41 3SB35 01-1RA51	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

To ronline configurator see www.siemens.com/sirius/configurators .

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

3SB3, Metal, Round, 22 mm

Actuators and Indicators

						_	
	Version	Version Illumination	Color of handle	DT	Configurator	£	PS
					Order No.		
Selector switches with ho	lders						
	Selector switches with	2 switch positions					
	Switching sequence O-I, 90° operating angle, maintained	Non-illuminated, standard version 1)	Black Red Green White		3SB35 00-2HA11 3SB35 00-2HA21 3SB35 00-2HA41 3SB35 00-2HA61		1 unit 1 unit 1 unit 1 unit
1	0	Non-illuminated, with solvent-resistant short handle ¹⁾	Black Red Green		3SB35 00-2HA11-0PA0 3SB35 00-2HA21-0PA0 3SB35 00-2HA41-0PA0		1 unit 1 unit 1 unit
Selector switch, 2 switch positions, standard version, 90°		Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2HA01 3SB35 01-2HA21 3SB35 01-2HA31 3SB35 01-2HA41 3SB35 01-2HA51 3SB35 01-2HA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, standard version 1)	Black Red Green White		3SB35 00-2KA11 3SB35 00-2KA21 3SB35 00-2KA41 3SB35 00-2KA61		1 unit 1 unit 1 unit 1 unit
Selector switch, 2 switch posi-	O I	Non-illuminated, with solvent-resistant short handle ¹⁾	Black Red Green		3SB35 00-2KA11-0PA0 3SB35 00-2KA21-0PA0 3SB35 00-2KA41-0PA0		1 unit 1 unit 1 unit
tions, standard version, 50°		Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2KA01 3SB35 01-2KA21 3SB35 01-2KA31 3SB35 01-2KA41 3SB35 01-2KA51 3SB35 01-2KA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Illuminated, with solvent-resistant short handle ¹⁾ (incl. holder for 3 elements)	Red Green Blue Clear		3SB35 01-2KA21-0PA0 3SB35 01-2KA41-0PA0 3SB35 01-2KA51-0PA0 3SB35 01-2KA71-0PA0		1 unit 1 unit 1 unit 1 unit
Selector switch, 2 switch positions,		Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-2PA11 3SB35 00-2PA21 3SB35 00-2PA41 3SB35 00-2PA61		1 unit 1 unit 1 unit 1 unit
heavy-duty version		Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2PA01 3SB35 01-2PA21 3SB35 01-2PA31 3SB35 01-2PA41 3SB35 01-2PA51 3SB35 01-2PA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, long handle, heavy duty version	Black Red Green White		3SB35 00-3PA11 3SB35 00-3PA21 3SB35 00-3PA41 3SB35 00-3PA61		1 unit 1 unit 1 unit 1 unit
Selector switch, 2 switch positions, long handle		Illuminated long handle, heavy duty version (incl. holder for 3 elements)	Red Yellow Green Blue Amber Clear		3SB35 01-3PA21 3SB35 01-3PA31 3SB35 01-3PA41 3SB35 01-3PA51 3SB35 01-3PA01 3SB35 01-3PA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

[©] For online configurator see www.siemensv.com/sirius/configurators

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Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

Push Button Units and Indicator Lights 3SB3, Metal, Round, 22 mm

Actuators and Indicators

	Version	Version Illumination	Color of handle	DT	Configurator	E	PS
					Order No.		
Selector switches with ho	olders						
A STATE OF THE STA	Selector switches with	2 switch positions					
	Switching sequence O-I, 50° operating angle, momentary, spring	Non-illuminated, standard version ¹⁾	Black Red Green White		3SB35 00-2LA11 3SB35 00-2LA21 3SB35 00-2LA41 3SB35 00-2LA61		1 unit 1 unit 1 unit 1 unit
	on	Non-illuminated, with solvent-resistant short handle ¹⁾	Black Red Green		3SB35 00-2LA11-0PA0 3SB35 00-2LA21-0PA0 3SB35 00-2LA41-0PA0		1 unit 1 unit 1 unit
Selector switch, 2 switch positions, standard version		Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2LA01 3SB35 01-2LA21 3SB35 01-2LA31 3SB35 01-2LA41 3SB35 01-2LA51 3SB35 01-2LA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Illuminated, with solvent-resistant short handle ¹⁾ (incl. holder for 3 elements)	Red Green Blue Clear		3SB35 01-2LA21-0PA0 3SB35 01-2LA41-0PA0 3SB35 01-2LA51-0PA0 3SB35 01-2LA71-0PA0		1 unit 1 unit 1 unit 1 unit
Selector switch, 2 switch		Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-2QA11 3SB35 00-2QA21 3SB35 00-2QA41 3SB35 00-2QA61		1 unit 1 unit 1 unit 1 unit
positions, heavy-duty version		Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2QA01 3SB35 01-2QA21 3SB35 01-2QA31 3SB35 01-2QA41 3SB35 01-2QA51 3SB35 01-2QA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, long handle, heavy-duty version	Black Red Green White		3SB35 00-3QA11 3SB35 00-3QA21 3SB35 00-3QA41 3SB35 00-3QA61		1 unit 1 unit 1 unit
Selector switch, 2 switch positions, long handle		Illuminated long handle, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-3QA01 3SB35 01-3QA21 3SB35 01-3QA31 3SB35 01-3QA41 3SB35 01-3QA51 3SB35 01-3QA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

3SB3, Metal, Round, 22 mm

Actuators and Indicators

	Version	Version		Т	Configurator	PS
		Illumination	handle		Order No.	
					Order 140.	
Selector switches with ho						
	Selector switches with Switching sequence I-O-II, 2 x 50° operating angle, maintained	3 switch positions Non-illuminated, standard version ¹⁾	Black Red Green White		3SB35 00-2DA11 3SB35 00-2DA21 3SB35 00-2DA41 3SB35 00-2DA61	1 unit 1 unit 1 unit 1 unit
		Non-illuminated, with solvent-resistant short handle ¹⁾	Black Red Green		3SB35 00-2DA11-0PA0 3SB35 00-2DA21-0PA0 3SB35 00-2DA41-0PA0	1 unit 1 unit 1 unit
Selector switch, 3 switch positions, standard version		Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2DA01 3SB35 01-2DA21 3SB35 01-2DA31 3SB35 01-2DA41 3SB35 01-2DA51 3SB35 01-2DA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Illuminated, with solvent-resistant short handle 1) (incl. holder for 3 elements)	Red Green Blue Clear		3SB35 01-2DA21-0PA0 3SB35 01-2DA41-0PA0 3SB35 01-2DA51-0PA0 3SB35 01-2DA71-0PA0	1 unit 1 unit 1 unit 1 unit
Selector switch, 3 switch positions,		Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-2SA11 3SB35 00-2SA21 3SB35 00-2SA41 3SB35 00-2SA61	1 unit 1 unit 1 unit 1 unit
heavy-duty version		Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2SA01 3SB35 01-2SA21 3SB35 01-2SA31 3SB35 01-2SA41 3SB35 01-2SA51 3SB35 01-2SA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, long handle, heavy-duty version	Black Red Green White		3SB35 00-3SA11 3SB35 00-3SA21 3SB35 00-3SA41 3SB35 00-3SA61	1 unit 1 unit 1 unit 1 unit
Selector switch, 3 switch positions, long handle		Illuminated long handle, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-3SA01 3SB35 01-3SA21 3SB35 01-3SA31 3SB35 01-3SA41 3SB35 01-3SA51 3SB35 01-3SA71	1 unit 1 unit 1 unit 1 unit 1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, momentary, spring	Non-illuminated, standard version ¹⁾	Black Red Green White		3SB35 00-2EA11 3SB35 00-2EA21 3SB35 00-2EA41 3SB35 00-2EA61	1 unit 1 unit 1 unit 1 unit
	return from the left and right O I I II	Non-illuminated, with solvent-resistant short handle ¹⁾	Black Red Green		3SB35 00-2EA11-0PA0 3SB35 00-2EA21-0PA0 3SB35 00-2EA41-0PA0	1 unit 1 unit 1 unit
	Ar.	Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2EA01 3SB35 01-2EA21 3SB35 01-2EA31 3SB35 01-2EA41 3SB35 01-2EA51 3SB35 01-2EA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Illuminated, with solvent-resistant short handle 1) (incl. holder for 3 elements)	Red Green Blue Clear		3SB35 01-2EA21-0PA0 3SB35 01-2EA41-0PA0 3SB35 01-2EA51-0PA0 3SB35 01-2EA71-0PA0	1 unit 1 unit 1 unit 1 unit
		Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-2TA11 3SB35 00-2TA21 3SB35 00-2TA41 3SB35 00-2TA61	1 unit 1 unit 1 unit 1 unit
		Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2TA01 3SB35 01-2TA21 3SB35 01-2TA31 3SB35 01-2TA41 3SB35 01-2TA51 3SB35 01-2TA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

Clear

Black

Red

Green

White

Amber

Red

Yellow Green

Blue

Non-illuminated,

Illuminated

long handle,

long handle, heavy-duty version

heavy-duty version
(incl. holder for 3 elements)

3SB35 01-2TA71

3SB35 00-3TA11 3SB35 00-3TA21 3SB35 00-3TA41

3SB35 00-3TA61

3SB35 01-3TA01 3SB35 01-3TA21 3SB35 01-3TA31 3SB35 01-3TA41

3SB35 01-3TA51 3SB35 01-3TA71

1 unit

1 unit

1 unit

1 unit

1 unit

1 unit

1 unit

1 unit 1 unit

1 unit

3SB3, Metal, Round, 22 mm

Actuators and Indicators

	Version	Version Illumination	Color of handle	DT	Configurator	ĘĎ;	PS
Outropy Pales White	. The second				Order No.		
Selector switches with ho	Selector switches with 3 s	witch positions (cont)					
	Switching sequence I-O-II, 2 x 50° operating angle, momentary to the left,	Non-illuminated, standard version ¹⁾	Black Red Green White		3SB35 00-2GA11 3SB35 00-2GA21 3SB35 00-2GA41 3SB35 00-2GA61		1 unit 1 unit 1 unit 1 unit
Selector switch, 3 switch positions, standard version	spring return from the left, maintained to the right	Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2GA01 3SB35 01-2GA21 3SB35 01-2GA31 3SB35 01-2GA41 3SB35 01-2GA51 3SB35 01-2GA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-2VA11 3SB35 00-2VA21 3SB35 00-2VA41 3SB35 00-2VA61		1 unit 1 unit 1 unit 1 unit
		Illuminated, heavy-duty version	Amber Red Yellow Green Blue Clear		3SB35 01-2VA01 3SB35 01-2VA21 3SB35 01-2VA31 3SB35 01-2VA41 3SB35 01-2VA51 3SB35 01-2VA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Selector switch, 3 switch positions, heavy-duty version	Switching sequence I-O-II, 2 x 50° operating angle, maintained to the left, momentary, to the right, spring return from the right	Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-3VA11 3SB35 00-3VA21 3SB35 00-3VA41 3SB35 00-3VA61		1 unit 1 unit 1 unit 1 unit
		Illuminated, long handle, heavy-duty version	Amber Red Yellow Green Blue Clear		3SB35 01-3UA01 3SB35 01-3UA21 3SB35 01-3UA31 3SB35 01-3UA41 3SB35 01-3UA51 3SB35 01-3UA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Calentar quitala		Non-illuminated, standard version 1)	Black Red Green White	3SB35 00-2FA11 3SB35 00-2FA21 3SB35 00-2FA41 3SB35 00-2FA61			1 unit 1 unit 1 unit 1 unit
Selector switch, 3 switch positions, long handle		Illuminated, standard version ¹⁾ (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-2FA01 3SB35 01-2FA21 3SB35 01-2FA31 3SB35 01-2FA41 3SB35 01-2FA51 3SB35 01-2FA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, heavy-duty version	Black Red Green White		3SB35 00-2UA11 3SB35 00-2UA21 3SB35 00-2UA41 3SB35 00-2UA61		1 unit 1 unit 1 unit 1 unit
		Illuminated, heavy-duty version	Amber Red Yellow Green Blue Clear		3SB35 01-2UA01 3SB35 01-2UA21 3SB35 01-2UA31 3SB35 01-2UA41 3SB35 01-2UA51 3SB35 01-2UA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		Non-illuminated, long handle	Black Red Green White		3SB35 00-3UA11 3SB35 00-3UA21 3SB35 00-3UA41 3SB35 00-3UA61		1 unit 1 unit 1 unit 1 unit
		Illuminated, long handle, heavy-duty version (incl. holder for 3 elements)	Amber Red Yellow Green Blue Clear		3SB35 01-3UA01 3SB35 01-3UA21 3SB35 01-3UA31 3SB35 01-3UA41 3SB35 01-3UA51 3SB35 01-3UA71		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

3SB3, Metal, Round, 22 mm

Actuators and Indicators

	Version	Lock version			DT	Configurator	£03	PS
		Туре	Lock No./ color	Key removal position		Order No.	0.0	
						Order No.		
Key-operated switches wi	ith holder ¹⁾							
	Key-operated switches wi	th 2 keys, 2 swi	tch position	s				
	Switching sequence O-I,	RONIS	SB 30	O+I		3SB35 00-4AD11		1 unit
S. C. C.	50° operating angle, maintained			0		3SB35 00-4AD01 3SB35 00-4AD21		1 unit 1 unit
	O	CES	SSG 10	0+I		3SB35 00-4AD21 3SB35 00-4LD11		1 unit
	Ĭzl	OLS	330 10	0		3SB35 00-4LD01		1 unit
	V			I		3SB35 00-4LD21		1 unit
RONIS key-operated switch			LSG 1	O+I O		3SB35 00-4LF01 3SB35 00-4LF11		1 unit 1 unit
		BKS	S1	O+I		3SB35 00-5AD11		1 unit
		BINO	01	Ö		3SB35 00-5AD01		1 unit
				1		3SB35 00-5AD21		1 unit
		O.M.R. ²⁾	73038	O+I		3SB35 00-3AG11		1 unit
			Light blue	O I		3SB35 00-3AG01 3SB35 00-3AG21		1 unit 1 unit
(2)			73037	O+I		3SB35 00-3AH11		1 unit
10			Red	0		3SB35 00-3AH01		1 unit
CES key aparated awitch			73034	O+I		3SB35 00-3AH21		1 unit 1 unit
CES key-operated switch			73034 Black	0+1		3SB35 00-3AJ11 3SB35 00-3AJ01		1 unit
				Ī		3SB35 00-3AJ21		1 unit
			73033	O+I		3SB35 00-3AK11		1 unit
			Yellow	0 I		3SB35 00-3AK01 3SB35 00-3AK21		1 unit 1 unit
	Switching sequence O-I,	RONIS	SB 30	0		3SB35 00-4BD01		1 unit
3	50° operating angle,	CES	SSG 10	0		3SB35 00-4MD01		1 unit
CONTROL OF THE PARTY OF THE PAR	momentary, spring return from the right		LSG 1	0		3SB35 00-4MF11		1 unit
3	0	BKS	S1	0		3SB35 00-5BD01		1 unit
BKS key-operated switch	 >	O.M.R. ²⁾	73038 Light blue	0		3SB35 00-3BG01		1 unit
			73037 Red	0		3SB35 00-3BH01		1 unit
			73034 Black	0		3SB35 00-3BJ01		1 unit
3			73033 Yellow	0		3SB35 00-3BK01		1 unit
O.M.R. key-operated switch								

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

For BKS and CES special locks see page 10/69

Siemens Industry, Inc. Industrial Controls Catalog 2

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Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

²⁾ According to FIAT standards; also available for other users.

3SB3, Metal, Round, 22 mm

• Revised • 11/15/14

Actuators and Indicators

	Version	Lock version	on	DT	Configurator	ردم	PS
	. 2. 5.6.1	Type	Lock No./	Key removal	2394.4.0.	£	, 0
		71	color	position	Order No.		
Key-operated switches wit	th holder ¹⁾						
	Key-operated switches with 2	keys, 3 sw	itch position	ıs			
	Switching sequence I-O-II, 2 x 50° operating angle, maintained	RONIS	SB 30	+O+ O + O+	3SB35 00-4DD11 3SB35 00-4DD01 3SB35 00-4DD41 3SB35 00-4DD21 3SB35 00-4DD31 3SB35 00-4DD51		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
RONIS key-operated switch	A	CES	SSG 10	O+I+II O I+II I	3SB35 00-4PD11 3SB35 00-4PD01 3SB35 00-4PD41 3SB35 00-4PD21 3SB35 00-4PD31		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
		BKS	S1	O O+I+II I II I+II	3SB35 00-5DD01 3SB35 00-5DD11 3SB35 00-5DD21 3SB35 00-5DD31 3SB35 00-5DD41		1 unit 1 unit
(0)		O.M.R. ²⁾	73038 Light blue	I+O+II	3SB35 00-3DG11		1 unit
CES key-operated switch			73037 Light blue	I+O+II O	3SB35 00-3DH11 3SB35 00-3DG01		1 unit 1 unit
			73034 Black	I+O+II O	3SB35 00-3DJ11 3SB35 00-3DJ01		1 unit 1 unit
	Switching sequence I-O-II,	RONIS	SB 30	0	3SB35 00-4ED01		1 unit
	2 x 50° operating angle, momentary, spring return from the left and right	CES	SSG 10	0	3SB35 00-4QD01		1 unit
		BKS	S1	0	3SB35 00-5ED01		1 unit
		O.M.R.	73034 Black	0	3SB35 00-3EJ01		1 unit
BKS key-operated switch	Switching sequence I-O-II, 2 x 50° operating angle, momentary to the left,	RONIS	SB 30	O + II O II	3SB35 00-4GD61 3SB35 00-4GD01 3SB35 00-4GD31		1 unit 1 unit 1 unit
	spring return from the left, maintained to the right	CES	SSG 10	0 + II 0 II	3SB35 00-4SD61 3SB35 00-4SD01 3SB35 00-4SD31		1 unit 1 unit 1 unit
[B]	'	BKS	S1	O + II O II	3SB35 00-5GD61 3SB35 00-5GD01 3SB35 00-5GD31		1 unit 1 unit 1 unit
		O.M.R.	73033 Yellow	II	3SB35 00-3GK31		1 unit
O.M.R. key-operated switch			73034 Black	II	3SB35 00-3GJ31		1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, maintained to the left,	RONIS	SB 30	O+I O I	3SB35 00-4FD51 3SB35 00-4FD01 3SB35 00-4FD21		1 unit 1 unit 1 unit
	momentary to the right, spring return from the right	CES	SSG 10	0+l 0 l	3SB35 00-4RD51 3SB35 00-4RD01 3SB35 00-4RD21		1 unit 1 unit 1 unit
	'\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	BKS	S1	O+I O I	3SB35 00-5FD51 3SB35 00-5FD01 3SB35 00-5FD21		1 unit 1 unit 1 unit

For online configurator see www.siemens.com/sirius/configurators .

For BKS and CES special locks see page 10/69

¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

²⁾ According to FIAT standards; also available for other users.

Actuators and Indicators

	Version	Color of handle	Approval	DT	Configurator	£	PS
					Order No.		
EMERGENCY-STOP device with holder 1)2). Can also be	es according to ISO 13850 and IEC 609 e used with 3TK28 safety relays.	947-5-5,					
	EMERGENCY-STOP mushroom push buttons, Ø 32 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism • Standard version • Solvent-resistant		₽		3SB35 00-1FA20 3SB35 00-1FA20-0PA0		1 unit 1 unit
Mushroom diameter 32 mm	EMEDOENCY STOP much room nuch	Dod					
Mushroom diameter 40 mm, with rotate-to-unlatch mechanism, with switch position indication	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism • Without switch position indicator • Without switch position indicator, solvent-resistant • With mechanical switch position indication	Red			3SB35 00-1HA20 3SB35 00-1HA20-0PA0 3SB35 00-1HA26		1 unit 1 unit 1 unit
	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with positive latching according to ISO 13850, with pull-to-unlatch mechanism	Red	Ď₽ DŶĒ		3SB35 00-1TA20		1 unit
Mushroom diameter 40 mm, pull-to-unlatch mechanism	EMERGENCY-STOP mushroom push buttons, Ø 60 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red	ĎE DVE		3SB35 00-1AA20		1 unit
Mushroom diameter 60 mm	EMERGENCY-STOP mushroom push buttons, Ø 40 mm with positive latching function with IKON lock Lock No. 360012K1, supplied with 2 keys, unlocking only possible using key	Red	₽E		3SB35 00-1UA20		1 unit
Widshidoli dalileter comm	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with RONIS keyoperated switch (with 2 keys), lock No. SB 30, with positive latching according to ISO 13850, unlocking only possible using key	Red	₽E		3SB35 00-1BA20		1 unit
Mushroom diameter 40 mm, with RONIS key-operated switch	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with CES key-operated switch, (with 2 keys), lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red	Ď ^V E		3SB35 00-1KA20		1 unit
	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with BKS key-operated switch, (with 2 keys), lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red	Ĉ ^V E		3SB35 00-1LA20		1 unit
Mushroom diameter 40 mm, with CES key-operated switch	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with O.M.R. keyoperated switch (with 2 keys), lock No. 73037, with positive latching according to ISO 13850, unlocking only using key	Red	Ď ^V E		3SB35 00-1MA20		1 unit
	Wobble Stick		<u></u>		3SB35 00-7CB61		

For online configurator see www.siemens.com/sirius/configurators

 Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

2)Yellow backing plates must be ordered separately; see "Accessories" on page 10/84.

For BKS and CES special locks see page 10/69

10/39

3SB3, Metal, Round, 22 mm

Actuators and Indicators

	Version	Color of lens	DT	Configurator	£03	PS
				Order No.		
Signaling elements v	with holder ¹⁾					
Indicator light with smooth lens	Indicator lights with lens with concentric rings ²⁾	Amber Red Yellow Green Blue White Clear		3SB35 01-6BA00 3SB35 01-6BA20 3SB35 01-6BA30 3SB35 01-6BA40 3SB35 01-6BA50 3SB35 01-6BA60 3SB35 01-6BA70		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Indicator lights with smooth lens ²⁾	Amber Red Yellow Green Blue White Clear		3SB35 01-6AA00 3SB35 01-6AA20 3SB35 01-6AA30 3SB35 01-6AA40 3SB35 01-6AA50 3SB35 01-6AA60 3SB35 01-6AA70		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Indicator lights with smooth solvent-resistant lens ²⁾³⁾	Red Yellow Green Blue White Clear		3SB35 01-6AA20-0PA0 3SB35 01-6AA30-0PA0 3SB35 01-6AA40-0PA0 3SB35 01-6AA50-0PA0 3SB35 01-6AA60-0PA0 3SB35 01-6AA70-0PA0		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

To ronline configurator see www.siemens.com/sirius/configurators .

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

 $^{^{2)}\,}$ Inscription by inserting a label is not possible.

³⁾ Not suitable for laser inscription.

Push Button Units and Indicator Lights 3SB3, Plastic, Round, 22 mm

Complete units

Selection and ordering data

	Rated voltage of lamp	Color of handle	Contacts for front plate	DT	Screw terminals	+	DT	Spring-type terminals	$\stackrel{\circ}{\mathbb{H}}$
			mounting		Configurator	£03		Configurator	€€}}
	V				Order No.			Order No.	
Push buttons									
	Push buttons wit				20022 02 04 411			20022 02 04 411 0000	
	_	Black Black Red Yellow Green Blue White	1 NO 1 NC 1 NC 1 NO 1 NO 1 NO 1 NO		3SB32 02-0AA11 3SB32 03-0AA11 3SB32 03-0AA21 3SB32 02-0AA31 3SB32 02-0AA41 3SB32 02-0AA51 3SB32 02-0AA61			3SB32 02-0AA11-0CC0 3SB32 03-0AA11-0CC0 3SB32 03-0AA21-0CC0 3SB32 02-0AA31-0CC0 3SB32 02-0AA41-0CC0 3SB32 02-0AA51-0CC0 3SB32 02-0AA61-0CC0	
Push button with flat button		Black Red Yellow Green Blue White	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB32 01-0AA11 3SB32 01-0AA21 3SB32 01-0AA31 3SB32 01-0AA41 3SB32 01-0AA51 3SB32 01-0AA61			3SB32 01-0AA11-0CC0 3SB32 01-0AA21-0CC0 3SB32 01-0AA31-0CC0 3SB32 01-0AA41-0CC0 3SB32 01-0AA51-0CC0 3SB32 01-0AA61-0CC0	
	Push Button with monentary	extended b	utton						
		Black Black Red Yellow Blue White	1 NO 1 NC 1 NC 1 NO 1 NO 1 NO		3SB3202-0BA11 3SB3203-0BA11 3SB3203-0BA21 3SB3202-0BA31 3SB3202-0BA51 3SB3202-0BA61			_ _ _ _	
		Black Red Yellow Blue White	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB3201-0BA11 3SB3201-0BA21 3SB3201-0BA31 3SB3201-0BA51 3SB3201-0BA61				
	Illuminated push	buttons with	n flat button		OODOZOT ODAOT				
	with integrated LE 24 AC/DC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO		3SB32 46-0AA21 3SB32 45-0AA31 3SB32 45-0AA41 3SB32 45-0AA51 3SB32 45-0AA61 3SB32 45-0AA71			3SB32 46-0AA21-0CC0 3SB32 45-0AA31-0CC0 3SB32 45-0AA41-0CC0 3SB32 45-0AA51-0CC0 3SB32 45-0AA61-0CC0 3SB32 45-0AA71-0CC0	
Illuminated push button	24 AC/DC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB32 47-0AA21 3SB32 47-0AA31 3SB32 47-0AA41 3SB32 47-0AA51 3SB32 47-0AA61 3SB32 47-0AA71			3SB32 47-0AA21-0CC0 3SB32 47-0AA31-0CC0 3SB32 47-0AA41-0CC0 3SB32 47-0AA51-0CC0 3SB32 47-0AA61-0CC0 3SB32 47-0AA71-0CC0	
with flat button	110 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB32 50-0AA21 3SB32 57-0AA31 3SB32 57-0AA41 3SB32 57-0AA51 3SB32 57-0AA61 3SB32 57-0AA71			_ _ _ _	
	110 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB32 51-0AA21 3SB32 51-0AA31 3SB32 51-0AA41 3SB32 51-0AA51 3SB32 51-0AA61 3SB32 51-0AA71			_ _ _ _	
	230 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO		3SB32 54-0AA21 3SB32 53-0AA31 3SB32 53-0AA41 3SB32 53-0AA51 3SB32 53-0AA61 3SB32 53-0AA71			3SB32 54-0AA21-0CC0 3SB32 53-0AA31-0CC0 3SB32 53-0AA41-0CC0 3SB32 53-0AA51-0CC0 3SB32 53-0AA61-0CC0 3SB32 53-0AA71-0CC0	
	230 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB32 55-0AA21 3SB32 55-0AA31 3SB32 55-0AA41 3SB32 55-0AA51 3SB32 55-0AA61 3SB32 55-0AA71			3SB32 55-0AA21-0CC0 3SB32 55-0AA31-0CC0 3SB32 55-0AA41-0CC0 3SB32 55-0AA51-0CC0 3SB32 55-0AA61-0CC0 3SB32 55-0AA71-0CC0	

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Inscription is possible by inserting a label.

Push Button Units and Indicator Lights 3SB3, Plastic, Round, 22 mm

	Color of handle	Contacts	DT	Screw terminals	(P)	DT	Spring-type terminals	8
		for front plate mounting		Configurator	£		Configurator	₹ <u>`</u> `}
				Order No.			Order No.	200
Push buttons								
		buttons with flat button older, without lamp elements)						
	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO		3SB32 07-0AA21 3SB32 06-0AA31 3SB32 06-0AA41 3SB32 06-0AA51 3SB32 06-0AA61 3SB32 06-0AA71			3SB32 07-0AA21-0CC0 3SB32 06-0AA31-0CC0 3SB32 06-0AA41-0CC0 3SB32 06-0AA51-0CC0 3SB32 06-0AA61-0CC0 3SB32 06-0AA71-0CC0	
Illuminated push button with flat button	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB32 05-0AA21 3SB32 05-0AA31 3SB32 05-0AA41 3SB32 05-0AA51 3SB32 05-0AA61 3SB32 05-0AA71			3SB32 05-0AA21-0CC0 3SB32 05-0AA31-0CC0 3SB32 05-0AA41-0CC0 3SB32 05-0AA51-0CC0 3SB32 05-0AA61-0CC0 3SB32 05-0AA71-0CC0	
		buttons with flat button older with incandescent lamp						
	Red Red Yellow Green Blue White Clear	1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB3213-0AA21 3SB3221-0AA21 3SB3221-0AA31 3SB3221-0AA41 3SB3221-0AA61 3SB3221-0AA61 3SB3221-0AA71			- - - - - -	
		buttons with flat button older with incandescent lamp						
	Red Yellow Green Blue White Clear	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO		3SB3216-0AA21 3SB3214-0AA31 3SB3214-0AA41 3SB3214-0AA51 3SB3214-0AA61 3SB3214-0AA71			- - - - -	
	Red Yellow Green Blue White Clear	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB3213-0AA21 3SB3213-0AA31 3SB3213-0AA41 3SB3213-0AA51 3SB3213-0AA61 3SB3213-0AA71			- - - - -	
Mushroom push but		pull buttons, Ø 40 mm, main-						
	tained, with pull-to-unlate							
	Red	1 NC 1 NO + 1 NC		3SB32 03-1CA21 3SB32 01-1CA21			3SB32 03-1CA21-0CC0 3SB32 01-1CA21-0CC0	
Mushroom push-pull button								

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Inscription is possible by inserting a label.

Selector switches	
	Selec Switch Latchi
Selector switch	Switch Latch
	Selec switch
	Latch

	Version	Color of handle/	Contacts for front plate	DT	Screw terminals	DT	Spring-type terminals	8
		Lock No.	mounting		Configurator	3	Configurator	£55
					Order No.		Order No.	
3								
	Selector switcher Switching sequen							
	Latching	Black	1 NO		3SB32 02-2KA11		3SB32 02-2KA11-0CC0	
	O I		1 NO + 1 NC		3SB32 01-2KA11		3SB32 01-2KA11-0CC0	
	Selector switcher Switching sequer							
	Latching	Black	1 NO		3SB32 02-2HA11		-	
			1 NO + 1 NC		3SB32 01-2HA11		-	
	Selector switcher switching sequer		sitions)° operating angle					
	Latching	Black	1 NO, 1 NO		3SB32 10-2DA11		3SB32 10-2DA11-0CC0	
			1 NO + 1 NC, 1 NO + 1 NC		3SB32 08-2DA11		3SB32 08-2DA11-0CC0	
	Momentary,	Black	1 NO, 1 NO		3SB32 10-2EA11		3SB32 10-2EA11-0CC0	
	spring return from left and right		1 NO + 1 NC, 1 NO + 1 NC		3SB32 08-2EA11		3SB32 08-2EA11-0CC0	
	1							
tcl	nes							

Key-operated swit



RONIS key-operated switches, 2 switch positions

with 2 keys, removal position O + I, switching sequence O-I, 50° operating angle Latching SB 30 1 NO

1 NO + 1 NC

Switching sequence I–O–II, maintained, operating angle 2 $\times\,50^\circ$

Latching SB 30 1 NO, 1 NO 0

1 NO + 1 NC, 1 NO + 1 NC

3SB32 08-4DD11

3SB32 02-4AD11-0CC0

3SB32 01-4AD11-0CC0

Twin push buttons



Twin push buttons, with flat, square buttons1)

With I/O inscrip- White/White 1 NO + 1 NC, 1 NO + 1 NC tion

3SB31 00-8AC61

3SB32 02-4AD11

3SB32 01-4AD11

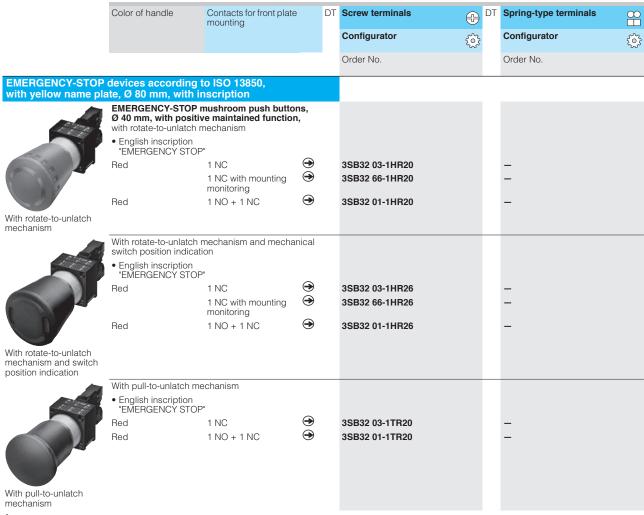
3SB32 10-4DD11

Twin push button with flat buttons

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Mounting the twin push buttons in 3SB38 enclosure is not possible. For accessories see page 10/55.

3SB3, Plastic, Round, 22 mm



 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

[→] Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3TK28 safety relays. Certificate:



Push Button Units and Indicator Lights 3SB3, Plastic, Round, 22 mm

	Rated voltage of lamp	Color of lens	DT	Screw terminals	Ð [TC	Spring-type terminals	$\overset{\infty}{\square}$
				Configurator	5		Configurator	£03
	V			Order No.			Order No.	
Indicator lights								
	Indicator lights with sm with integrated LED	ooth lens ¹⁾						
Indicator light with smooth lens	24 AC/DC	Red Yellow Green Blue White Clear		3SB32 44-6AA20 3SB32 44-6AA30 3SB32 44-6AA40 3SB32 44-6AA50 3SB32 44-6AA60 3SB32 44-6AA70			3SB32 44-6AA20-0CC0 3SB32 44-6AA30-0CC0 3SB32 44-6AA40-0CC0 3SB32 44-6AA50-0CC0 3SB32 44-6A60-0CC0 3SB32 44-6AA70-0CC0	
	110 AC	Red Yellow Green Blue White Clear		3SB32 48-6AA20 3SB32 48-6AA30 3SB32 48-6AA40 3SB32 48-6AA50 3SB32 48-6AA60 3SB32 48-6AA70				
	230 AC	Red Yellow Green Blue White Clear		3SB32 52-6AA20 3SB32 52-6AA30 3SB32 52-6AA40 3SB32 52-6AA50 3SB32 52-6AA60 3SB32 52-6AA70			3SB32 52-6AA20-0CC0 3SB32 52-6AA30-0CC0 3SB32 52-6AA40-0CC0 3SB32 52-6AA50-0CC0 3SB32 52-6AA60-0CC0 3SB32 52-6AA60-0CC0	
	With BA 9s lamp holder, v	without lamp						
		Red Yellow Green Blue White Clear		3SB32 04-6AA20 3SB32 04-6AA30 3SB32 04-6AA40 3SB32 04-6AA50 3SB32 04-6AA60 3SB32 04-6AA70			3SB32 04-6AA20-0CC0 3SB32 04-6AA30-0CC0 3SB32 04-6AA40-0CC0 3SB32 04-6AA50-0CC0 3SB32 04-6AA60-0CC0 3SB32 04-6AA70-0CC0	
	With BA 9s lamp holde w	ith lamp (130 V)						
	24 V AC/DC	Red Yellow Green Blue White Clear		3SB32 17-6AA20 3SB32 17-6AA30 3SB32 17-6AA40 3SB32 17-6AA50 3SB32 17-6AA60 3SB32 17-6AA70			- - - - -	
	With BA 9s lamp holder v	vith lamp (130 V)						
	230 V AC/DC	Red Yellow Green Blue White Clear		3SB32 12-6AA20 3SB32 12-6AA30 3SB32 12-6AA40 3SB32 12-6AA50 3SB32 12-6AA60 3SB32 12-6AA70			3SB32 12-6AA20-0CC0 3SB32 12-6AA30-0CC0 3SB32 12-6AA40-0CC0 3SB32 12-6AA50-0CC0 3SB32 12-6AA60-0CC0 3SB32 12-6AA70-0CC0	

To online configurator see www.siemens.com/sirius/configurators .

¹⁾ Inscription by inserting a label is not possible.

Push Button Units and Indicator Lights 3SB3, Plastic, Round, 22 mm

Revised11/15/14

	Rated voltage of lamp	Color of lens	DT	Screw terminals		DT	Spring-type terminals	8
				Configurator	£03		Configurator	£0,3
	V			Order No.			Order No.	
Indicator lights								
Pig.	Indicator lights with len with concentric rings ¹⁾ with integrated LED	s						
Indicator light with lens with concentric rings	24 AC/DC	Red Yellow Green Blue White Clear		3SB32 44-6BA20 3SB32 44-6BA30 3SB32 44-6BA40 3SB32 44-6BA50 3SB32 44-6BA60 3SB32 44-6BA70			3SB32 44-6BA20-0CC0 3SB32 44-6BA30-0CC0 3SB32 44-6BA40-0CC0 3SB32 44-6BA50-0CC0 3SB32 44-6BA60-0CC0 3SB32 44-6BA70-0CC0	
	110 AC	Red Yellow Green Blue White Clear		3SB32 48-6BA20 3SB32 48-6BA30 3SB32 48-6BA40 3SB32 48-6BA50 3SB32 48-6BA60 3SB32 48-6BA70			_ _ _	
	230 AC	Red Yellow Green Blue White Clear		3SB32 52-6BA20 3SB32 52-6BA30 3SB32 52-6BA40 3SB32 52-6BA50 3SB32 52-6BA60 3SB32 52-6BA70			3SB32 52-6BA20-0CC0 3SB32 52-6BA30-0CC0 3SB32 52-6BA40-0CC0 3SB32 52-6BA50-0CC0 3SB32 52-6BA60-0CC0 3SB32 52-6BA70-0CC0	
	With BA 9s lamp holder, v	vithout lamp						
		Amber Red Yellow Green Blue White Clear		3SB32 04-6BA00 3SB32 04-6BA20 3SB32 04-6BA30 3SB32 04-6BA40 3SB32 04-6BA50 3SB32 04-6BA60 3SB32 04-6BA70				
	With BA 9s lamp holder, v	vith LED						
	130 AC	Amber Red Yellow Green Blue White Clear		3SB32 40-6BA00 3SB32 40-6BA20 3SB32 40-6BA30 3SB32 40-6BA40 3SB32 40-6BA50 3SB32 40-6BA60 3SB32 40-6BA70			_ _ _ _	
	With BA 9s lamp holder v LED lamp	vith						
	24 V AC/DC	Red Yellow Green Blue White Clear		3SB32 36-6BA20 3SB32 36-6BA30 3SB32 36-6BA40 3SB32 36-6BA50 3SB32 36-6BA60 3SB32 36-6BA70			_ _ _ _	
	With integrated LED 230 AC	Red Yellow Green Blue White Clear		3SB32 52-6BA20 3SB32 52-6BA30 3SB32 52-6BA40 3SB32 52-6BA50 3SB32 52-6BA60 3SB32 52-6BA70			3SB32 52-6BA20-0CC0 3SB32 52-6BA30-0CC0 3SB32 52-6BA40-0CC0 3SB32 52-6BA50-0CC0 3SB32 52-6BA60-0CC0 3SB32 52-6BA70-0CC0	

To ronline configurator see www.siemens.com/sirius/configurators

¹⁾ Inscription by inserting a label is not possible.

Push Button Units and Indicator Lights 3SB3, Plastic, Round, 22 mm

_		4.0
Com	nlete	units
	DICEC	dilito

	Version	Rated voltage of lamp	Color of lens	DT	Screw terminals	+	PS
						£03	
		V			Order No.		
Signaling devices							,
	Acoustic signaling devices, IP65	1)					
	Continuous tone 2.4 kHz, operational current min. 4 mA,	24 AC/DC 115 AC/DC	Black		3SB32 33-7BA10 3SB32 34-7BA10		1 unit 1 unit
Emily 37	sound pressure min. 80 dB/10 cm	230 AC/DC			3SB32 35-7BA10		1 unit
(FII)	$X1 \longrightarrow X2$ $(L+) \longrightarrow (L-)$ NSD0_00003						
Acoustic signaling device							

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Mounting in 3SB38 enclosures only with the 3SB3400-1A lamp holder for front plate mounting, which is included.

	Version	Degree of protection	Color of handle	Without connection	PS
				Order No.	
Special devices					
	Actuators for potentiometers ²⁾³⁾				
311 ·	With shaft Ø 6 mm, 30 32 mm long	IP65	_	3SB10 00-7CH07	1 unit
Potentiometer drive					
	Push buttons with extended strot for actuating relays	ke ²⁾			
	12 mm stroke	IP65	Black	3SB30 00-0EA11	1 unit
Push buttons with 12 mm stroke					
	Mechanical Reset)				
	Overload reset adapter Reset Push Button IP65 Ø 22mm, 12 mm stroke	S00 to S10/S12	_	3RU19 00-1A	1 unit
	Reset extension Complete assembly	S10/S12		3SX1335 3SBES-RESET	1 unit 1 unit

²⁾ Mounting in 3SB38 enclosure is not possible.

 $^{^{}m 3)}$ The potentiometer is not included in the scope of supply.

3SB3, Plastic, Round, 22 mm

Actuators and Indicators

Selection and ordering data

	Version	Inscriptions	Color of handle D	Т	Configurator	PS
					Order No.	
Push buttons with hold	ler ¹⁾					
	Push buttons with flat button		Black Red Yellow Green Blue White Gray Clear ²⁾		3SB30 00-0AA11 3SB30 00-0AA21 3SB30 00-0AA31 3SB30 00-0AA41 3SB30 00-0AA51 3SB30 00-0AA61 3SB30 00-0AB51 3SB30 00-0AA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
With flat button		I O I O R	Green Red White Black Blue		3SB30 00-0AA81 3SB30 00-0AB01 3SB30 00-0AB11 3SB30 00-0AB21 3SB30 00-0AC81	1 unit 1 unit 1 unit 1 unit 1 unit
With raised button		Down Up Forward Reverse On Start Reset	Black Black Black Black Green Red Blue		3SB30 00-0AA11-ZEE 3SB30 00-0AA11-ZED 3SB30 00-0AA11-ZEF 3SB30 00-0AA11-ZEG 3SB30 00-0AA11-ZEB 3SB30 00-0AA11-ZEL 3SB30 00-0AA11-ZEL	1 unit
The reason solution	Push buttons with raised button	Off Stop	Black Red Yellow Green Blue White Red Red		3SB30 00-0BA11 3SB30 00-0BA21 3SB30 00-0BA31 3SB30 00-0BA41 3SB30 00-0BA51 3SB30 00-0BA61 3SB30 00-0BA21-ZEC 3SB30 00-0BA21-ZEC	1 unit 1 unit 1 unit 1 unit 1 unit
THE STATE OF THE S	Push buttons with raised button, maintained by pressing in and turning to the right, unlatches by turning to the left	·	Black Red		3SB30 00-0CA11 3SB30 00-0CA21	1 unit 1 unit
With soled button major	Push buttons with raised front ring (height 13 mm)		Black Red Yellow Green Blue White		3SB30 00-0AA12 3SB30 00-0AA22 3SB30 00-0AA32 3SB30 00-0AA42 3SB30 00-0AA52 3SB30 00-0AA62	1 unit 1 unit 1 unit 1 unit 1 unit
With raised button, maintained	Push buttons with raised front ring, castellated (height 13 mm)		Black Red Yellow Green Blue White		3SB30 00-0AA13 3SB30 00-0AA23 3SB30 00-0AA33 3SB30 00-0AA43 3SB30 00-0AA53 3SB30 00-0AA63	1 unit 1 unit 1 unit 1 unit
With raised front ring	Illuminated push buttons with flat button (incl. holder for 3 elements)		Amber ²⁾ Red ²⁾ Yellow ²⁾ Green ²⁾ Blue ²⁾ White Clear ²⁾		3SB30 01-0AA01 3SB30 01-0AA21 3SB30 01-0AA31 3SB30 01-0AA41 3SB30 01-0AA51 3SB30 01-0AA61 3SB30 01-0AA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Illuminated push buttons with raised button (incl. holder for 3 elements)		Red Yellow Green Blue Clear		3SB30 01-0BA21 3SB30 01-0BA31 3SB30 01-0BA41 3SB30 01-0BA51 3SB30 01-0BA71	1 unit 1 unit 1 unit 1 unit 1 unit
With raised front ring, castellated	Push buttons with flat button, maintained, unlatches by press- ing again		Black Red Yellow Green Blue White Gray		3SB30 00-0DA11 3SB30 00-0DA21 3SB30 00-0DA31 3SB30 00-0DA41 3SB30 00-0DA51 3SB30 00-0DA61 3SB30 00-0DB51	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Illuminated push buttons with flat button, maintained, unlatches by press- ing again (incl. holder for 3 elements)		Red ²) Yellow ²) Green ²) Blue ²) White Clear ²)		3SB30 01-0DA21 3SB30 01-0DA31 3SB30 01-0DA41 3SB30 01-0DA51 3SB30 01-0DA61 3SB30 01-0DA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Illuminated push button with raised button						

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

 $^{^{2)}}$ Inscription is possible by inserting a label.

Push Button Units and Indicator Lights 3SB3, Plastic, Round, 22 mm

Actuators and Indicators

	Version	Color of han- DT	Configurator ${\circ}$	PS
		dle	Order No.	
Mushroom push buttons	with holder(1)2)			
Mushroom push buttons	Mushroom push buttons, Ø 30 mm	Black Red Yellow Green	3SB30 00-1DA11 3SB30 00-1DA21 3SB30 00-1DA31 3SB30 00-1DA41	1 unit 1 unit 1 unit 1 unit
	Mushroom push buttons, Ø 40 mm	Black Red Yellow Green	3SB30 00-1GA11 3SB30 00-1GA21 3SB30 00-1GA31 3SB30 00-1GA41	1 unit 1 unit 1 unit 1 unit
	Mushroom push buttons, Ø 60 mm	Black Red Yellow Green	3SB30 00-1QA11 3SB30 00-1QA21 3SB30 00-1QA31 3SB30 00-1QA41	1 unit 1 unit 1 unit 1 unit
	Illuminated mushroom push buttons, Ø 30 mm (incl. holder for 3 elements)	Red Yellow Green Blue White Clear	3SB30 01-1DA21 3SB30 01-1DA31 3SB30 01-1DA41 3SB30 01-1DA51 3SB30 01-1DA61 3SB30 01-1DA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Illuminated mushroom push buttons, Ø 40 mm (incl. holder for 3 elements)	Yellow Green White	3SB30 01-1GA31 3SB30 01-1GA41 3SB30 01-1GA61	1 unit 1 unit 1 unit
	Push-pull buttons, Ø 30 mm, maintained, pull to unlatch	Black Red	3SB30 00-1EA11 3SB30 00-1EA21	1 unit 1 unit
The Park of the	Push-pull buttons, Ø 40 mm, maintained, pull to unlatch	Black Red	3SB30 00-1CA11 3SB30 00-1CA21	1 unit 1 unit
	Push-pull buttons, Ø 60 mm, maintained, pull to unlatch	Black Red	3SB30 00-1RA11 3SB30 00-1RA21	1 unit 1 unit
	Push-pull buttons, Ø 30 mm, can be illuminated, maintained, pull to unlatch, (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-1EA21 3SB30 01-1EA31 3SB30 01-1EA41 3SB30 01-1EA51 3SB30 01-1EA71	1 unit 1 unit 1 unit 1 unit 1 unit
	Push-pull buttons, Ø 40 mm, can be illuminated, maintained, pull to unlatch (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-1CA21 3SB30 01-1CA31 3SB30 01-1CA41 3SB30 01-1CA51 3SB30 01-1CA71	1 unit 1 unit 1 unit 1 unit 1 unit

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

²⁾ Maximum permissible equipment: 3 single-pole or 2 double-pole contact blocks. When using the 3SB39 01-0AB holder, the central command point must not be empty.

3SB3, Plastic, Round, 22 mm

Actuators and Indicators

	Version	Version Illumination	Color of han- D	OT Configurator	۩ P
				Order No.	
Selector switches wi	th holder ¹⁾				
	Selector switches with 2 switch pe	ositions			
	Switching sequence O-I, 90° operating angle, maintained O	Non-illuminated	Black Red Green White	3SB30 00-2HA11 3SB30 00-2HA21 3SB30 00-2HA41 3SB30 00-2HA61	1 u 1 u 1 u 1 u
	V	Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2HA21 3SB30 01-2HA31 3SB30 01-2HA41 3SB30 01-2HA51 3SB30 01-2HA71	1 u 1 u 1 u 1 u 1 u
Non-illuminated	Switching sequence O-I, 50° operating angle, maintained OI	Non-illuminated	Black Red Green White	3SB30 00-2KA11 3SB30 00-2KA21 3SB30 00-2KA41 3SB30 00-2KA61	1 u 1 u 1 u 1 u
		Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2KA21 3SB30 01-2KA31 3SB30 01-2KA41 3SB30 01-2KA51 3SB30 01-2KA71	1 u 1 u 1 u 1 u 1 u
Illuminated	Switching sequence O-I, 50° operating angle, momentary, spring apart from right	Non-illuminated	Red Green White	3SB30 00-2LA11 3SB30 00-2LA21 3SB30 00-2LA41 3SB30 00-2LA61	1 u 1 u 1 u 1 u
	\ \ \ \	Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2LA21 3SB30 01-2LA31 3SB30 01-2LA41 3SB30 01-2LA51 3SB30 01-2LA71	1 u 1 u 1 u 1 u 1 u
	Selector switches with 3 switch pe				
A. J.	Switching sequence I-O-II, 2 x 50° operating angle, maintained	Non-illuminated	Black Red Green White	3SB30 00-2DA11 3SB30 00-2DA21 3SB30 00-2DA41 3SB30 00-2DA61	1 u 1 u 1 u 1 u
	_\	Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2DA21 3SB30 01-2DA31 3SB30 01-2DA41 3SB30 01-2DA51 3SB30 01-2DA71	1 u 1 u 1 u 1 u 1 u
Non-illuminated	Switching sequence I-O-II, 2 x 50° operating angle, momentary, spring return from left and right	Non-illuminated	Black Red Green White	3SB30 00-2EA11 3SB30 00-2EA21 3SB30 00-2EA41 3SB30 00-2EA61	1 u 1 u 1 u 1 u
		Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2EA21 3SB30 01-2EA31 3SB30 01-2EA41 3SB30 01-2EA51 3SB30 01-2EA71	1 u 1 u 1 u 1 u 1 u
Illuminated	Switching sequence I-O-II, 2 x 50° operating angle, momentary to the left, spring return to the left, maintained to the right	Non-illuminated	Black Red Green White	3SB30 00-2GA11 3SB30 00-2GA21 3SB30 00-2GA41 3SB30 00-2GA61	1 u 1 u 1 u 1 u
		Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2GA21 3SB30 01-2GA31 3SB30 01-2GA41 3SB30 01-2GA51 3SB30 01-2GA71	1 u 1 u 1 u 1 u 1 u
	Switching sequence I-O-II, 2 x 50° operating angle, maintained to the left, momentary to the right, spring return from the right		Red Green White	3SB30 00-2FA11 3SB30 00-2FA21 3SB30 00-2FA41 3SB30 00-2FA61	1 u 1 u 1 u 1 u
		Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear	3SB30 01-2FA21 3SB30 01-2FA31 3SB30 01-2FA41 3SB30 01-2FA51 3SB30 01-2FA71	1 u 1 u 1 u 1 u 1 u

To ronline configurator see www.siemens.com/sirius/configurators .

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

Actuators and Indicators

	Version	Lock version Type	Lock No./	D Key removal	ТС	Configurator	£03	PS
			color	position	C	Order No.		
Key-operated switches wi	th holder ¹⁾							
ntoy oporatou ountoneo un	Key-operated switches wit	h 2 kevs. 2 swit	ch positions	.				
	Switching sequence O-I, 50° operating angle, maintained	RONIS	SB 30	O+I O I	3	SB30 00-4HD11 SB30 00-4HD01 ISB30 00-4HD21		1 unit 1 unit 1 unit
RONIS key-operated switch	Switching sequence O-I, 50° operating angle, maintained	RONIS	SB 30	O+I O I	3	SB30 00-4AD11 SB30 00-4AD01 SB30 00-4AD21		1 unit 1 unit 1 unit
		CES	SSG 10	O+I O I	3	SB30 00-4LD11 SB30 00-4LD01 SB30 00-4LD21		1 unit 1 unit 1 unit
			LSG 1	0+I 0		SB30 00-4LF01 SB30 00-4LF11		1 unit 1 unit
		CES with key monitoring ²⁾	SSG 10	0	3	SB30 00-4LD05		1 unit
		BKS	S1	O+I O I	3	SB30 00-5AD11 SB30 00-5AD01 SB30 00-5AD21		1 unit 1 unit 1 unit
CES key-operated switch		O.M.R. ³⁾	73038 Light blue	O+I O		SB30 00-3AG11 SB30 00-3AG01		1 unit 1 unit
			73037 Red	O+I O		SB30 00-3AH11 SB30 00-3AH01		1 unit 1 unit
			73034 Black	O+I O I	3	SB30 00-3AJ11 SB30 00-3AJ01 SB30 00-3AJ21		1 unit 1 unit 1 unit
			73033 Yellow	O+I O		SB30 00-3AK11 SB30 00-3AK01		1 unit 1 unit
	Switching sequence O-I,	RONIS	SB 30	0	3	SB30 00-4BD01		1 unit
BKS key-operated switch	50° operating angle, momentary, spring return	CES	SSG 10	0	3	SB30 00-4MD01		1 unit
	from the right		LSG 1	0	3	SB30 00-4MF11		1 unit
	0	BKS	S1	0	_	SB30 00-5BD01		1 unit
	\mathrew\'\	O.M.R. ³⁾	73038 Light blue	0		SB30 00-3BG01		1 unit
			73037 Red	0	3	SB30 00-3BH01		1 unit
• 3			73034 Black	0	3	SB30 00-3BJ01		1 unit
O.M.R. key-operated switch			73033 Yellow	0	3	SB30 00-3BK01		1 unit

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Special locks can be ordered only with order code "Y01".

3) According to FIAT standards; also available for other users.

For BKS and CES special locks see page 10/69.

Siemens Industry, Inc. Industrial Controls Catalog 2

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Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

²⁾ For locks with key monitoring the supplied 3SB39 01-0AB holder must be used.

The key scan is performed by a 3SB34 single-pole NC contact block which must be snap-mounted in the center position. Scanning of the switch positions must be performed by additional contact blocks which are snap-mounted on the actuator.

3SB3, Plastic, Round, 22 mm

Actuators and Indicators

	Version	Lock version			DT Co	onfigurator	र्ेट्र	PS
		Туре	Lock No./ color	Key removal position			200	
			COIOI	position	Or	der No.		
Key-operated switches w	vith holder ¹⁾							
	Key-operated switches with 2	2 keys, 3 switc	h positions					
	Switching sequence I-O-II, 2 x 50° operating angle, maintained	RONIS	SB 30	+O+ O + 	3S 3S 3S	6B30 00-4DD11 6B30 00-4DD01 6B30 00-4DD41 6B30 00-4DD21 6B30 00-4DD31		1 un 1 un 1 un 1 un 1 un
	' \ "		000.40	0+1	38	B30 00-4DD51		1 un
RONIS key-operated switch		CES	SSG 10	+O+ O O+ + 	3S 3S 3S	6B30 00-4PD11 6B30 00-4PD01 6B30 00-4PD51 6B30 00-4PD41 6B30 00-4PD21 6B30 00-4PD31		1 un 1 un 1 un 1 un 1 un 1 un
		CES with key monitoring	SSG 10	0	38	B30 00-4PD05		1 un
		BKS	S1		38	B30 00-5DD11 B30 00-5DD31 B30 00-5DD01		1 un 1 un 1 un
CES key-operated switch		O.M.R. ³⁾	73038 Light blue	I+O+II O	38	B30 00-3DG11 B30 00-3DG01		1 un 1 un
			73037 Red	0 0+l	38	B30 00-3DH01 B30 00-3DH51		1 un 1 un
			73034 Black 73033	I+O+II O I+O+II	38	6B30 00-3DJ11 6B30 00-3DJ01 6B30 00-3DK11		1 un 1 un 1 un
			Yellow	1+0+11	33	DB30 00-3DK11		i uii
	Switching sequence I-O-II, 2 x 50° operating angle,	RONIS	SB 30	0		B30 00-4ED01		1 un
	momentary, spring return from	CES BKS	SSG 10 S1	0		B30 00-4QD01 B30 00-5ED01		1 ur
KS key-operated switch	left and right	O.M.R. ³⁾	73034	0		B30 00-3EJ01		1 un 1 un
. 4.7.17	' √ '>"		73037 Red	0	38	B30 00-3EH01		
	Switching sequence I-O-II, 2 x 50° operating angle, momentary to the left,	RONIS	SB 30	O + II O II	38	B30 00-4GD61 B30 00-4GD01 B30 00-4GD31		1 un 1 un 1 un
	spring return from the left, maintained to the right	CES	SSG 10	O + II O		B30 00-4SD61 B30 00-4SD01		1 un 1 un
D.M.R. key-operated switch		BKS	S1	0	38	B30 00-5GD01		1 un
	Switching sequence I-O-II, 2 x 50° operating angle, maintained to the left,	RONIS	SB 30	O+I O I	38	6B30 00-4FD51 6B30 00-4FD01 6B30 00-4FD21		1 un 1 un 1 un
	momentary to the right, spring return from the right	CES	SSG 10	O+I O I	38	6B30 00-4RD51 6B30 00-4RD01 6B30 00-4RD21		1 un 1 un 1 un
	1 1	BKS	S1	O+I O I	38	B30 00-5FD51 B30 00-5FD01 B30 00-5FD21		1 un 1 un 1 un
		O.M.R. ³⁾	73038 Light blue	0		B30 00-3FG01		1 un
			73034 Black	1	38	B30 00-3FJ21		1 un

 ${\small \textcircled{\$}} \ \, \text{For online configurator see www.siemens.com/sirius/configurators} \; .$

used. The key scan is performed by a 3SB34 single-pole NC contact block which must be snap-mounted in the center position. Scanning of the switch positions must be performed by additional contact blocks which are snap-mounted on the actuator.

Special locks can be ordered only with order code "Y01".

For BKS and CES special locks see page 10/69.

¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

 $^{^{\}rm 2)}$ For locks with key monitoring the supplied 3SB39 01-0AB holder must be used.

 $^{^{\}rm 3)}$ According to FIAT standards; also available for other users.

3SB3, Plastic, Round, 22 mm

Actuators and Indicators

	Version	Color of handle	Approval	DT	Configurator	PS PS
					Order No.	
EMERGENCY-STOP devices Can also be used with 3TK2		47-5-5, with	holder ¹⁾²⁾ .			
	EMERGENCY-STOP mushroom push buttons, Ø 32 mm, with positive maintained according to ISO 13850, with rotate-to- unlatch mechanism	Red			3SB30 00-1FA20	1 unit
Mushroom diameter 32 mm						
	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with positive maintained according to ISO 13850, with rotate-to-unlatch mechanism	Red	Ď ^V E			
	Without switch position indicator				3SB30 00-1HA20	1 unit
Mushroom diameter 40 mm,	With mechanical switch position indication				3SB30 00-1HA26	1 unit
with rotate-to-unlatch mechanism, with switch position indication	• Flat head style				3SB30 00-1XA20	
	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with positive maintained according to ISO 13850, with pull-to-unlatch mechanism	Red	Ô ^V E		3SB30 00-1TA20	1 unit
Mushroom diameter 40 mm, pull-to-unlatch mechanism						
	EMERGENCY-STOP mushroom push buttons, Ø 60 mm, with positive maintained according to ISO 13850, with rotate-to-unlatch mechanism	Red	Ĉ ^V E		3SB30 00-1AA20	1 unit
Mushroom diameter 60 mm	EMERGENCY-STOP mushroom push	Red			3SB30 00-1BA20	1 unit
	buttons, Ø 40 mm, with RONIS lock, lock No. SB 30, with positive maintained acc. to ISO 13850, unlocking only possible using key		Ø ^E			
Mushroom diameter 40 mm, with RONIS key-operated switch	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with CES lock, lock No. SSG 10, with positive maintained according to ISO 13850, unlocking only possible using key	Red	ĎĒ.		3SB30 00-1KA20	1 unit
will hons key-operated switch	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with BKS lock, lock No. S1, with positive maintained according to ISO 13850, unlocking only possible using key	Red	₽		3SB30 00-1LA20	1 unit
	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with O.M.R. lock, lock No. 73037, with positive maintained according to ISO 13850, unlocking only possible using key	Red	₽		3SB30 00-1MA20	1 unit
Mushroom diameter 40 mm, with CES key-operated switch	EMERGENCY-STOP mushroom push buttons, Ø 40 mm, with "EMO" marking for SEMI S2 compliance with mechanical maintained function acc. to EN418, turn short handle to left to unlatch	Red (flat)			3SB30 00-1XB80	1 unit

For online configurator see www.siemens.com/sirius/configurators

For BKS and CES special locks see page 10/69.

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¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

²⁾ Yellow backing plates must be ordered separately; see "Accessories" on page 10/84...

3SB3, Plastic, Round, 22 mm

Actuators and Indicators

	Version	Color of lens DT	Configurator	PS PS
			Order No.	
Signaling elements with	າ holder ¹⁾			
	Indicator lights with smooth lens ²⁾	Amber Red Yellow Green Blue White Clear	3SB30 01-6AA00 3SB30 01-6AA20 3SB30 01-6AA30 3SB30 01-6AA40 3SB30 01-6AA50 3SB30 01-6AA60 3SB30 01-6AA70	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Indicator light with concentric rings	Indicator lights with lens with concentric rings ²⁾	Amber Red Yellow Green Blue White Clear	3SB30 01-6BA00 3SB30 01-6BA20 3SB30 01-6BA30 3SB30 01-6BA40 3SB30 01-6BA50 3SB30 01-6BA60 3SB30 01-6BA70	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Acoustic signaling device	Acoustic signaling devices, IP40 ³⁾ For acoustic signal transformer 24 V DC ⁴⁾ (without BA 9s base)	Black	3SB30 00-7AA10	1 unit

- © For online configurator see www.siemens.com/sirius/configurators
- 1) Also available without holder. Supplement Order No. with "-Z" and quote order code **"B01"**. Price reduction on request.
- 2) Inscription by inserting a label is not possible.
- 3) For acoustic signaling devices, IP65, see "Complete Units".
- Following must be ordered separately:
 3SB1902-2BN acoustic signal transformer, see "Accessories".
 3SB34 00-1A lamp holder for front plate mounting or 3SB34 20-1A lamp holder for base mounting, both with screw terminals. Devices assembled in this way are suitable for use in enclosures. Lamp holders with spring-type terminals cannot be used.

	Version	Inscriptions	Color of handle	DT	Configurator Order No.	ۂ}	PS
					Order No.		
Twin push buttons with indicator light with holder ¹⁾²⁾							
	Twin push buttons with indicator light, IP65	I/O ³⁾	Green/Red White/Black		3SB31 01-8BC21 3SB31 01-8BC31		1 unit 1 unit
Twin push button with indicator light, with flat buttons	with flat, square buttons, incl. holder for 3 elements	↑/↓ ³⁾	Green/Red		3SB31 01-8BC81		1 unit
Twin push buttons with indicator light, with flat and raised buttons	Twin push buttons with indicator light, IP65 with flat and raised, square buttons, incl. holder for 3 elements	I/O ³⁾ I/O ³⁾	Green/Red White/Black		3SB31 01-8DC21 3SB31 01-8DC31		1 unit 1 unit

- To ronline configurator see www.siemens.com/sirius/configurators.
- 1)Mounting the twin push buttons in 3SB38 enclosure is not possible.
- 2)Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.
- 3)Black inscription for green, red and white

3SB3, Plastic, Round, 22 mm

Actuators and Indicators

	Version	Inscriptions	Color of handle	DT	Configurator	(C)	PS
					Order No.		
Twin push buttons wit	h holder ¹⁾²⁾						
	Twin push buttons, IP65 with flat, square buttons	I/O ³⁾ I/O ³⁾	Green/Red White/Black		3SB31 00-8AC21 3SB31 00-8AC31		1 unit 1 unit
		↑/↓ ³⁾	White/White		3SB31 00-8AC61-0AD0		1 unit
Twin purch button	Twin push buttons, IP65 with flat and raised, square buttons	I/O ³⁾ I/O ³⁾	Green/Red White/Black		3SB31 00-8CC21 3SB31 00-8CC31		1 unit 1 unit
Twin push button with flat buttons							
For online configurator se	e www.siemens.com/sirius/configura	tors.					

- 1) Mounting the twin push buttons in 3SB38 enclosure is not possible.
- 2) Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.
- 3) Black inscription for green, red and white buttons; white inscription on black button.

	Version	Use	DT	Order No.	PS
Accessories for twin pu	sh buttons				
Label holder	Label holders 70 mm x 30 mm for inscription label 12.5 mm x 27 mm ¹⁾	Twin push buttons		3SB39 22-0AY	5 units
Protective cap	Protective caps, clear Silicone, for degree of protection IP67	Twin push buttons with flat buttons		3SB39 21-0AQ	1 unit

¹⁾ Mounting in 3SB38 enclosure is not possible. For inscription labels see pages 10/75 and 10/76.

10/55

3SB3, Plastic, Round, 22 mm

Coordinate switches, complete

Overview



Coordinate switch with contact blocks

Coordinate switches control auxiliary circuits permitting movements in various directions of machines and equipment.

The switches are designed for front panel mounting. They are climate-proof.

Operation

The 3SB14 00-0J contact block is used, which due to its depth cannot be built into 3SB38 enclosures.

Switches are available as follows:

- With 2 or 4 switch positions
- Latching or momentary contact type
- · With or without mechanical interlocking

In the case of switches with mechanical interlock in O position, the switch is unlatched with the unlatching button at the front of the actuating lever.

Inscriptions

A name plate consisting of a black, plastic label holder and two or four adhesive, silver-colored inscription labels of $27~\text{mm}\,\text{x}\,27~\text{mm}$ in size is available for labeling purposes. These labels can be supplied with and without customized inscription.

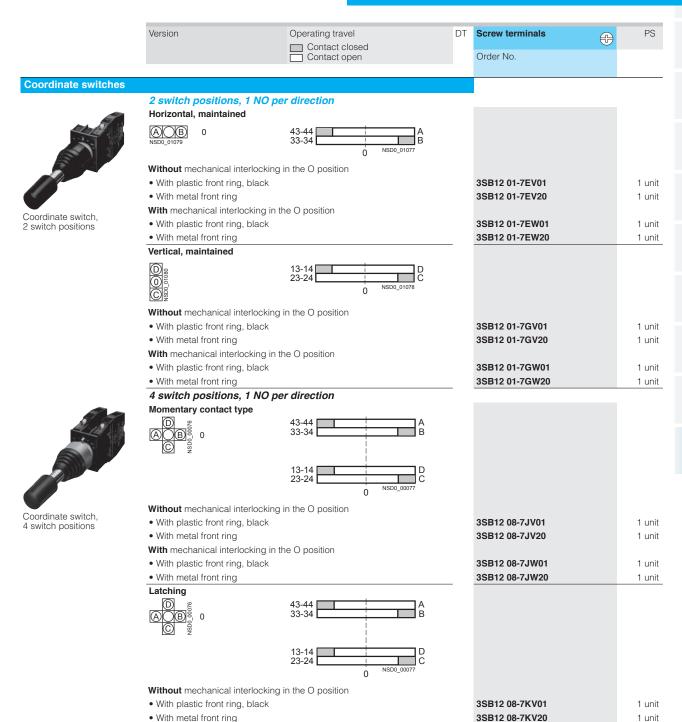
Note mounting dimensions!

Selection and ordering data

	Version	Operating travel Contact closed Contact open	DT	Screw terminals	PU (UNIT, SET, M)	PS	
				Order No.			
Coordinate switches							
	2 switch positions, 1 NO	per direction					
	Horizontal, momentary contact type						
	(A) (B) 0 NSD0_01079	43-44 33-34 NSD0_01077 B					
	Without mechanical interlocking	ng in the O position					
	• With plastic front ring, black		С	3SB12 01-7DV01	1	1 unit	
	 With metal front ring 		С	3SB12 01-7DV20	1	1 unit	
Coordinate switch,	With mechanical interlocking in the O position						
2 switch positions	 With plastic front ring, black 		С	3SB12 01-7DW01	1	1 unit	
	With metal front ring		С	3SB12 01-7DW20	1	1 unit	
	Vertical, momentary contact type						
	NSDO_01080	13-14 23-24 D C					
	Without mechanical interlocking	ng in the O position					
	With plastic front ring, black		С	3SB12 01-7FV01	1	1 unit	
	 With metal front ring 		С	3SB12 01-7FV20	1	1 unit	
	With mechanical interlocking in	n the O position					
	 With plastic front ring, black 		С	3SB12 01-7FW01	1	1 unit	
	 With metal front ring 		С	3SB12 01-7FW20	1	1 unit	

3SB3, Plastic, Round, 22 mm

Coordinate switches, complete



With mechanical interlocking in the O position

· With plastic front ring, black

· With metal front ring

Siemens Industry, Inc. Industrial Controls Catalog 1 unit

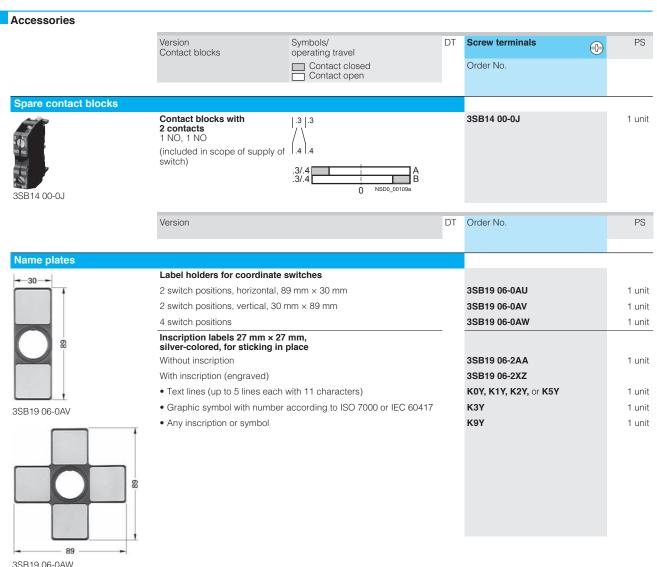
1 unit

3SB12 08-7KW01

3SB12 08-7KW20

3SB3, Plastic, Round, 22 mm

Coordinate switches, complete



For black plastic labels see page 10/76.

Options

Customized inscriptions

These labeling plates can be inscribed with text or symbols. 5 lines with 11 characters each in a letter height of 4 mm are possible.

Ordering notes

Append the following order codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): K0Y
- Text line(s) in upper case (e.g. "LIFT OFF"): K1Y
- Text line(s) in lower case (e.g. "lift off"): K2Y
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): K5Y
- Symbol with number according to ISO 7000 or IEC 60417:
- Any inscription or symbol according to order form supplement: K9Y

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower".

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417.

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

A label inscribed with symbol No. 1117 according to ISO 7000 is required:

3SB19 06-2XZ K3Y

Z = 1117 ISO

For other ordering examples see page 10/72.

Push Button Units and Indicator Lights 3SB3, Plastic, Square, 22 mm

Complete Units

lection and ordering	ng data							
	Version	Rated voltage of lamp	Color of handle	Contacts for front plate	DT	Screw terminals		PS
				mounting		Configurator	€€}}	
		V				Order No.		
ısh buttons								
	Push buttons with flat button	_	Black Black Red Yellow Green Blue White	1 NO 1 NC 1 NC 1 NO 1 NO 1 NO 1 NO		3SB33 02-0AA11 3SB33 03-0AA11 3SB33 03-0AA21 3SB33 02-0AA31 3SB33 02-0AA41 3SB33 02-0AA51 3SB33 02-0AA61		1 u 1 u 1 u 1 u 1 u 1 u
sh button			Black Red Yellow Green Blue White	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB33 01-0AA11 3SB33 01-0AA21 3SB33 01-0AA31 3SB33 01-0AA41 3SB33 01-0AA51 3SB33 01-0AA61		1 u 1 u 1 u 1 u 1 u 1 u
	Illuminated push buttons with flat button with integrated LED (incl. holder for 3 elements)	24 AC/DC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB33 46-0AA21 3SB33 45-0AA31 3SB33 45-0AA41 3SB33 45-0AA51 3SB33 45-0AA61 3SB33 45-0AA71		1 u 1 u 1 u 1 u 1 u
minated push button			Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB33 47-0AA21 3SB33 47-0AA31 3SB33 47-0AA41 3SB33 47-0AA51 3SB33 47-0AA61 3SB33 47-0AA71		1 u 1 u 1 u 1 u 1 u
	Illuminated push buttons with flat button with integrated LED (incl. holder for 3 elements)	230 AC	Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO		3SB33 54-0AA21 3SB33 53-0AA31 3SB33 53-0AA41 3SB33 53-0AA51 3SB33 53-0AA61 3SB33 53-0AA71		1 u 1 u 1 u 1 u 1 u
			Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB33 55-0AA21 3SB33 55-0AA31 3SB33 55-0AA41 3SB33 55-0AA51 3SB33 55-0AA61 3SB33 55-0AA71		1 u 1 u 1 u 1 u 1 u 1 u
	Illuminated push buttons with flat button with BA 9s lamp holder without lamp (incl. holder for 3 elements)		Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NC 1 NO 1 NO 1 NO 1 NO 1 NO 1 NO		3SB33 07-0AA21 3SB33 06-0AA31 3SB33 06-0AA41 3SB33 06-0AA51 3SB33 06-0AA61 3SB33 06-0AA71		1 u 1 u 1 u 1 u 1 u 1 u
			Red ¹⁾ Yellow ¹⁾ Green ¹⁾ Blue ¹⁾ White Clear ¹⁾	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC		3SB33 05-0AA21 3SB33 05-0AA31 3SB33 05-0AA41 3SB33 05-0AA51 3SB33 05-0AA61		1 u 1 u 1 u 1 u

To ronline configurator see www.siemens.com/sirius/configurators .

¹⁾ Inscription is possible by inserting a label.

3SB3, Plastic, Square, 22 mm

Complete units



Tor online configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3TK28 safety relays. Certificate:



1) German inscription "NOT-HALT".

	Version	Rated voltage of lamp	Color of lens DT		PS
		V		Order No.	
Signaling devices					
	Indicator lights with integrated LED	24 AC/DC	Red Yellow Green Blue White Clear	3SB33 44-6AA20 3SB33 44-6AA30 3SB33 44-6AA40 3SB33 44-6AA50 3SB33 44-6AA60 3SB33 44-6AA70	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Indicator light	Indicator lights with integrated LED	230 AC	Red Yellow Green Blue White Clear	3SB33 52-6AA20 3SB33 52-6AA30 3SB33 52-6AA40 3SB33 52-6AA50 3SB33 52-6AA60 3SB33 52-6AA70	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
	Indicator lights with BA 9s lamp holder (without lamp)	_	Red Yellow Green Blue White Clear	3SB33 04-6AA20 3SB33 04-6AA30 3SB33 04-6AA40 3SB33 04-6AA50 3SB33 04-6AA60 3SB33 04-6AA70	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Actuators and Indicators

Selection and ordering	data			
	Version	Color of handle DT	Configurator	PS
			Order No.	
Push buttons and switch	nes with holder ¹⁾			
	Push buttons with flat button	Black Red Yellow Green Blue White Clear ²⁾	3SB31 10-0AA11 3SB31 10-0AA21 3SB31 10-0AA31 3SB31 10-0AA41 3SB31 10-0AA51 3SB31 10-0AA61 3SB31 10-0AA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Push button	Push buttons	Black	3SB31 10-0AA12	1 unit
	with raised front ring (height 13 mm)	Red Green White	3SB31 10-0AA22 3SB31 10-0AA42 3SB31 10-0AA62	1 unit 1 unit 1 unit
Push button with raised front ring				
	Push buttons with raised front ring, castellated (height 13 mm)	Black Red Yellow Green White	3SB31 10-0AA13 3SB31 10-0AA23 3SB31 10-0AA33 3SB31 10-0AA43 3SB31 10-0AA63	1 unit 1 unit 1 unit 1 unit 1 unit
Push button with raised front ring, castellated				
	Illuminated push buttons with flat button (incl. holder for 3 elements)	Red ²⁾ Yellow ²⁾ Green ²⁾ Blue ²⁾ White Clear ²⁾	3SB31 11-0AA21 3SB31 11-0AA31 3SB31 11-0AA41 3SB31 11-0AA51 3SB31 11-0AA61 3SB31 11-0AA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Illuminated push button		D	20004 40 00444	4 1
	Push buttons, maintained, with flat button, unlocking by pressing again	Black Red Yellow Green Blue White	3SB31 10-0DA11 3SB31 10-0DA21 3SB31 10-0DA31 3SB31 10-0DA41 3SB31 10-0DA51 3SB31 10-0DA61	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Push button				
	Illuminated push buttons, maintained, with flat button (incl. holder for 3 elements), unlatches by pressing again,	Red ²⁾ Yellow ²⁾ Green ²⁾ Blue ²⁾ White Clear ²⁾	3SB31 11-0DA21 3SB31 11-0DA31 3SB31 11-0DA41 3SB31 11-0DA51 3SB31 11-0DA61 3SB31 11-0DA71	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
Illuminated push button				

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

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Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

 $^{^{2)}}$ Inscription is possible by inserting a label.

3SB3, Plastic, Square, 22 mm

Actuators and Indicators

	Version	Version Illumination	Color of handle	DT	Configurator	PS
					Order No.	
Selector switches with h	older ¹⁾					
7 7	Selector switches with 2 switch position	ons				
	Switching sequence O-I, 50° operating angle, maintained O I	Non-illuminated	Black Red Green White		3SB31 10-2KA11 3SB31 10-2KA21 3SB31 10-2KA41 3SB31 10-2KA61	1 unit 1 unit 1 unit 1 unit
Selector switch		Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear		3SB31 11-2KA21 3SB31 11-2KA31 3SB31 11-2KA41 3SB31 11-2KA51 3SB31 11-2KA71	1 unit 1 unit 1 unit 1 unit
	Switching sequence O-I, 50° operating angle, momentary, spring return from the left O I	Non-illuminated	Black Red Green White		3SB31 11-2LA71 3SB31 10-2LA11 3SB31 10-2LA21 3SB31 10-2LA41 3SB31 10-2LA61	1 unit 1 unit 1 unit 1 unit 1 unit
Selector switch, illuminated	A,	Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear		3SB31 11-2LA21 3SB31 11-2LA31 3SB31 11-2LA41 3SB31 11-2LA51 3SB31 11-2LA71	1 unit 1 unit 1 unit 1 unit 1 unit
7 00	Selector switches with 3 switch position	ons				
	Switching sequence I-O-II, 2 x 50° operating angle, maintained	Non-illuminated	Black Red Green White		3SB31 10-2DA11 3SB31 10-2DA21 3SB31 10-2DA41 3SB31 10-2DA61	1 unit 1 unit 1 unit 1 unit
Selector switch	_\\"	Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear		3SB31 11-2DA21 3SB31 11-2DA31 3SB31 11-2DA41 3SB31 11-2DA51 3SB31 11-2DA71	1 unit 1 unit 1 unit 1 unit 1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, momentary, spring return from the left and right	Non-illuminated	Black Red Green White		3SB31 10-2EA11 3SB31 10-2EA21 3SB31 10-2EA41 3SB31 10-2EA61	1 unit 1 unit 1 unit 1 unit
Selector switch, illuminated		Illuminated (incl. holder for 3 elements)	Red Yellow Green Blue Clear		3SB31 11-2EA21 3SB31 11-2EA31 3SB31 11-2EA41 3SB31 11-2EA51 3SB31 11-2EA71	1 unit 1 unit 1 unit 1 unit 1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, momentary to the left, spring return from the left, maintained to the right	Non-illuminated	Black Green White		3SB31 10-2GA11 3SB31 10-2GA41 3SB31 10-2GA61	1 unit 1 unit 1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, maintained to the left, momentary to the right, spring return from the right	Non-illuminated	Black Red Green		3SB31 10-2FA11 3SB31 10-2FA21 3SB31 10-2FA41	1 unit 1 unit 1 unit

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

Actuators and Indicators

	Version	Lock version Type	Lock No./	D' Key removal	Configurator	£	PS
		.,,,,,	color	position	Order No.		
Key-operated switches w	ith holder ¹⁾						
	Key-operated switches with 2	keys, 2 switc	h positions				
	Switching sequence O-I, 50° operating angle, maintained	RONIS	SB 30	O+I O I	3SB31 10-4AD11 3SB31 10-4AD01 3SB31 10-4AD21		1 unit 1 unit 1 unit
		CES	SSG 10	0+I 0 I	3SB31 10-4LD11 3SB31 10-4LD01 3SB31 10-4LD21		1 unit 1 unit 1 unit
RONIS key-operated switch			LSG 1	0+I 0	3SB31 10-4LF01 3SB31 10-4LF11		1 unit 1 unit
_		BKS	S1	O+I	3SB31 10-5AD11		1 unit
111				0	3SB31 10-5AD01		1 unit
		O.M.R. ²⁾	73037 Red	0	3SB31 10-3AH01		1 unit
			73034 Black	O+I	3SB31 10-3AJ11		1 unit
			73037 Red	O+I	3SB31 10-3AH11		
	Switching sequence O-I,	RONIS	SB 30	0	3SB31 10-4BD01		1 unit
CES key-operated switch	50° operating angle, momentary, spring return from the right	CES	SSG 10	0	3SB31 10-4MD01		1 unit
	Key-operated switches with 2	keys, 3 switc					
	Switching sequence I-O-II,	RONIS	SB 30	I+O+II	3SB31 10-4DD11		1 unit
3	2 x 50° operating angle, maintained	CES	SSG 10	I+O+II O	3SB31 10-4PD11 3SB31 10-4PD01		1 unit 1 unit
		BKS	S1	0	3SB31 10-5BD01		1 unit
O.M.R. key-operated switch	Switching sequence I-O-II,	RONIS	SB 30	0	3SB31 10-4ED01		1 unit
emmandy operated emicin	2 x 50° operating angle, momentary, spring return from the left and right	CES	SSG 10	0	3SB31 10-4QD01		1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, momentary to the left, spring return from the left, maintained to the right	CES	SSG 10	0	3SB31 10-4SD01		1 unit
	Switching sequence I-O-II, 2 x 50° operating angle, maintainedmaintainedmaintained to the left, momentary to the right, spring return from the right	CES	SSG 10	O+I	3SB31 10-4RD51		1 unit

To ronline configurator see www.siemens.com/sirius/configurators .

For BKS and CES special locks see page 10/69

Siemens Industry, Inc. Industrial Controls Catalog

Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

 $^{^{2)}\,}$ According to FIAT standards; also available for other users.

3SB3, Plastic, Square, 22 mm

Actuators and Indicators

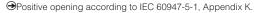


	Version	Color of lens	OT C	Configurator	£03	PS
			C	Order No.		
Signaling elements with hole	der ¹⁾					
Indicator lights	Indicator lights	Red Yellow Green Blue Clear White	3 3 3	SB31 11-6AA20 SB31 11-6AA30 SB31 11-6AA40 SB31 11-6AA50 SB31 11-6AA70 SB31 11-6AA60		1 unit 1 unit 1 unit 1 unit 1 unit 1 unit

For online configurator see www.siemens.com/sirius/configurators.

¹⁾ Also available without holder. Supplement Order No. with "-Z" and quote order code "B01". Price reduction on request.

Selection and o	ruernig data							
	Version		Diagram	Operating travel	DT	Screw terminals		PS
				Contact closed		Order No.		
Contact blocks t	for front plate mounting			Contact open				
Contact blocks	Contact blocks with one conta	ct						
3 10	Mounting depth: 50 mm							
	1 NO		.3	NSD0_00015		3SB34 00-0B		1 un
	1 NO with		⊢7,	3-4		3SB34 00-0BA		1 un
	gold-plated contacts		.4	0 1 2 3 4 mm—> 2,3				
SB34 00-0B	1 NC	\odot	11	2,3 NSD0_00017		3SB34 00-0C		1 un
-	1 NC with	→	<u>.</u> ''	1-2		3SB34 00-0CA		1 un
inc	gold-plated contacts		.2	0 1 2 3 4 mm———————————————————————————————————				
S. (1 NC with	→	11	1, b NSD0_00017		3SB34 00-0M		1 un
6	mounting monitoring contact ¹⁾		<u> </u>	1-2				
	 Mounting depth: 63 mm 		.2	0 1 2 3 4 mm——				
SB34 00-0M				1,6				
	Contact block with 2 contacts Mounting depth 63 mm (including	na unit l	abeling plate))				
9	1 NO + 1 NC	ັ 🕞	.3 .1	NSD0_00038		3SB34 00-0A		1 uni
3	1 NO + 1 NC	\odot	- / <u>-</u>	3-4 1-2		3SB34 00-0AA		1 un
NO.	with gold-plated contacts	→	.4 .2	0 1 2 3 4		00004 00 01		4
NO Sal	1 NO + 1 NC with dust protection ²⁾	9		mm — 1,6 2,3		3SB34 00-0N		1 uni
14	1 NO leading + 1 NC lagging		.7 .5	7-8 NSD0_00037b		3SB34 00-0H		1 uni
B34 00-0A	1 NO leading + 1 NC lagging with gold-plated contacts		\	5-6		3SB34 00-0HA		1 un
	with gold-plated contacts		1.8 1.6	0 1 2 3 4 mm — 3 4				
				1,3 2,2				
	2 NO		.3 .3	3-4 NSD0_00039		3SB34 00-0D		1 un
	2 NO with gold-plated contacts		r-//-/	0 1 2 3 4		3SB34 00-0DA		1 un
	2 NO with		l.4 l.4	mm— ►		3SB34 00-0P		1 un
	dust protection ²⁾	→		2,3		00004.00.05		4
	2 NC 2 NC with	→	1414	1-2 1-2		3SB34 00-0E 3SB34 00-0EA		1 uni 1 uni
	gold-plated contacts		<i>-</i>			33B34 00-0EA		i uii
	2 NC with dust protection ²⁾	€	1.2 1.2	0 1 2 3 4 mm + 1,6		3SB34 00-0Q		1 uni
and a	Blocks with 2 diodes type 1N 4	1007		1,0				
3	Mounting depth: 63 mm					2CB24 00 2A		1
xs /	$U_{\rm RMS} = {\rm max.}~250~{\rm V}$ $I_{\rm FAV} = 0.8~{\rm A}$ at $T_{\rm u} = 60~{\rm ^{\circ}C}$		(L+) X5	(L-) <u>7 X6</u>		3SB34 00-2A		1 uni
= 12	at $T_u = 60 ^{\circ}\text{C}$		X7 D	X8				
S			NSD	D_00113				
1								



¹⁾ The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped onto the actuator. Not suitable for mounting in 3SB38 enclosures.

3SB34 00-2A

²⁾ With 3SB30 01-0CH dust protection shield

Push Button Units and Indicator Lights 3SB3, Components for Actuators and Indicators, 22 mm

Contact blocks and lamp holders

	Version	Diagram	Rated voltage	DT	Screw terminals	PS
			V		Order No.	
Contact blocks for f	ront plate mounting					
	BA 9s lamp holders, mounting depth	50 mm				
X 31	Without lamp	X1 2 X2	Acc. to lamp		3SB34 00-1A	1 unit
	With 24 V incandescent lamp (3SX1 344)	(L+) (L-) NSD0_00003	24 AC/DC	_	3SB34 00-1D	1 unit
	BA 9s lamp holders, mounting depth	50 mm				
3SB34 00-1A	With integrated voltage reducer and with 130 V lamp (3SX1 731) ¹⁾	X1 X2 NSD0_00042	230 / 240 AC		3SB34 00-1C	1 unit
	BA 9s lamp holders, mounting depth	50 mm		_		
	With built-in resistor for longer endurance and with 130 V lamp (3SX1 731) ¹⁾	X1 X2 (L+) (L-) NSD0_00041	110/130 AC/DC		3SB34 00-1B	1 unit
	BA 9s lamp holders			_		
3 (X)	with separate lamp test function ²⁾³⁾ With integrated voltage reducer and with 130 V lamp (3SX1 731) ¹⁾	X5 X2 X1 X2 NSD0_00043	230 / 240 AC		3SB34 00-1F	1 unit
3 SSB34 00-1F	Without lamp For incandescent lamp, max. 2.6 W; for LED lamp, 24/48/230 V AC/DC ⁴⁾	AC/DC-LED - (L-) X1	Acc. to lamp		3SB34 00-1G	1 unit
	Without lamp	X5 *	Acc. to lamp		3SB34 00-1L	1 unit
	For incandescent lamp, max. 2.6 W; for LED lamp, AC or DC ⁵⁾	X2 X1 (L-) (L+) NSDD_00045				
	Without lamp For incandescent lamp, max. 2.6 W; for glow lamp, AC	X5 X2 (L+) (L-) NSD0_00046a	Acc. to lamp		3SB34 00-1H	1 unit
	Lamp holders with integrated LED			_		
	Mounting depth: 50 mm Yellow Red Green Blue White	X1 X2 NSD0_01292b	24 AC/DC		3SB34 00-1PA 3SB34 00-1PB 3SB34 00-1PC 3SB34 00-1PD 3SB34 00-1PE	1 unit 1 unit 1 unit 1 unit 1 unit
	Yellow	X1	110 AC		3SB34 00-1QA	1 unit
SB34 00-1PA	Red Green Blue				3SB34 00-1QB 3SB34 00-1QC 3SB34 00-1QD	1 unit 1 unit 1 unit
	White	X2 NSD0 01396b			3SB34 00-1QE	1 unit
	Yellow Red Green	NSD0_01296b	230 AC		3SB34 00-1RA 3SB34 00-1RB 3SB34 00-1RC	1 unit 1 unit 1 unit
	Blue White	X2 NSD0_01296b			3SB34 00-1RD 3SB34 00-1RE	1 unit 1 unit
	Transformers For snapping onto 3SB34 00-1A lamp		127 / 24 240 / 24		3SB34 00-3A 3SB34 00-3C	1 unit 1 unit
	holder For incandescent lamp AC,	X1 X2 NSD0_00047	260 / 24 400 / 24		3SB34 00-3E 3SB34 00-3F	1 unit 1 unit
	max. 2 W		127 / 6		3SB34 00-3M	1 unit
	Mounting depth: 97 mm		240 / 6 400 / 6 480 / 6 600 / 6		3SB34 00-3P 3SB34 00-3S 3SB34 00-3U 3SB34 00-3W	1 unit 1 unit 1 unit 1 unit
SB34 00-3.						

¹⁾ Use these lamps only.

 $^{^{\}rm 2)}$ The lamp holder with separate lamp test function can not be installed in an

³⁾ For circuit examples see Reference manual "Commanding and Signaling

⁴⁾ Not suitable for LEDs which are suitable only for AC or DC.

⁵⁾ Not suitable for LED for 24/48/230 V AC/DC. For connecting to DC, X5 must be connected to L-.

Contact blocks and lamp holders

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IU

Rated voltage of Operating travel/color **Spring-type terminals** Version lamp/ Contact closed Diagram Order No. Contact open Contact blocks for front plate mounting Contact blocks with one contact, mounting depth 50 mm 1 NO 3SB34 03-0B 1 unit 3SB34 03-0BA 1 NO with 1 unit gold-plated contacts 1 NC 3SB34 03-0C 1 unit 1 NC with 3SB34 03-0CA 1 unit 3SB34 03-0B gold-plated contacts mm-1 NC with 3SB34 03-0M 1 unit mounting monitoring contact¹⁾ 0 mm 1 2 • Mounting depth: 63 mm Contact blocks with 2 contacts, mounting depth 63 mm 1 NO + 1 NC 3SB34 03-0A 1 unit 1 NO + 1 NC 3SB34 03-0AA 1 unit 3SB34 03-0M with gold-plated contacts 1 2 1,6 2,3 1 NO leading + 3SB34 03-0H 1 unit 1 NC lagging 1 NO leading + 3SB34 03-0HA 1 unit 1 NC lagging with gold-plated contacts 1,3 2,2 2 NO 3SB34 03-0D 1 unit 2 NO with 3SB34 03-0DA 1 unit gold-plated contacts mm-3SB34 03-0A 2 NC 3SB34 03-0E 1 unit 3SB34 03-0EA 2 NC with 1 unit gold-plated contacts 1,6



3SB34 03-1C



3SB3403-1PA

BA 9s lamp holders, mounting	depth 50 mm
Without Jamp ²⁾	Acc to lar

ithout lamp²⁾ Acc. to X1

X1 X2 (L+) (L-) NSD0_00003 Cer 230/240 V AC

With integrated voltage reducer and with 130 V lamp (3SX1 731)²⁾³⁾

Lamp holders with integrated LED

Mounting depth: 50 mm

NSD0_00042			
24 V AC/DC X1 NSD0_01292b	Yellow Red Green Blue White	3SB34 03-1PA 3SB34 03-1PB 3SB34 03-1PC 3SB34 03-1PD 3SB34 03-1PE	1 unit 1 unit 1 unit 1 unit 1 unit
110 V AC X1 X2 NSD0_01296b	Yellow Red Green Blue White	3SB34 03-1QA 3SB34 03-1QB 3SB34 03-1QC 3SB34 03-1QD 3SB34 03-1QE	1 unit 1 unit 1 unit 1 unit 1 unit
230 V AC	Yellow Red Green Blue White	3SB34 03-1RA 3SB34 03-1RB 3SB34 03-1RC 3SB34 03-1RD 3SB34 03-1RE	1 unit 1 unit 1 unit 1 unit 1 unit

3SB34 03-1A

3SB34 03-1C

1 unit

1 unit

[→]Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). For more explanations see footnote, page 10/65. Not suitable for mounting in 3SB38 enclosures.

²⁾ Not suitable for square command devices.

³⁾ Use these lamps only.

3SB3, Components for Actuators and Indicators, 22 mm

Contact blocks and lamp holders

	Version	Diagram	Operating travel	DT	Solder pin properties on solder pin connections	PS
			Contact closed Contact open		Order No.	
Contact blocks fo	r use on printed circuit boards		Contact open			
	Contact blocks with one contact Mounting depth 44 mm					
·3	1 NO	⊢√ .3	3-4 NSD0_00015		3SB34 11-0B	1 unit
ia U		1.4	mm—► 2,3			
3SB34 11-0B	1 NC →	L <u>1</u> ⊢-/	1-2 NSD0_00017 0 1 2 3 4 mm———————————————————————————————————		3SB34 11-0C	1 unit
	Wedge base lamp holders W2 x 4.6 Mounting depth: 44 mm	d	1,6			
	Without lamp	X1 (L+) NSDO	X2 (L-) 0_00003		3SB34 11-1A	1 unit
3SB34 11-1A						
Positive opening ac	ccording to IEC 60947-5-1, Appendix K.					
	Version			DT	Order No.	PS
Holders for 3 con	tact blocks, for front panel mountin	na				
	Holders for push buttons and switt for snapping on 3 blocks (for illuminated push buttons and illu included in the scope of supply)	ches ¹⁾	tor switches the holder is		3SB39 01-0AB	20 units

³SB39 01-0AB



Holders for selector switches, key-operated switches and twin push but-With pressure plate for actuating the central contact block of 3 contact blocks

3SB39 01-0AC

Pressure plates for use on printed circuit boards



Pressure plates for selector switches and key-operated switches

For actuating the central contact block of 3 contact blocks

3SB39 01-0AW

3SB39 01-0AC

10 units

10 units

3SB39 01-0AW

Accessories for printed circuit boards



Holders for printed circuit boards

for mounting the command devices on the printed circuit board (screw is included in the scope of supply)

3SB39 01-0AA

10 units

¹⁾ Holder also for mushroom push button and push-pull button.

3SB3, Components for Actuators and Indicators, 22 mm

Special locks

Options

Special locks for key-operated switches

The BKS and CES plastic and metal key-operated switches, round and square versions, can be optionally equipped with special locks.

In this case the Order No. of the matching key-operated switch must be supplemented with "-Z", the matching order code "Y01" or "Y02" and the required lock number.

Order code	Y01	Y02
In accordance with the table of special locks	No	Yes
Normal delivery time	25 working days	5 working days
Additional price per unit	On request	On request
Ordering example	3SB30 00-4LD01-Z Y01 Z = SSG18	3SB30 00-4LD01-Z Y02 Z = SSG11

Available special locks with order code "Y02" Key-operated switch CES SSG 11 to SSG 15 SB34LD01-Z Y02 3SB34LD11-Z Y02 3SB34MD01-Z Y02 3SB34MD01-Z Y02 3SB34MD01-Z Y02 3SB34MD0-Z Y02 3SB34MDZ Y02 3SB34MDZ Y02 3SB34SDZ Y02 3SB34SDZ Y02 3SB35ADZ Y02 3SB35BD01-Z Y02 3SB35DDZ Y02 3SB35DD1-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02		
CES SSG 11 to SSG 15 3SB34LD01-Z Y02 3SB34LD21-Z Y02 3SB34MD01-Z Y02 3SB34MD01-Z Y02 3SB34PDZ Y02 3SB34PDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB35ADZ Y02 3SB35ADZ Y02 3SB35DDZ Y02 3SB35DDZ Y02 3SB35ED01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD51-Z Y02 SBMS E9¹) 3SB35FD51-Z Y02 SBMS E9¹) 3SB35FD51-Z Y02 SBMS E9¹) 3SB35FD51-Z Y02 SBMS E9¹) 3SB35FD51-Z Y02	Available special locks with order code "Y02"	
Y02 3SB34LD11-Z Y02 3SB34LD21-Z Y02 3SB34MD01-Z Y02 3SB34PDZ Y02 3SB34PDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB35ADZ Y02 3SB35ADZ Y02 3SB35BD01-Z Y02 3SB35ED01-Z Y02 3SB35ED01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02	Key-operated switch	
Y02 3SB34LD21-Z Y02 3SB34MD01-Z Y02 3SB34PDZ Y02 3SB34QDZ Y02 3SB34RDZ Y02 3SB34SDZ Y02 3SB35ADZ Y02 3SB35ADZ Y02 3SB35ADZ Y02 3SB35DDZ Y02 3SB35DDZ Y02 3SB35DDZ Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 3SB35FD51-Z Y02 BKS E9¹) 3SB35FD51-Z Y02 BMCS E9SP 9 3SB31KA20-Z	CES SSG 11 to SSG 15	
Y02 3SB34MD01-Z Y02 3SB34PDZ Y02 3SB34PDZ Y02 3SB34RDZ Y02 3SB34SDZ Y02 3SB34SDZ Y02 3SB35BD01-Z Y02 3SB35BD01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02		
Y02 3SB34PDZ Y02 3SB34QDZ Y02 3SB34RDZ Y02 3SB34RDZ Y02 3SB34SDZ Y02 3SB35ADZ Y02 3SB35BD01-Z Y02 3SB35BD01-Z Y02 3SB35ED01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02		
W102 3SB34QDZ Y02 3SB34RDZ Y02 3SB34SDZ Y02 3SB35ADZ Y02 3SB35ADZ Y02 3SB35BD01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02		
Y02 3SB34RDZ Y02 3SB34SDZ Y02 BKS E1, E2, E7, E9 ¹⁾ 3SB35ADZ Y02 3SB35BD01-Z Y02 3SB35ED01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02		Y02
BKS E1, E2, E7, E9 ¹⁾ BKS E1, E2, E7, E9 ¹⁾ 3SB35ADZ Y02 3SB35BD01-Z Y02 3SB35BD01-Z Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD51-Z Y02 BKS E9 ¹⁾ 3SB35FD51-Z Y02 BKS E9 ¹⁾ 3SB35FD51-Z Y02 BKS E9 ¹⁾ 3SB35FD51-Z Y02 BKS E9 ¹⁾ 3SB35FD51-Z Y02		Y02
Y02		Y02
Y02 3SB35BD01-Z Y02 3SB35DDZ Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD51-Z Y02 BKS E9 ¹⁾ 3SB35FD51-Z Y02 EMERGENCY-STOP mushroom push buttons CES SSP 9 3SB31KA20-Z		
Y02 3SB35DDZ Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35GD01-Z Y02 3SB35GD01-Z Y02 BKS E9 ¹⁾ 3SB35FD51-Z Y02 EMERGENCY-STOP mushroom push buttons CES SSP 9 3SB31KA20-Z	BKS E1, E2, E7, E9 ¹⁾	
Y02 3SB35ED01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35FD51-Z Y02 EMERGENCY-STOP mushroom push buttons CES SSP 9 3SB31KA20-Z		Y02
Y02 3SB35FD01-Z Y02 3SB35FD01-Z Y02 3SB35GD01-Z Y02 SB35FD51-Z Y02 EMERGENCY-STOP mushroom push buttons CES SSP 9 3SB31KA20-Z		Y02
Y02 3SB35GD01-Z Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y02 Y03		Y02
Y02		Y02
EMERGENCY-STOP mushroom push buttons CES SSP 9 3SB31KA20-Z		
buttons CES SSP 9 3SB31KA20-Z	BKS E9 ¹⁾	
	CES SSP 9	

¹⁾ Delivery of these BKS key-operated switches (locks for VW) without key.

3SB3. ..-1LA20-Z

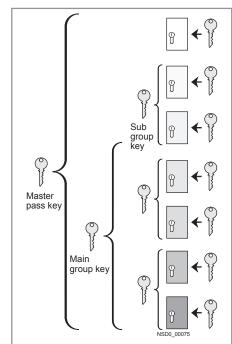
Master and master-pass key systems

The following key systems can be supplied with BKS or CES keyoperated switches:

- · Central lock systems
- · Master key systems
- · Central master key systems
- Master-pass key systems

When placing an order you must supplement the Order No. of the matching key-operated switches with "-Z" and quote the order code "Y03".

Please enquire for price and delivery time.



Example of master-pass key system

Ordering notes

- For all special locks, an additional price applies.
- The order code "Y01" or "Y02" must be quoted in accordance with the table above. Automated processing of the order with a defined delivery time can be guaranteed only for correctly submitted orders.
- For applications in which access security is important and several lock numbers are used, we recommend the use of BKS or CES key-operated switches.
- Special locks for VW (E1, E2, ...) will be delivered without keys, all others with 2 keys.

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BKS E2, E7, E91)

3SB3, Components for Actuators and Indicators, 22 mm

Contact block position for selector switches & 3-position push-pull

Selection and ordering data

Switch Position (front of switch)		Circuit	Contact Block	Block Postion ¹⁾²⁾				
Two-Position Selector Contact Block Selection								
0	X	1 NO	3SB34 00-0B	Any Postion				
X	0	1 NC	3SB34 00-0C	Any Postion				
O X	X O	1 NO/1 NC	3SB34 00-0A	Any Postion				
0	X	2 NO	3SB34 00-0D	Any Postion				
X X	0	2 NC	3SB34 00-0E	Any Postion				
There Deaths	0.1	an Orașia și Dia	1.0.1					

Three-Position Selector Contact Block Selection

Inree-P	OSILIO	n Selec	ctor Contact Biod	x Selection				
Χ	0	Ο	1 NO	3SB34 00-0B	1 or 2A			
X	0	Χ	1 NO	3SB34 00-0B	2			
0	0	Χ	1 NO	3SB34 00-0B	3 or 2B			
0	Χ	Χ	1 NC	3SB34 00-0C	1 or 2A			
0	Χ	Ο	1 NC	3SB34 00-0C	2			
Χ	Χ	0	1 NC	3SB34 00-0C	3 or 2B			
X	O X	O X	1 NO/1 NC	3SB34 00-0A	1 or 2A			
X	O X	X	1 NO/1 NC	3SB34 00-0A	2			
O	O X	X	1 NO/1 NC	3SB34 00-0A	3 or 2B			
X	0	0	2 NO	3SB34 00-0D	1 or 2A			
X	0	X	2 NO	3SB34 00-0D	2			
0	0	X	2 NO	3SB34 00-0D	3 or 2B			
0	X	X	2 NC	3SB34 00-0E	1 or 2A			
0	X	0	2 NC	3SB34 00-0E	2			
X	X	0	2 NC	3SB34 00-0E	3 or 2B			
Three-P	Three-Position Push-Pull Contact Block Selection							

Three	-Position	n Pusl	h-Pull Contact Blo	ck Selection	
Out	Center	In			
Χ	Ο	Ο	1 NO	3SB34 00-0B	1 or 2A
0	0	Χ	1 NO	3SB34 00-0B	3 or 2B
Х	Χ	0	1 NC	3SB34 00-0C	3 or 2B
0	Χ	Χ	1 NC	3SB34 00-0C	1 or 2A
O X	X	X	1 NO/1 NC	3SB34 00-0A	1 or 2A
X	X	O X	1 NO/1 NC	3SB34 00-0A	3 or 2B
O X	X	O X	1 NO/1 NC	3SB34 00-0A	2

Rear View of Switch



Operator without Contact Block Carrier

For Mounting Contacts Directly to Operator



Operator with Contact block carrier

For Mounting Contacts with Carrier

- X Contact Closed
- 0 Contact Open
- 2 Both Pushers Inserted
- 2A—Left Pusher Inserted
- 2B-Right Pusher Inserted



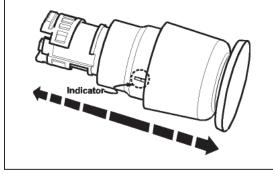
3SB39 01-0AC for operating center position. Shown with both pushers inserted (Sold separately)



3SB39 01-0AB included with illuminated devices

Orienting 3-Position Push-Pull Devices

- 1. Pull the operator to the out position and locate the device orientation mark.
- 2. With the mark located, insert into panel with the mark on the left side of the device as you face the panel.



¹⁾ Positions 2, 2A and 2B cannot be used on illuminated selector switches. Position is occupied by lamp module.

For illuminated transformer-type devices, an extra-deep lampholder is required when using two-element contact

Laser inscriptions

Overview

Inscription of actuators and indicators

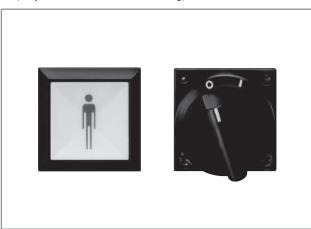
Actuators and indicators of plastic as well as metal version can be optionally inscribed with a laser.



Pushbutton (metal) with laser inscription

The actuators of the push buttons, illuminated push buttons, mushroom push buttons and illuminated mushroom push buttons can be inscribed as well as the lenses of the indicator lights.

Selector switches can be inscribed only if they are made of plastic (only one text line on the front ring).



Pushbutton and selector switch (plastic) with laser inscription

Version

A letter height of 4 mm is used as standard for text inscriptions:

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round buttons and lenses, the possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

On square buttons and lenses, 10 characters are possible per line.

Ordering notes

When ordering, supplement the Order No. of the actuator or the indicator light with "-Z" and an order code:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift off"): Y10
- Text in upper case (e.g. "LIFT OFF"): Y11
- Text in lower case (e.g. "lift off"): Y12
- Text in upper/lower case, all words begin with capital letters (e.g. "Lift Off"): Y15
- Symbol with number according to ISO 7000 or IEC 60417: Y13
- Any inscription or symbol according to order form supplement: Y19

Additional price per unit for Y10 to Y19 on request.

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language (see ordering example 1).

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 = Lower". For long words you can also specify the end-of-line division.

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code Y19), a CAD drawing in DXF format can be submitted.

Ordering example 1

A round push button with the inscription "Reset" is required:

3SB30 00-0AA41-Z

Y 10

Z = Reset (English)

Ordering example 2

A square push button inscribed with symbol No. 5389 according to IEC 60417 is required:

3SB31 10-0AA31-Z Y13

Z = 5389 IEC

Ordering example 3

A round push button inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB30 00-0AA41-Z Y13

Z = 1118 ISO

10

3SB3, Inscriptions, 22 mm

Laser inscriptions

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

Insert Labels

By default, a letter height of 4 mm (for a single line of text) or 3 mm (for 2 or 3 lines of text) is used for text inscriptions.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round insert labels, the maximum possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

On square insert labels, 10 characters are possible per line.

Name plates

The following letter heights are used as standard for text inscriptions:

- Label size 12.5 mm x 27 mm: maximum 3 lines with letter height 4 mm (1-line), 3.5 mm (2-line) or 2.5 mm (3-line)
- Label size 27 mm x 27 mm: maximum 5 lines with letter height 4 mm (1- to 5-line)
- Label size 17.5 mm x 28 mm: maximum 3 lines with letter height 4 mm (1- and 2-line) or 3 mm (3-line)

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Inscription labels for enclosures

A letter height of 4 mm is used as standard for text inscriptions (1 to 3 lines)

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Ordering notes

Append the following codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): K0Y
- Text line(s) in upper case (e.g. "LIFT OFF"): K1Y
- Text line(s) in lower case (e.g. "lift off"): K2Y
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): K5Y
- Symbol with number according to ISO 7000 or IEC 60417:
 K3Y
- Any inscription or symbol according to order form supplement: K9Y

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 = Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format should be submitted to sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB39 02-1XZ

K1Y

Z1 = LIFT

Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB39 02-1XZ

K3Y

Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB39 02-1XZ

K3Y

Z = 1118 ISO

Examples for customized inscription



Two-line inscription in upper/lower case lettering (K0Y) (Insert labels)



Single-line inscription in upper case lettering (K1Y) (Name plates)



Three-line inscription in lower case lettering (K2Y)



Symbol number 5011 according to IEC 60417 (K3Y)



Any symbol according to order form supplement (K9Y) (Inscription labels for enclosures)

3SB3, Inscriptions, 22 mm

Inscriptions by laser printer

Overview

Label inscriptions

Using the *Label Designer* software, which can be downloaded from the Internet, and the inscription labels for laser inscription you can create your own customized labels with a standard laser printer.

The self-adhesive or snap-on labels can be stuck or snapped onto the corresponding label holders (see Name plates). Round labels are provided for inserting in illuminated push buttons and switches.

The labels are suitable for printing with one to three lines of text or symbols.

For applications with more exacting requirements we recommend factory-printed inscription labels and insert labels (laser-printed or engraved depending on the type).

You can find the Label Designer software on the Internet at:

www.siemens.com/sirius-label-designer

Selection and ordering data

	Version	Color	DT	Order No. Pr	rice PU PU (UNIT, SET, M)	PS
Labels for printing						
1 2 3 4 5 16 1 8	Insert labels for inserting in round illuminated push buttons and illuminated switches	Milky	А	3SB39 01-2AB	100	480 units
$\frac{2}{\ell}$ 3	Inscription labels 12.5 mm x 27 mm for sticking onto label holder	White	А	3SB39 02-2AA	100	480 units
9 4 9	Inscription labels 27 mm x 27 mm for sticking onto label holder	White	А	3SB39 03-2AA	100	480 units
5 7 0	Inscription labels 17.5 mm x 28 mm for snapping onto label holder	White	Α	3SB39 05-2AA	100	720 units
2 2 2 3 4 6 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7	Inscription labels 22 mm x 22 mm for sticking onto enclosure	White	А	3SB39 06-2AA	100	700 units

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3SB3, Inscriptions, 22 mm

Insert labels

Overview

Push buttons (clear) and illuminated push buttons with a flat button can be fitted with insert labels for identification purposes, but indicator lights cannot.

These insert labels are made of clear, transparent plastic with black inscription; they can be fitted in any 90° angle.

Inscriptions

The inscriptions have upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417 (see page 10/72).

The insert labels without inscription are suitable for user marking with permanent pen.

Selection and ordering data

	Inscription/Symbol		Symbol No.	DT	Round range	D	Square range	
	пъсприоп/зупрог		Symbol No.	וט	_	ce		Price
					per			r PU
Insert label	s							
	For self-inscription							
	Blank			В	3SB19 01-4AS	В	3SB39 40-4AA	
	With inscription							
400	On Off			B B	3SB19 01-4EB 3SB19 01-4EC	B B	3SB39 40-4EB 3SB39 40-4EC	
	Up			В	3SB19 01-4ED	В	3SB39 40-4ED	
	Down			В	3SB19 01-4EE	В	3SB39 40-4EE	
	Forward			В	3SB19 01-4EF	В	3SB39 40-4EF	
	Reverse Right			B C	3SB19 01-4EG 3SB19 01-4EH	В	3SB39 40-4EG	
	Left			Č	3SB19 01-4EJ		-	
	Open			В	3SB19 01-4EP	В	_	
	Close Fast			B B	3SB19 01-4EQ 3SB19 01-4ER		_	
	Slow			В	3SB19 01-4ES		_	
	Running			В	3SB19 01-4EV		3SB39 40-4EV	
	Fault Reset			B B	3SB19 01-4EW 3SB19 01-4EM	В	3SB39 40-4EW 3SB39 40-4EM	
	Test			В	3SB19 01-4EN	Ь	-	
	Start			В	3SB19 01-4EK	В	3SB39 40-4EK	
	Stop			В	3SB19 01-4EL	В	3SB39 40-4EL	
TI.	With graphic symbol		5000 150	-	0004004.4140		20002 42 4440	
	O (Off)	\circ	5008 IEC	В	3SB19 01-4MB	В	3SB39 40-4MB	
	I (On)	1	5007 IEC	В	3SB19 01-4MC	В	3SB39 40-4MC	
	II (On)	П	_	В	3SB19 01-4MD	В	3SB39 40-4MD	
	Electric motor		0011 ISO	В	3SB19 01-4PA		3SB39 40-4PA	
	Motion in direction of arrow	\rightarrow	5022 IEC	В	3SB19 01-4NA	В	3SB39 40-4NA	
	Increase, plus	+	5005 IEC	В	3SB19 01-4NG	В	3SB39 40-4NG	
	Decrease, minus	<u> </u>	5006 IEC	В	3SB19 01-4MC	В	3SB39 40-4MC	
	With customized inscription							
	For inscriptions or symbols see "Options"				3SB19 01-4AZ		3SB39 40-4AZ	
	 Text line(s) or symbol with No. 			В	K0Y, K1Y, K2Y, K3Y or K5Y	В	K0Y. K1Y. K2Y. K3Y or K5Y	
	 Any inscription or symbol 			В	К9Ү	В	K9Y	

For customized inscriptions see page 10/72.

3SB3, Inscriptions, 22 mm

Name plates

Overview

The name plates consist of a black plastic label holder and an inscription label (black with white print or silver-colored with black print) for sticking or snapping in place. They are not suitable for EMERGENCY-STOP push buttons.

Note mounting dimensions!

Inscriptions

The inscriptions have upper case initial letters. The typeface is Arial. Graphic symbols, including those not listed in the tables, are according to ISO 7000 or IEC 60417 (see page 10/72).

Self-adhesive labels

There are 2 sizes available for the round and square ranges:

- Label holders 30 mm x 45 mm x 7 mm with inscription label 12.5 mm x 27 mm.
- Label holders 30 mm × 60 mm × 7 mm with inscription label 27 mm × 27 mm.

Snap-on labels

The following version is available for the round range:

 Label holders 29.8 mm x 51 mm x 3 mm with inscription label 17.5 mm x 28 mm (inscription area: 17.5 mm x 27 mm)

Selection and ordering data

	Inscriptions	DT	Black	DT	Silver-colored
			Order No.		Order No.
			Cradi No.		0.00.110.
Inscription labels	. self-adhesive.				
12.5 mm × 27 mm					
	For self-inscription				
	Blank		3SB39 02-1AA	В	3SB19 01-2AA
	Dialik		33B39 02-1AA	Ь	33B19 01-2AA
Forward	With inscription				
Torward	On	В	3SB39 02-1EB	В	3SB19 01-2EB
Cabaall	Off	В	3SB39 02-1EC	В	3SB19 01-2EC
Schnell	Up Down	B B	3SB39 02-1ED 3SB39 02-1EE	B B	3SB19 01-2ED 3SB19 01-2EE
	Emerg. Stop	D	3SB39 02-1EE 3SB39 02-1AU	Ь	35B19 01-2EE
	Hand O Auto		3SB39 02-1BE		
	Jog		3SB39 02-1BG		
	Man O Auto		3SB39 02-1ET		
	Power Off		3SB39 02-1BH		
	Power On Reset		3SB39 02-1BJ 3SB39 02-1EM		
	Run		3SB39 02-1EM 3SB39 02-1EX		
	Forward	В	3SB39 02-1EF	_	
	Reverse	В	3SB39 02-1EG		
	Right	В	3SB39 02-1EH	В	3SB19 01-2EH
	Left	В	3SB39 02-1EJ	В	3SB19 01-2EJ
	Open	В	3SB39 02-1EP	В	3SB19 01-2EP
	Close	В	3SB39 02-1EQ	В	3SB19 01-2EQ
	Fast		_	В	3SB19 01-2ER
	Slow		_	В	3SB19 01-2ES
	Stop	В	3SB39 02-1EK	В	3SB19 01-2EK
	Start Test	B B	3SB39 02-1EL 3SB39 02-1EN	ВВ	3SB19 01-2EL 3SB19 01-2EN
	Running	D	- UZ-1EIN	В	3SB19 01-2EN 3SB19 01-2EV
	Fault	В	3SB39 02-1EW	В	3SB19 01-2EW
	Reset		_	В	3SB19 01-2EM
	Stop Start	В	3SB39 02-1BC	В	3SB19 01-2BC
	Hand Auto	В	3SB39 02-1BA	В	3SB19 01-2BA
	Man Auto	В	3SB39 02-1EU	В	3SB19 01-2EU
	Hand O Auto		_	В	3SB19 01-2BE
	Man O Auto Off On		- 3SB39 02-1EA	В	3SB19 01-2ET
	Oll Oll		33D39 UZ-1EA		

For label holders see page 10/78.

For customized inscriptions see page 10/72..

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Push Button Units and Indicator Lights 3SB3, Inscriptions, 22 mm

Name plates

	Inscriptions	DT	Black	DT	Silver-colored
			Order No.		Order No.
12.5 mm × 27 m	els, self-adhesive,				
12.5 IIIII × 27 II	With graphic symbol				
\circ \circ	O Symbol	В	3SB39 02-1MB	В	3SB19 01-2MB
	1	B	3SB39 02-1MC	В	3SB19 01-2MC
1011	II III		_	C B	3SB19 01-2MD 3SB19 01-2ME
	01	В	3SB39 02-1MF	В	3SB19 01-2ME
	101	В	3SB39 02-1MG	В	3SB19 01-2MG
	1 0 2	Б	-	В	3SB19 01-2MK
	1 2	B B	3SB39 02-1ML 3SB39 02-1NJ	В	- 3SB19 01-2NA
		В	3SB39 02-1NA	В	3SB19 01-2NJ
	With customized inscription				
LIFT	For inscriptions or symbols see "Options"		3SB39 02-1XZ		3SB19 01-2XZ
	Text line(s)	В	KOY	В	KOY
	 Text line(s) or symbol with No. 	В	K1Y, K2Y, K3Y or	В	K1Y. K2Y. K3Y or
			K5Y		K5Y
	Any inscription or symbol	В	К9Ү	В	K9Y
	Inscriptions	DT	Black	DT	Silver-colored
			Order No.		Order No.
Incorintian labor	els, self-adhesive,				
27 mm × 27 mn					
	For self-inscription				
	Blank	В	3SB39 03-1AA	В	3SB19 06-2AA
	With inscription				
	On	В	3SB39 03-1EB		_
	Off Start	B B	3SB39 03-1EC 3SB39 03-1EL		- - -
	Emerg. Stop	В	3SB39 03-1AU		_
	Hand O Auto	B B	3SB39 03-1BE		_ _
	Jog Man O Auto	В	3SB39 03-1BG 3SB39 03-1ET		_
	Power Off	В	3SB39 03-1BH		-
	Power On Reset	B B	3SB39 03-1BJ 3SB39 03-1EM		_
	Run	В	3SB39 03-1EX		-
Off	Forward Reverse	B B	3SB39 03-1EF 3SB39 03-1EG		_
	Right	В	3SB39 03-1EH		_
	Left	B B	3SB39 03-1EJ		_ _ _
	Up Down	В	3SB39 03-1ED 3SB39 03-1EE		_
	Open	В	3SB39 03-1EP		-
	Close Test	B B	3SB39 03-1EQ 3SB39 03-1EN		_
	Stop	В	3SB39 03-1EK		-
	Man Auto Off On	B B	3SB39 03-1EU 3SB39 03-1EA		-
	Stop Start	В	3SB39 03-1BC		_
	Hand Auto	В	3SB39 03-1BA		-
	With graphic symbol	_			
	0	В	3SB39 03-1MB		_
	01	В	3SB39 03-1MF		_
	With outtomized incovintion	В	3SB39 03-1NA		-
	With customized inscription For inscriptions or symbols see "Options"		3SB39 03-1XZ		3SB19 06-2XZ
Ein	Text line(s)	В	K0Y	В	K0Y
	Text line(s) Text line(s) or symbol with No.		K1Y, K2Y, K3Y or	В	K1Y. K2Y. K3Y or
	Toke into(s) or symbol with two.	U	K5Y	D	K5Y
	 Any inscription or symbol 	В	К9Ү	В	K9Y

For label holders see page 10/78.

For customized inscriptions see page 10/72.

Push Button Units and Indicator Lights 3SB3, Inscriptions, 22 mm

Name pla	

Inscription labels, for snapping on,	B39 05-1AA B B39 05-1EB B B39 05-1EC B39 05-1ED B	Silver-colored Order No. 3SB19 04-2AA
Inscription labels, for snapping on, 17.5 mm × 28 mm	B39 05-1AA B B39 05-1EB B B39 05-1EC B	
For self-inscription	B39 05-1EB B B39 05-1EC B	3SB19 04-2AA
Blank B 3SB	B39 05-1EB B B39 05-1EC B	3SB19 04-2AA
With inscription On B 3SB Off B 3SB Up B 3SB Down B 3SB Forward B 3SB Reverse B 3SB Right B 3SB Left B 3SB Open B 3SB Stop B 3SB Start B 3SB Start B 3SB Fault B 3SB Reset — — Stop Start B 3SB Man Auto B 3SB Man O Auto — — With graphic symbol — — O I B 3SB I O II B 3SB	B39 05-1EB B B39 05-1EC B	3SB19 04-2AA
Off B 3SE Off B 3SE Up B 3SE Down B 3SE Forward B 3SE Reverse B 3SE Right B 3SE Left B 3SE Open B 3SE Close B 3SE Stop B 3SE Test — — Running B 3SE Fault B 3SE Reset — — Stop Start B 3SE Man Auto B 3SE Man O Auto — — With graphic symbol — — O I B 3SE	B39 05-1EC B	
### Description of the content of t	B39 05-1EC B	
Down		3SB19 04-2EB
Down B 3SE		3SB19 04-2EC
Reverse B 3SE	B39 05-1EE	_
Right B 3SE	B39 05-1EF B	_
Left B 3SE Open B 3SE Close B 3SE Stop B 3SE Start B 3SE Running B 3SE Fault B 3SE Reset — Stop Start B 3SE Hand Auto B 3SE Man O Auto — With graphic symbol O B 3SE O I	B39 05-1EG B	3SB19 04-2EG
Open Close B 3SE Stop Start B 3SE Start B 3SE Test — — Running B 3SE Fault B 3SE Reset — — Stop Start Hand Auto B 3SE Man Auto B 3SE Man O Auto — — With graphic symbol — B 3SE O I B 3SE O I <t< td=""><td>B39 05-1EH B39 05-1EJ</td><td>_</td></t<>	B39 05-1EH B39 05-1EJ	_
Ciose B 3SE Stop B 3SE Start B 3SE Test — Running B 3SE Fault B 3SE Reset — — Stop Start B 3SE Hand Auto B 3SE Man Auto B 3SE Man O Auto — — With graphic symbol O B 3SE O I B 3SE	B39 05-1EP	_
Start B 3SE Test — Running B 3SE Fault B 3SE Reset — Stop Start B 3SE Hand Auto B 3SE Man Auto B 3SE Man O Auto — — With graphic symbol — B 3SE O I B 3SE I O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE O I B 3SE	B39 05-1EQ	-
Test Running Reset Reset Stop Start Hand Auto Man Auto Man O Auto	B39 05-1EK B	3SB19 04-2EK
Running	B39 05-1EL B	3SB19 04-2EL
Fault B 3SB Reset - Stop Start B 3SB Hand Auto B 3SB Man Auto B 3SB Man O Auto - With graphic symbol O B 3SB I B 3SB O I B 3SB I D I B 3SB	В	3SB19 04-2EN
Reset	B39 05-1EV	_
Stop Start Hand Auto B 3SB Man Auto Man O Auto	B39 05-1EW B	3SB19 04-2EW
Hand Auto Man Auto Man O Auto With graphic symbol O I I I I I I I I I I I I I I I I I I	В	3SB19 04-2EM
Man Auto Man O Auto With graphic symbol ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	B39 05-1BC B	3SB19 04-2BC
Man O Auto	B39 05-1BA B	3SB19 04-2BA
With graphic symbol ○	B39 05-1EU	3SB19 04-2EU
O B 3SB B 3SB B 3SB B 3SB B 3SB	В	3SB19 04-2ET
B 3SB B 3S		
OI B 3SB	B39 05-1MB	3SB19 04-2MB
0 1 1011	B39 05-1MC B	3SB19 04-2MC
	B39 05-1MF	3SB19 04-2MF
102	B B	3SB19 04-2MG 3SB19 04-2MK
В 358	B39 05-1NA B	3SB19 04-2MR 3SB19 04-2NA
	B39 05-1NJ B	3SB19 04-2NJ
With customized inscription		
	B39 05-1XZ	3SB19 04-2XZ
• Text line(s)		KOY
		K1Y. K2Y. K3Y or K5Y
Any inscription or symbol B K9Y	Y B Y, K2Y , K3Y or B	K9Y

For label holders see page 10/78.

For customized inscriptions see page 10/72.

Siemens Industry, Inc. Industrial Controls Catalog

Push Button Units and Indicator Lights 3SB3, Inscriptions, 22 mm

Name plates

	Version	DT	Black	PU (UNIT, SET, M)	PS
			Order No.		
Label holders for	inscription labels 12.5 mm × 27 mm				
	For round range, flat	В	3SB39 22-0AV	100	10 units
	For potentiometer drives 3SB10 00-7CH07 ¹⁾	В	3SB39 22-0AS	1	1 unit
3SB39 22-0AV	For square range, flat	В	3SB39 42-0AX	100	5 units
Label holders for	inscription labels 27 mm × 27 mm				
	For round range, flat	В	3SB39 23-0AV	100	10 units
	For round range, raised	С	3SB39 23-0AX	1	10 units
	For potentiometer drives, flat	В	3SB39 23-0AS	1	1 unit
3SB39 23-0AV	For square range, flat	В	3SB39 43-0AX	100	1 unit
Label holders for	inscription labels 17.5 mm × 28 mm				
3SB39 25-0AV	For round design	>	3SB39 25-0AV	100	10 units

¹⁾ This label holder can also be used for push buttons with dust covers if the front panel thickness of 3 mm is not exceeded.

Push Button Units and Indicator Lights 3SB3, Accessories and spare parts, 22 mm

Buttons and lenses

Selection and orderi	ng data					
	Version	Color	DT	Order No.	PU (UNIT, SET, M)	PS
Buttons and lenses f	or round version ¹⁾					
	Buttons, flat for round illuminated push buttons and illuminated switches, plastic version	Red Yellow Green Blue White Clear	B B B B	3SB39 30-0CA2 3SB39 30-0CA3 3SB39 30-0CA4 3SB39 30-0CA5 3SB39 30-0CA6 3SB39 30-0CA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-0CA6	Buttons, flat for round push buttons and switches, metal version	Black Red Yellow Green Blue White Clear	B B B B B	3SB39 30-0EA1 3SB39 30-0EA2 3SB39 30-0EA3 3SB39 30-0EA4 3SB39 30-0EA5 3SB39 30-0EA6 3SB39 30-0EA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-0EA3	Buttons, raised for round illuminated push buttons and illuminated switches, plastic version	Red Green Clear	B B B	3SB39 30-0DA2 3SB39 30-0DA4 3SB39 30-0DA7	1 1 1	10 units 10 units 10 units
3SB39 30-0DA4	Buttons, raised for round push buttons and switches, metal version	Black Red Yellow Green Blue White Clear	DCCCCC	3SB39 30-0FA1 3SB39 30-0FA2 3SB39 30-0FA3 3SB39 30-0FA4 3SB39 30-0FA5 3SB39 30-0FA6 3SB39 30-0FA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-0FA4	Buttons, flat for round illuminated push buttons and illuminated switches, metal version	Amber Red Yellow Green Blue White Clear	B B B B B	3SB39 30-0GA0 3SB39 30-0GA2 3SB39 30-0GA3 3SB39 30-0GA4 3SB39 30-0GA5 3SB39 30-0GA6 3SB39 30-0GA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-0GA3	Buttons, flat, solvent-resistant ²⁾ , for round illuminated push buttons and switches, metal version	Red Yellow Green Blue White Clear	B B B B B	3SB39 30-0GA20-0PA0 3SB39 30-0GA30-0PA0 3SB39 30-0GA40-0PA0 3SB39 30-0GA50-0PA0 3SB39 30-0GA60-0PA0 3SB39 30-0GA70-0PA0	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-0HA4	Buttons, raised for round illuminated push buttons and illuminated switches, metal version	Amber Red Yellow Green Blue White Clear	0000000	3SB39 30-0HA0 3SB39 30-0HA2 3SB39 30-0HA3 3SB39 30-0HA4 3SB39 30-0HA5 3SB39 30-0HA6 3SB39 30-0HA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-6BA3	Lenses, smooth For round indicator lights, plastic and metal version	Amber Red Yellow Green Blue White Clear	C B B B B	3SB39 30-6BA0 3SB39 30-6BA2 3SB39 30-6BA3 3SB39 30-6BA4 3SB39 30-6BA5 3SB39 30-6BA6 3SB39 30-6BA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units 10 units
3SB39 30-6CA3	Lenses with concentric rings For round indicator lights, plastic and metal version	Amber Red Yellow Green Blue White Clear	B B B B B	3SB39 30-6CA0 3SB39 30-6CA2 3SB39 30-6CA3 3SB39 30-6CA4 3SB39 30-6CA5 3SB39 30-6CA6 3SB39 30-6CA6	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units 10 units
Buttons and lenses f						
20020 50 2040	Buttons, flat For square illuminated push buttons and illuminated switches, plastic version	Red Yellow Green Blue White Clear	B B B B	3SB39 50-0CA2 3SB39 50-0CA3 3SB39 50-0CA4 3SB39 50-0CA5 3SB39 50-0CA6 3SB39 50-0CA7	1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units
3SB39 50-0CA6 3SB39 50-6AA2	Lenses, smooth For square indicator lights, plastic version	Red Yellow Green Blue White Clear	B B B B B	3SB39 50-6AA2 3SB39 50-6AA3 3SB39 50-6AA4 3SB39 50-6AA5 3SB39 50-6AA6 3SB39 50-6AA7	1 1 1 1 1 1	10 units 10 units 10 units 10 units 10 units 10 units

 $^{^{1)}\,}$ In scope of supply of push buttons or indicator lights.

²⁾ Not suitable for laser inscription.

3SB3, Accessories and spare parts, 22 mm

Lamps, acoustic signal transformers and keys

Selection and ordering data

Selection and ordering							
	Version	Rated voltage	Color	DT	Order No.	PU (UNIT, SET, M)	PS
		V					
Lamps, BA 9s bases ¹⁾							
	Incandescent lamps 1.2 W, length up to 28 mm, max. bulb diameter 10 mm	24 AC/DC	Clear	А	3SB19 02-0AY	1	10 units
3SB19 02-0AY	Incandescent lamps 2 W, length up to 28 mm, max. bulb diameter 10 mm	6 AC/DC 12 AC/DC 24 AC/DC 30 AC/DC 48 AC/DC 60 AC/DC	Clear	A A A B A	52AABN 52AACN 52AADN1 3SB19 02-2AF 3SB19 02-1AP 3SR94 24	1 1 1 1 1	1 units 1 units 1 units 10 units 10 units
	Incandescent lamps 2.6 W, length 28 mm, bulb diameter 10 mm	110 130 AC/DC ²⁾	Clear	>	3SX1 731	1	10 units
	Incandescent lamps 3 W, length 28 mm, bulb diameter 10 mm	120V #120 MB	Clear	•	52AAENC	1	1 units
	Multi-incandescent lamps 1.2 W, endurance 25 000 h, high resistance to vibration	24 AC/DC		В	3SB19 02-2BU	1	10 units
3SB39 01-1PA	LED lamps, super-bright Length up to 28 mm, max. bulb diameter 10 mm, max. operational current 15 mA	24 V AC/DC	Red Green Yellow White Blue	B A B	52AED2 52AED3 52AED4 52AEDB 52AEDB	1 1 1 1 1	1 units 1 units 1 units 1 units 1 units
33539 VI-IFA		48 AC/DC	Red Yellow Green Blue White	B B B B	3SB39 01-1CC 3SB39 01-1BC 3SB39 01-1DC 3SB39 01-1PC 3SB39 01-1QC	1 1 1 1 1	10 units 10 units 10 units 10 units 10 units
		120 AC/DC	Red Green Yellow White Blue	B B B B	52AEE2 52AEE3 52AEE4 52AEEB 52AEE5	1 1 1 1 1	1 units 1 units 1 units 1 units 1 units
		230 AC, 110 160 DC, if X1 at "+"	Red Yellow Green Blue White	B B B B	3SB39 01-1CF 3SB39 01-1BF 3SB39 01-1DF 3SB39 01-1PF 3SB39 01-1QF	1 1 1 1 1	10 units 10 units 10 units 10 units 10 units
		230 AC/DC	Red Yellow Green Blue White	B B B B	3SB39 01-1CG 3SB39 01-1BG 3SB39 01-1DG 3SB39 01-1PG 3SB39 01-1QG	1 1 1 1 1	10 units 10 units 10 units 10 units 10 units
	LED lamps Length up to 28 mm, max. bulb diameter 10 mm, max. operational current 15 mA	22 32 DC	Red Yellow Green	D D D	3SB19 02-4AJ 3SB19 02-4BJ 3SB19 02-4CJ	1 1 1	10 units 10 units 10 units
3SB19 02-4MC	LED lamps, flashing (1.4 Hz), length up to 28 mm, bulb diameter 10 mm, operational current 24 29 mA	24 DC	Red Yellow Green	B C C	3SB19 02-4LC 3SB19 02-4MC 3SB19 02-4NC	1 1 1	10 units 10 units 10 units
3SX1 703	Glow lamps ³⁾ length 28 mm, bulb diameter 10 mm, operational current approx. 1.8 mA	110 AC 220 AC 220 AC	Clear Clear Green	A A C	3SX1 703 3SX1 701 3SX1 702	1 1 1	10 units 10 units 10 units
3SB19 02-2AD	Lamp extractors For lamps with BA 9s base			•	3SB19 02-2AD	1	1 unit

¹⁾ Essential accessories when using lamp holders with BA 9s base and delivery without lamp.

 $^{^{\}rm 2)}$ Also for 230 V when used with a 3SB34 00-1C voltage reducer.

³⁾ Due to the inherent orange color of glow lamps and their lower luminance level compared to incandescent lamps, it is recommended that they should only be used with clear or red screw lenses and in areas where ambient light levels are not very high.

Lamps, acoustic signal transformers and keys

	Version	Rated voltage	Color	DT	Order No.	PU (UNIT, SET, M)	PS
		V					
Lamps, Wedge ba	ses ¹⁾						
3SB29 08-1AE	Incandescent lamps Wedge base W2 × 4.6 d, 1.0 W	6 AC/DC 12 AC/DC 24 AC/DC 30 AC/DC 48 AC/DC 60 AC/DC	Clear	C B A B	3SB29 08-1AA 3SB29 08-1AB 3SB29 08-1AC 3SB29 08-1AD 3SB29 08-1AE 3SB29 08-1AF	100 100 100 100 1 1	10 units 10 units 10 units 10 units 10 units 10 units
3SB39 01-1SB	LED lamps, super-bright Wedge base W2 × 4.6 d, operational current 10 mA	24 AC/DC	Red Yellow Green White Blue	B B B B	3SB39 01-1SB 3SB39 01-1RB 3SB39 01-1TB 3SB39 01-1UB 3SB29 08-1BD	1 1 1 1	10 units 10 units 10 units 10 units 10 units
3SB39 01-1VE		28 AC/DC	Red Yellow Green White Blue	B B B D	3SB39 01-1SE 3SB39 01-1RE 3SB39 01-1TE 3SB39 01-1UE 3SB39 01-1VE	1 1 1 1 1	10 units 10 units 10 units 10 units 10 units
3SB29 08-2AB	Lamp extractors for lamps with bases W2×4.6 d			•	3SB29 08-2AB	1	1 unit
33B29 00-ZAB	Lamp adapters For fitting a lamp with a wedge base socket into a BA 9s lamp holder			С	3SB19 02-1AU	1	1 unit
3SB19 02-1AU							
Acoustic signal tra	ansformers, BA 9s base						
3SB19 02-2BN	Acoustic signal transformers for acoustic signaling devices ²⁾ operational current 25 mA, 0.6 W, sound pressure 80 dB/10 cm	24 28 DC		В	3SB19 02-2BN	1	1 unit

 $^{^{\}rm 1)}$ Can be used with lamp adapters in lamp holders with BA 9s base.

²⁾ For increased protection, the IP65 acoustic signaling device (complete unit) can be used.

	Version Lock Manufacturer	Lock No.	Color	DT	Order No.	PU (UNIT, SET, M)	PS
Keys for actuators ¹⁾							
	RONIS	SB 30	_	В	3SB39 10-4A	1	1 unit
	BKS	S1	_	Α	3SY1 066	1	1 unit
3SY1 054	CES	LSG 1	_	В	3SB19 10-2F	1	1 unit
3311034		SSG 10 SSP 9	_	B A	3SY1 054 3SY1 052	1	1 unit 1 unit
	O.M.R.	73038	Light blue	С	3SB19 10-2L	1	1 unit
		73037	Red	В	3SB19 10-2M	1	1 unit
		73034	Black	В	3SB19 10-2N	1	1 unit
		73033	Yellow	D	3SB19 10-2P	1	1 unit

¹⁾ Included in scope of supply of the key-operated switches and the EMERGENCY-STOP mushroom push buttons with key-operated switch. Also available with special lock. Supplement Order No. with "-Z" and quote the required lock in plain text. Additional price on request. This does not include locks for VW and main and general locking systems.

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3SB3, Accessories and spare parts, 22 mm

Protective covers

Version	Use	Color	DT	Order No.	PU (UNIT, SET, M)	PS
ve caps ¹⁾ , degree of protec	ction IP67					
Material: elast	olan					
Protective caps For round version	Flat button (plastic)	Clear	В	3SB39 21-0AJ	1	1 un
Torround voroion	Flat button (metal), raised button (plastic)	Clear	В	3SB39 21-0AM	1	1 un
• PVC	Raised button (metal)	Clear	С	3SB19 02-2AN	1	1 un
Protective caps For square versio	Flat button (plastic) n	Clear	В	3SB39 41-0AJ	1	1 uni
Material: silico	one					
Protective caps For round version	Flat button (plastic)	Clear	В	3SB39 21-0AH	1	1 uni
	Flat button (metal),	Clear	В	3SB19 02-0AK	1	1 uni
	raised button (plastic)					
	Raised button (metal)	Clear	В	3SB19 02-0AN	1	1 uni
Protective caps	Selector switch (plastic and metal,	Clear	В	3SB39 21-0BA	1	1 uni
For round version	normal handle)	Clear	Б	33D39 21-UDA	<u>'</u>	i uiii
Protective come	Mushagan nuch null hutton	Class	В	3SB19 02-2BH	1	1 uni
Protective caps For round version	Mushroom push-pull button, Ø 40 mm (plastic and metal)	Clear	В	35619 02-266		i uni
Н	EMERGENCY-STOP mushroom	Clear	В	3SB39 21-0BU	1	1 uni
	pushbutton, Ø 40 mm (plastic and metal)					
Protective caps	Flat button (plastic)	Clear	В	3SB39 41-0AH	1	1 uni
For square versio	n	Olcai	Ь	33B39 41-0A11	'	i uiii

¹⁾ Protective caps are not suitable for use with 3SB38 plastic enclosures. With 3SB38 metal enclosures, protective caps can only be used with 3SB34 00 single-pole contact blocks for front plate mounting. Not to be used with label holder.

Push Button Units and Indicator Lights 3SB3, Accessories and spare parts, 22 mm

Protective covers

	Version	Use	Color	DT	Order No.	PU (UNIT, SET, M)	PS
Other protective c	aps ¹⁾						
3SB19 02-0AL	Sealable caps For round version	Flat button (plastic) Flat button (metal), raised button (plastic)	Black Clear	B B	3SB19 02-0AL 3SB19 02-2AR	1	1 unit 1 unit
3SB19 02-2AR							
3SB39 21-0BT	Dust covers For use in dusty environments	BKS, CES, O.M.R. key-operated switch	Clear	В	3SB39 21-0BT	1	1 unit
Protective collars							
	Protective collars for EMERGENCY-STOP ²⁾ For round version	EMERGENCY-STOP mushroom push button	Yellow Gray	C	3SB39 21-0AK 3SB39 21-0AP	1	1 unit 1 unit
3SB39 21-0AX	For round version	without key-operated switch EMERGENCY-STOP mushroom pushbutton with key-operated switch	Yellow	В	3SB39 21-0AX	1	1 unit
10	Protective collars for EMERGENCY-STOP for 5 padlocks ²) For round version	3SB31AA20 EMERGENCY-STOP mushroom push button	Yellow	•	3SB39 21-0CG	1	1 unit
3SB39 21-0CG 3SB39 21-0AS	Sun collars For round version	Illuminated push buttons	Black	В	3SB39 21-0AS	1	1 unit
	r spare command poin	ts for front plates					
	Blanking plugs For round version	Plastic version	Black	•	3SB39 21-0AA	1	10 units
3SB39 21-0AA 3SB39 41-0AA	Blanking plugs For square version	Plastic version	Black	В	3SB39 41-0AA	1	1 unit
3SB19 02-0AQ	Blanking plugs (plastic) for round version	Metal version	Alumi- nized	В	3SB19 02-0AQ	1	10 units
1) Not quitable for mou	nting in 20020 analoguras						

Not suitable for mounting in 3SB38 enclosures. Not to be used with label holder.

²⁾ The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded actuation of the EMERGENCY-STOP mushroom pushbutton.

3SB3, Accessories and spare parts, 22 mm

Miscellaneous accessories

Selection and o	rdering data						
	Version	Use	Inscriptions	DT	Order No.	PU (UNIT, SET, M)	PS
ellow name pla	tes for EMERGENCY-ST	ОР					
	For use on front plan	tes					
HOT-HALA	Name plates, round Self-adhesive, external diameter 60 mm, internal diameter 23 mm	EMERGENCY-STOP mushroom push button (round version)	Blank	В	3SB39 21-0DY	1	1 unit
339 21-0AC	Name plates, round Self-adhesive, external diameter	EMERGENCY-STOP mushroom push button (round version)	Blank	В	3SB39 21-0AB	1	1 unit
NOT - HALT EMERGENZA	80 mm, internal diameter 23 mm		EMERGENCY STOP	В	3SB39 21-0AD	1	1 unit
124072M2	Name plates, round Self-adhesive, external diameter	EMERGENCY-STOP mushroom push buttons (square version)	Blank	В	3SB39 41-0AB	1	1 unit
39 21-0BW	80 mm, cutout 26 mm \times 26 mm		EMERGENCY STOP	В	3SB39 41-0AD	1	1 unit
	Name plates, round 1 mm thick, external diameter 75 mm, internal diameter 22.5 mm	EMERGENCY-STOP mushroom push button (round version)	Blank	В	3SB19 02-2BA	1	1 unit
	Name plates, round Self-adhesive, external diameter 60 mm, internal diameter 23 mm ¹⁾	EMERGENCY-STOP mushroom push button (round version)	Blank	В	3SB39 21-0DA	1	1 unit
339 21-0DA	Illuminated, suitable as signaling device for EMERGENCY-STOP, with plug-in connection for 24 V AC/DC ²⁾		EMERGENCY STOP	В	3SB39 21-0DD	1	1 unit
scription label		O and a stable also			00000 04 0011	100	40
339 01-0CH	Inscription labels For supporting dust resistance	Contact blocks		В	3SB39 01-0CH	100	10 units
4 210-0H	Unit labeling plates	Contact blocks		В	3TX4 210-0H	100	100 units
ckouts	Looking cover	Drayanta aggesta nyabb	uttono		3SB39 21-0BS	1	4 . umit
6B3921-0BS	Locking cover	Prevents access to pushbuttons, knob type selector switches and will work with both metal and plastic devices			33533 21-053		1 unit
B3921-0BG	Lockout	for metal flush pushbutton for metal extended pushbutton for metal mushroom cap (40 mm) pushbutton			3SB39 21-0BG 3SB39 21-0BH 3SB39 21-0BJ	1 1 1	1 unit 1 unit 1 unit
	2 Position Selector Switch Lockouts ³⁾	Lock in left postion Lock in right postion			3SB39 21-0BK 3SB39 21-0BL	1	1 unit 1 unit
B3921-0BK							

3 Position Selector

Switch Lockouts 3)

3SB39 21-0BM 3SB39 21-0BN 3SB39 21-0BP 3SB39 21-0BQ 3SB39 21-0BR

Lock in reit postion
Lock in center postion
Lock in right postion
Lock out -left postion only
Lock out -right postion only

Lock in left postion

1 unit 1 unit 1 unit 1 unit 1 unit

¹⁾ For front panel thickness of max. 4 mm.

²⁾ The illuminated label can also be operated through the AS-Interface F adapter (see page 10/97).

³⁾ For metal devices only.

3SB3, Accessories and spare parts, 22 mm

Miscellaneous accessories

	Version	Use	DT	Order No.	PU (UNIT, SET, M)	PS
Holders and pressure	e plates					
	Holders For snapping on 3 blocks ¹⁾	Push buttons, push-pull buttons, mushroom push buttons with front plate mounting	>	3SB39 01-0AB	100	20 units
3SB39 01-0AB	Haldava with preserve plate	Calantar avritahan Ivay anar		20020 04 040	100	10
3SB39 01-0AC	Holders with pressure plate For actuating the central contact block of 3 contact blocks ²)	Selector switches, key-oper- ated switches and twin push buttons with front plate mounting		3SB39 01-0AC	100	10 units
35B39 01-0AC	Pressure plates	Selector switches and key-oper-	B	3SB39 01-0AW	100	10 units
3SB39 01-0AW	For actuating the central contact block of 3 contact blocks ²⁾	ated switches for use on PCBs or with base mounting	В	33533 01-0AW	100	TO UTILIS
	ding and signaling elements ³⁾					
	Holders For plastic version, round	As-supplied state for front panel thickness 1 4 mm	>	3SB39 31-0AA	1	10 units
3SB39 31-0AA						
3SB39 51-0AA	Holders For plastic version, square		В	3SB39 51-0AA	1	1 unit
3SB39 31-0AC	Holders For metal version, round		•	3SB39 31-0AC	1	10 units
3SB39 21-0BD	Grounding screws For grounding metal actuators for fitting in front plates made of non-conducting materials		В	3SB39 21-0BD	100	50 units
	Bolt for enclosure			3SB39 31-0AB		
	Ring nut wretch					
Guards						
SOURCE OF SOURCE	Pushbutton Guard	For standard pushbuttons, flush and extended. Also fits 30mm mushroom head devices		3SB39 21-0BE	1	1 unit
3SB3921-0BE	Guard	For 40mm muchroom bood		3SB39 21-0BF	1	1 unit
	dualu	For 40mm mushroom head devices standard momentary or 2 position push-pull		33333 ZI-UDF	ı	i uriit
3SB3921-0BF						

¹⁾ The holder for illuminated commanding devices is included in the scope of supply.

²⁾ The pressure plates can be removed one by one to meet individual requirements.

³⁾ The matching holder for actuators and indicators is included in the scope of supply (exception: Order with order code "B01").

Push Button Units and Indicator Lights 3SB3, Accessories and spare parts, 22 mm

Miscellaneous accessories

	Version	Use	Color	DT	Order No.	PU (UNIT, SET, M)	PS
Tools 3SB39 41-0AF	Blanking tools 26 mm × 26 mm, for square version			В	3SB39 41-0AF	1	1 unit
	Hole drilling templates for 30 mm × 30 mm grid, horizontal, for round and square versions			С	3SB19 02-2BG	1	1 unit
3SB19 02-2BG 3SB39 21-0BC	Mounting tools For buttons and lenses, metal version			В	3SB39 21-0BC	1	1 unit
3SX1707	Mounting tools For potentiometer drives and for push buttons with extended stroke			С	3SX1 707	1	1 unit
	Dismantling tools For contact blocks and lamp holders	Blocks with screw terminals		В	3SB39 01-0CB	1	1 unit
3SB39 01-0CB Various accessories	Dismantling tools For contact blocks and lamp holders	With spring-type terminals		С	3SB39 01-0CG	1	1 unit
3SB39 21-0AU	Single frames For square design of the round version		Black	С	3SB39 21-0AU	1	1 unit
3SB39 21-0AE	Adapter parts Adapters for 30.5 mm mounting hole, comprising a metal disk with an adhesive layer on one side, degree of protection IP65	As thrust ring for a thin molded- plastic front plate		В	3SB39 21-0AE	1	1 unit
3SB39 01-0AA	Printed circuit board holders For mounting the command devices on the printed circuit board (screw is included in the scope of supply)	Contact blocks and lamp hold- ers for solder connection		В	3SB39 01-0AA	100	10 units
3SX1 335	Extension plungers For compensation of the distance between a push button and the unlatching button of an overload relay	Push buttons with extended - stroke		А	3SX1 335	1	1 unit

General data

Overview



Enclosures with standard and customized equipment

Enclosed push buttons and indicator lights are used as hand operated control devices for separately allocated control units and cabinets

Enclosures with handle are available for suspension (e.g. for crane control units).

The enclosed push buttons and indicator lights are available with conventional controls as well as for connection to the AS-Interface bus system.

The following versions are available:

- Enclosures with standard fittings with 1 to 3 command points
- Enclosures with customized equipment with 1 to 6 command points
- Empty enclosures (individual parts must be ordered separately)

Customer-specific enclosures

On request enclosures with more than 6 command points can also be supplied with AS-Interface connection.

Use the configurator for selection.

For AS-Interface enclosures see page 10/96).

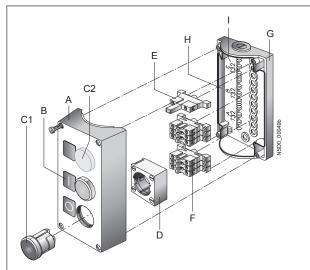
Application

The devices are climate-proof (KTW 24) according to EN ISO 6270-2 and suitable for stationary use (weather-protected) and for use in marine applications.

Technical specifications

Туре	3SB38 00, 3SB38 01	3SB38 02, 3SB38 03
Enclosures		
Enclosure material	Plastic	Metal
Actuators and indicators	Plastic, round	Metal, round
Degree of protection acc. to IEC 60529	IP65	IP67 and NEMA Type 4
Climatic withstand capability according to EN ISO 6270-2	KTW 24	
Shock resistance according to IEC 60068-2-27 for half-sine shock type, 11 ms shock duration		
Devices without incandescent lamp	≤50 g	
Devices with incandescent lamp	≤30 g	
Vibration resistance acc. to IEC 60068-2-6		
Acceleration at frequency 20 200 Hz	5 <i>g</i>	

Enclosures with standard fittings



- A Top part of enclosure
- B Inscription labels
- C1 Pushbutton
- C2 Indicator light
- D Holder
- E Contact designations
- F Contact blocks, lampholders for floor mounting
- Bottom part of enclosure
- H Identification letters for the command points
- Identification number

Standards

IEC 60947-5-1, EN 60947-5-1

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3SB3, Enclosures, 22 mm

Enclosures with standard fittings

Overview

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage up to 400 V
- · Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators
- Contact blocks and lamp holders for base mounting (are snapped into the enclosure base); screw terminals (box terminals) as standard; some versions also with spring-type terminals (Order No. ends with -OCCO)

Color of enclosure cover:

- Gray, RAL 7035
- Yellow, RAL 1004

Color of enclosure base:

• Black, RAL 9005

Selection and ordering data

Equipment	function comman	command		Screw terminals	(1)	PU (UNIT,	PS
		points		Configurator	£53	SET, M)	
				Order No.			

Plastic enclosures with standard fittings

3SB38 01-0DA3



3SB38 01-0.F3



3SB38 02-0DA3



3SB38 03-0DA3

Cable entry top and bottom each 1 x M20

A = Pushbutton green, label "I"	1 NO	1	В	3SB38 01-0DA3	1	1 unit
A = Pushbutton red, label "O"	1 NC	1	В	3SB38 01-0DB3	1	1 unit
A = Pushbutton white, label "I"	1 NO	1	В	3SB38 01-0DD3	1	1 unit
A = Pushbutton black, label "O"	1 NC	1	В	3SB38 01-0DE3	1	1 unit

A = EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism

nism						
 With yellow top part, 	1 NC 👄	1	В	3SB38 01-0DG3	1	1 unit
without protective collar	2 NC 👄	1	В	3SB38 01-0EG3	1	1 unit
 With yellow top part, with protective collar¹⁾ 	1 NC 👄	1	В	3SB38 01-0DF3	1	1 unit
	2 NC →	1	В	3SB38 01-0EF3	1	1 unit
B = Pushbutton green, label "I" A = Pushbutton red, label "O"	1 NO, 1 NC	2	В	3SB38 02-0DA3	1	1 unit
B = Pushbutton white, label "l" A = Pushbutton black, label "O"	1 NO, 1 NC	2	В	3SB38 02-0DB3	1	1 unit

C = Indicator light clear, label without inscription,	BA 9s ²⁾ ,	3	В	3SB38 03-0DA3	1	1 unit
B = Pushbutton green, label "I", A = Pushbutton red, label "O"	1 NO, 1 NC					
C = Pushbutton black, label "II" B = Pushbutton black, label "I", A = Pushbutton red, label "O"	1 NO, 1 NO, 1 NC	3	С	3SB38 03-0DB3	1	1 unit
C = Indicator light clear, label without inscription,	BA 9s ²⁾ ,	3	С	3SB38 03-0DC3	1	1 unit
B = Pushbutton white, label "I", A = Pushbutton black label "O"	1 NO, 1 NC					

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators.

igoplus Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

²⁾ Only lamp holder; order lamp separately.

Enclosures with standard fittings

Equipment	Contact block function	Number of command points	Screw terminals Spring-type terminals ³⁾ Configurator	⊕ 8H \$	PU (UNIT, SET, M)	PS
			Order No.			

Metal enclosures with standard fittings



3SB38 01-2DB3



3SB38 01-2.F3



3SB38 01-2EB30-0CC0



3SB38 02-2DA3



3SB38 03-2DA3



3SB38 03-2DB3

- $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .
- → Positive opening according to IEC 60947-5-1, Appendix K.
- 1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.
- 2) **-0CC0**: Contact blocks with spring-type terminals.
- 3) Only lamp holder; order lamp separately.

				Order No.		
standard fittings						
Cable entry top and bottom ea	ch 1 x M20					
A = Pushbutton green, label "I"	1 NO	1	В	3SB38 01-2DA3	1	1 unit
A = Pushbutton red, label "O"	1 NC	1	В	3SB38 01-2DB3	1	1 unit
A = Pushbutton white, label "I"	1 NO	1	В	3SB38 01-2DD3	1	1 unit
A = Pushbutton black, label "O"	1 NC	1	В	3SB38 01-2DE3	1	1 unit
A = EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, with positive latching according to ISC 13850 and rotate-to-unlatch mecha- nism)					
With yellow top part,	1 NC →	1	В	3SB38 01-2DG3	1	1 unit
without protective collar	2 NC 🏵	1	В	3SB38 01-2EG3	1	1 unit
- With M12 socket	2 NC → 2)	1	С	3SB38 01-2EG10-0CC0	1	1 unit
With yellow top part,	1 NC 👄	1	В	3SB38 01-2DF3	1	1 unit
with protective collar ¹⁾	2 NC →	1	В	3SB38 01-2EF3	1	1 unit
pushbutton, Ø 60 mm, with positive latching according to ISC 13850 and rotate-to-unlatch mecha- nism • With yellow top part, with protective collar for 5 padlocks	2 NC ⊕ 2 NC ⊕ ²⁾	1	В В	3SB38 01-2EA30 3SB38 01-2EA30-0CC0	1 1	1 unit 1 unit
A = mushroom pushbutton, Ø 60 mm, black, with positive latching and rotate-to- unlatch mechanism						
 With gray top part, with protective collar for 5 padlocks 	2 NC ²⁾	1	В	3SB38 01-2EB30-0CC0	1	1 unit
B = Pushbutton green, label "I" A = Pushbutton red, label "O"	1 NO, 1 NC	2	В	3SB38 02-2DA3	1	1 unit
B = Pushbutton white, label "I" A = Pushbutton black, label "O"	1 NO, 1 NC	2	В	3SB38 02-2DB3	1	1 unit
C = Indicator light clear, label without inscription, B = Pushbutton green, label "I", A = Pushbutton red, label "O"	BA 9s ³⁾ , 1 NO, 1 NC	3	В	3SB38 03-2DA3	1	1 unit
C = Pushbutton black, label "II" B = Pushbutton black, label "I", A = Pushbutton red, label "O"	1 NO, 1 NO, 1 NC	3	В	3SB38 03-2DB3	1	1 unit
C = Indicator light clear, label without inscription, B = Pushbutton white, label "I", A = Pushbutton black, label "O"	BA 9s ³⁾ , 1 NO, 1 NC	3	В	3SB38 03-2DC3	1	1 unit

3SB3, Enclosures, 22 mm

Empty enclosures

	Version	Number of	DT	Configurator ,	PU	PS
	veraion	command points		Configuration	(UNIT, SET, M)	10
				Order No.		
pty enclosures	, plastic					
e	Cable entry top and bottom each 1 x M20 for 1 to 3 command points, each 1 x M25 for 4 and 6 command points					
	For contact blocks, lamp holders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switch- ing state is maintained upon opening), with gray top part	1 2 3 4 6	B B B B	3SB38 01-0AA3 3SB38 02-0AA3 3SB38 03-0AA3 3SB38 04-0AA3 3SB38 06-0AA3	1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit
B38 02-0AA3	E EMEDOENOVOTOD (
•	For EMERGENCY-STOP, for contact blocks, lamp holders and accessories with snap-on base mounting, also sin- gle-pole front plate blocks can be used (switching state is maintained upon opening)					
	 With yellow top part, without protective collar 	1	В	3SB38 01-0AB3	1	1 unit
SB38 01-0AB3	With yellow top part, with protective collar ¹⁾	1	В	3SB38 01-0AD3	1	1 unit
mpty enclosures						
	Cable entry top and bottom					
•	each 1 x M20 for 1 to 3 command points, each 1 x M25 for 4 and 6 command points					
	For contact blocks, lamp holders and accessories with	1	В	3SB38 01-2AA3	1	1 unit
	snap-on base mounting, also single-pole front plate blocks can be used (switch-	2	B B	3SB38 02-2AA3 3SB38 03-2AA3	1 1	1 unit 1 unit
	ing state is maintained upon opening), with gray top part	4 6	B B	3SB38 04-2AA3 3SB38 06-2AA3	1	1 unit 1 unit
	mangay top part	O		SOBOO OF EARO		T GITTE
B38 04-2AA3	For EMERGENCY-STOP, for contact blocks, lamp holders					
G	and accessories with snap-on base mounting, also sin- gle-pole front plate blocks can be used (switching state is maintained upon opening)					
District of the last of the la	With yellow top part, without protective collar	1	В	3SB38 01-2AB3	1	1 unit
B38 01-2AB3	With yellow top part,	1	В	3SB38 01-2AD3	1	1 unit
6 6	with protective collar ¹)					
SB38 01-2AD3						
1000 U I-ZAD3	With gray top part,	1	В	3SB38 01-2AE3	1	1 unit
	with protective collar With yellow top part.	1	В	3SB38 01-2EC3	1	1 unit
	with yellow top part, with protective collar for 3 padlocks, for mushroom Ø 40 mm, can be locked (BKS, CES, O.M.R.)	1	ט	03530 01-2E03	ı	i uilit
6 6						

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators.

3SB38 01-2EC3

¹⁾ The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

3SB3, Enclosures, 22 mm

Customized enclosures

Overview

Customized enclosures are available with:

- 1 to 6 command points
- Operational voltage up to 400 V

One command point comprises:

- 1 actuator or indicator
- Up to 3 contact blocks or up to 2 contact blocks + 1 lamp holder
- 1 inscription label

For plastic enclosures the command points are equipped as standard with plastic actuators and indicators, for metal enclosures they are equipped with metal actuators and indicators.

For cable entry in each case, a hole is provided at the top and bottom:

- For M20 for 1 to 3 command points
- For M25 for 4 and 6 command points

Ordering notes (selection by configurator)

To order customized enclosures with the 3SB3 control devices (except suspended push buttons), use the 3SB3/3SF5 configurator to select the blocks for equipping. An electronic order form will be generated for the additional options. The configurator is available in the electronic catalog CA 01 on DVD or in the online catalog (Mall) on the Internet:

www.siemens.com/industrymall

Supplement the Order No. with the order code **"K0Y"** (as already listed in the selection table).

The list price of the complete enclosure is generated in the configurator for the customized equipment.

Please send the resulting electronic order form along with your order by e-mail to our Competence Center at

sirius-attach.aud@siemens.com

If you are unable to access either catalog, please contact our Technical Assistance.

Selection and ordering data

	Version	Number of command points	DT	Configurator	PU (UNIT, SET, M)	PS
				Order No.		
Plastic enclosures						
	With contact blocks and lamp holders for base mounting With single-pole contact blocks and lamp holders for front plate mounting	1 2 3 4 6 1 2	СССВВССС	3SB38 01-0AZK0Y 3SB38 02-0AZK0Y 3SB38 03-0AZK0Y 3SB38 04-0AZK0Y 3SB38 04-0AZK0Y 3SB38 01-1AZK0Y 3SB38 02-1AZK0Y 3SB38 03-1AZK0Y	1 1 1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit
3SB38 03AZ Metal enclosures		4 6	B B	3SB38 04-1AZK0Y 3SB38 06-1AZK0Y	1	1 unit 1 unit
	With contact blocks and lamp holders for base mounting	1 2 3 4 6	00000	3SB38 01-2AZK0Y 3SB38 02-2AZK0Y 3SB38 03-2AZK0Y 3SB38 04-2AZK0Y 3SB38 06-2AZK0Y	1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit
3SB38 03AZ	With single-pole contact blocks and lamp holders for front plate mounting	1 2 3 4 6	CCCCC	3SB38 01-3AZK0Y 3SB38 02-3AZK0Y 3SB38 03-3AZK0Y 3SB38 04-3AZK0Y 3SB38 06-3AZK0Y	1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit

For online configurator see www.siemens.com/sirius/configurators.

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3SB3, Enclosures, 22 mm

Contact blocks and lamp holders

Selection and ordering data

For self-equipping of the enclosures

ontact blocks for the second s	or base mounting Contact blocks with one conta 1 NO 1 NO with gold-plated contacts 1 NC 1 NC with gold-plated contacts BA 9s lamp holders	3 -	NSD0_00015 3-4	▶ B	3SB34 20-0B 3SB34 20-0BA	1	1 unit 1 unit
	Contact blocks with one contact 1 NO 1 NO with gold-plated contacts 1 NC 1 NC with gold-plated contacts →	3 -\ _4 1 	3-4 0 1 2 3 4 mm 2,3 NSD0_00017 1-2	В			
B34 20-0B	1 NO 1 NO with gold-plated contacts 1 NC 1 NC with gold-plated contacts →	3 -\ _4 1 	3-4 0 1 2 3 4 mm 2,3 NSD0_00017 1-2	В			
B34 20-0B	1 NO with gold-plated contacts 1 NC 1 NC with gold-plated contacts →	\ 4 -7	3-4 0 1 2 3 4 mm 2,3 NSD0_00017 1-2	В			
B34 20-0B	gold-plated contacts	<u>l.1</u> ⊢	NSD0_00017	>			
SB34 20-0B	gold-plated contacts	⊢ '	1-2		3SB34 20-0C	1	1 unit
	BA 9s lamp holders	1.4	0 1 2 3 4 mm———— 1,6	С	3SB34 20-0CA	1	1 unit
			,-				
	Without lamp	Acc. to lamp $ \underbrace{\frac{X1}{(L+)}}_{NSD0_00003} \underbrace{\frac{X2}{(L-)}}_{NSD0_00003} $		•	3SB34 20-1A	1	1 unit
B34 20-1A	With integrated voltage reducer and with 130 V lamp (3SX1 731) ¹⁾	230/240 V AC X1	Clear	В	3SB34 20-1C	1	1 unit
	Lamp holders with integrated	24 V AC/DC	Yellow	В	3SB34 20-1PA	1	1 unit
9	LED	X1	Red Green	>	3SB34 20-1PB 3SB34 20-1PC	1 1	1 unit 1 unit
		X2 NSD0_01292b	Blue White	В	3SB34 20-1PD 3SB34 20-1PE	1 1	1 unit
		110 V AC	Yellow	В	3SB34 20-1QA	1	1 unit
		X1 ~ */ * */ */ */ */ */ */ */ */ */ */ */ *	Red Green	B B	3SB34 20-1QB 3SB34 20-1QC	1 1	1 unit 1 unit
6B34 20-1PE		X2 NSD0_01296	Blue White	D B	3SB34 20-1QD 3SB34 20-1QE	1 1	1 unit
		230 V AC	Yellow	В	3SB34 20-1RA	1	1 unit
		X1 &	Red Green	B B	3SB34 20-1RB 3SB34 20-1RC	1	1 unit 1 unit
			Blue	B B	3SB34 20-1RD	1	1 unit
		X2 NSD0 01296	White	D	3SB34 20-1RE	1	1 unit
Si	Fixpoint terminals		Black	В	3SB39 01-0AG	1	1 unit
B39 01-0AH			Blue Green/Yellow	B B	3SB39 01-0AH 3SB39 01-0AJ	1 1	1 unit 1 unit

[→]Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Only use with this lamp.

Push Button Units and Indicator Lights 3SB3, Enclosures, 22 mm

Contact blocks and lamp holders

	Version	Rated voltage/ Diagram	Operating travel/color Contact closed	DT	Spring-type terminals □	PU (UNIT, SET, M)	PS
			Contact open		Order No.		
Contact blocks for	or base mounting						
6	Contact blocks with one conta	act					
	1 NO	.].3	NSD0_00015	В	3SB34 23-0B	1	1 unit
	1 NO with gold-plated contacts	.4	3-4 0 1 2 3 4 mm 2,3	D	3SB34 23-0BA	1	1 unit
	1 NC	J.1	NSD0_00017	В	3SB34 23-0C	1	1 unit
3SB34 23-0B	1 NC with gold-plated contacts →	⊢ 7 I.2	1-2 0 1 2 3 4 mm 1,6	В	3SB34 23-0CA	1	1 unit
	Lamp holders with integrated		Yellow	В	3SB34 23-1PA	1	1 unit
	LED	X1 ⁄⁄⁄	Red Green	B B	3SB34 23-1PB 3SB34 23-1PC	1 1	1 unit 1 unit
		X2 (************************************	Blue	В	3SB34 23-1PD	1	1 unit
		NSD0_01292b	White	В	3SB34 23-1PE	1	1 unit
		110 V AC	Yellow	В	3SB34 23-1QA	1	1 unit
		X1 → A	Red Green	D D	3SB34 23-1QB 3SB34 23-1QC	1 1	1 unit 1 unit
			Blue	D	3SB34 23-1QD	1	1 unit
		X2 NSD0_0129		D	3SB34 23-1QE	1	1 unit
		230 V AC	Yellow Red	D B	3SB34 23-1RA 3SB34 23-1RB	1	1 unit 1 unit
		X1	Green	В	3SB34 23-1RC	1	1 unit
			Blue White	B B	3SB34 23-1RD 3SB34 23-1RE	1	1 unit
		X2 NSD0_0129		D	35B34 23-INE		1 unit
SI	Fixpoint terminals		Black	В	3SB34 23-2F	1	1 unit
10			Blue Green/Yellow	B B	3SB34 23-2G 3SB34 23-2H	1 1	1 unit 1 unit
3SB34 23-2G			areary ranew	D	0020120 211		Turne
_	ccording to IEC 60947-5-1, Appen	dix K					
C. Colling of	000.4mg to 120 000+7 0 1,71ppen						
	Version			DT	Order No.	PU (UNIT,	PS
						SET, M)	
Accessories							
Accessories	Pressure plates for selector s	witches and kev-o	perated switches	В	3SB39 01-0AW	100	10 units
	For actuating the central contact			_			

Siemens Industry, Inc. Industrial Controls Catalog

3SB39 01-0AW

3SB3, Enclosures, 22 mm

Inscription labels for enclosures

Overview

Inscription labels

The inscription labels (black with white inscription or silver-colored with black print) have an adhesive layer on the back. The size of the labels is 22 mm x 22 mm.

Inscriptions

The inscriptions have upper case initial letters. The typeface is Arial. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417 (see page 10/95).

Selection and ordering data

	Inscriptions	DT	Black	DT	Silver-colored
			Order No.		Order No.
Inscription la	bels, self-adhesive, 22 mm × 22 mm				
	For self-inscription				
1	Blank	В	3SB39 06-1AA	В	3SB19 01-3AA
	With inscription				
	On Off	B B	3SB39 06-1EB 3SB39 06-1EC	ВВ	3SB19 01-3EB 3SB19 01-3EC
100000	Up	В	3SB39 06-1ED	В	3SB19 01-3ED
1000	Down	В	3SB39 06-1EE	В	3SB19 01-3EE
	Open Close	B B	3SB39 06-1EP 3SB39 06-1EQ	ВВ	3SB19 01-3EP 3SB19 01-3EQ
	Forward	В	3SB39 06-1EF	В	3SB19 01-3EF
Ein	Reverse	В	3SB39 06-1EG	В	3SB19 01-3EG
	Right Left	B B	3SB39 06-1EH 3SB39 06-1EJ		_
	Fast	В	3SB39 06-1ER		_
	Slow	В	3SB39 06-1ES		-
	Running Fault	B B	3SB39 06-1EV 3SB39 06-1EW	В	3SB19 01-3EV -
	Operation	В	3SB39 06 -1AP		_
	Start	В	3SB39 06-1EL	В	3SB19 01-3EL
	Reset Test	B B	3SB39 06-1EM 3SB39 06-1EN	B B	3SB19 01-3EM 3SB19 01-3EN
	Stop	В	3SB39 06-1EK	В	3SB19 01-3EK
	EMERGENCY STOP Equipment	В	3SB39 06-1EY	В	3SB19 01-3EY
	Equipment Fan	В	3SB39 06 -1CA		_
	Pump	В	3SB39 06 -1CB		-
	Cooling Heating	B B	3SB39 06 -1CC 3SB39 06 -1CD		_
	Lighting	В	3SB39 06 -1CE		-
	Filter Motor	B B	3SB39 06 -1CF 3SB39 06 -1CG		_
	Compressor	В	3SB39 06 -1CH		-
	With graphic symbol	_			
	0 	B B	3SB39 06-1MB 3SB39 06-1MC	B B	3SB19 01-3MB 3SB19 01-3MC
	il	В	3SB39 06-1MD	В	3SB19 01-3MD
	[][В	3SB39 06-1ME	В	3SB19 01-3ME
	O I (horizontal) I O II (horizontal)	B B	3SB39 06-1MF 3SB39 06-1MG	В	3SB19 01-3MF 3SB19 01-3MG
	I O (vertical)	B B	3SB39 06-1MH	ВС	3SB19 01-3MH
	II O I (vertical)	В	3SB39 06-1MW 3SB39 06-1NA	В	3SB19 01-3MW 3SB19 01-3NA
			ODDO OF THA		OOD TO OT OTHE
	Inscriptions	DT	Black	DT	Silver-colored
			Order No.		Order No.
Inscription la	bels, self-adhesive, 22 mm × 22 mm				
	With customized inscription				
\longleftrightarrow	For inscriptions or symbols see "Options"		3SB39 06-0XZ		3SB19 01-3XZ
\Box	• Text line(s)	В	KOY	В	KOY
	Text line(s) or symbol with No.	В	K1Y, K2Y, K3Y or K5Y	В	K1Y, K2Y, K3Y or K5Y
	Any inscription or symbol	В	К9Ү	В	К9Ү

For customized inscriptions see page 10/72.

Accessories for enclosures

		0.1.1	_			
	Version	Color/ inscription	DT	Order No.	PU (UNIT, SET, M)	PS
Blanking pluge for e	pare command points					
bialiking plugs for s	Blanking plugs	Black	•	3SB39 21-0AA	1	10 uni
	For plastic version, round	DIAUN		33B39 21-0MA	'	TO UITI
3SB39 21-0AA	Displain a displaint (also tis)	A la construction of all		00040.00.040		40
	Blanking plugs (plastic) For metal version, round	Aluminized	В	3SB19 02-0AQ	1	10 uni
3SB19 02-0AQ						
Holders and pressur						
SSB39 01-0AB	Holders for push buttons and switches For snapping on 3 blocks, 1) for front plate mounting		•	3SB39 01-0AB	100	20 unit
	Holders for selector switches and keyoperated switches with pressure plate Fo actuating a central contact block, for front plate mounting ²)	r	•	3SB39 01-0AC	100	10 unit
3SB39 01-0AC						
3SB39 01-0AW	Pressure plates for selector switches and key-operated switches For actuating a central contact block, for base mounting ²⁾	1	В	3SB39 01-0AW	100	10 unit
Accessories for enc	losures					
	Yellow name plates As backing plate for EMERGENCY-STOP, self-adhesive	Without inscription	D	3SB19 02-1AQ	1	1 ur
		With recess for inscription label	В	3SB39 21-0BV	1	1 ur
	Cable gland includes hexagonal nut					
	• M20		В	3SB39 01-0CK	1	1 ur
	• M25		В	3SB39 01-0CM	1	1 ur
3SB39 01-0CK	• Pg 16		В	3SB39 01-0AK	1	1 ur
	• Pg 22		В	3SB39 01-0AM	1	1 ur
	Hexagonal nuts For cable glands		D	20020 01 001	100	10 uni
	M25M20		B B	3SB39 01-0CL 3SB39 01-0CN	100 100	10 uni 10 uni
0CD20.01.0CL	• Pg 16		В	3SB39 01-0CN 3SB39 01-0AL	100	10 uni
3SB39 01-0CL	• Pg 22		В	3SB39 01-0AN	100	10 uni
	Connecting pieces For connecting 2 plastic enclosures • M20/M20		В	3SB39 01-0CS	1	1 ur
	• M20/M25 ³⁾		В	3SB39 01-0CT	1	1 ur
3SB39 01-0CS	• M25/M25 Connecting pieces		В	3SB39 01-0CU	1	1 ur
1	For connecting 2 metal enclosures					
	• M20/M20		В	3SB39 01-0CP	1	1 ur
3SB39 01-0CP	M20/M25 Pg 16 terminal for AS interface cable		B B	3SB39 01-0CQ 3SB39 01-0AF	1	1 ur 1 ur

¹⁾ The holder for illuminated commanding devices is included in the scope of supply.

10/95

³⁾ Not suitable for plastic enclosures with 6 command points.

²⁾ The pressure plates can be removed one by one to meet individual requirements.

3SB3, Enclosures for AS-Interface, 22 mm

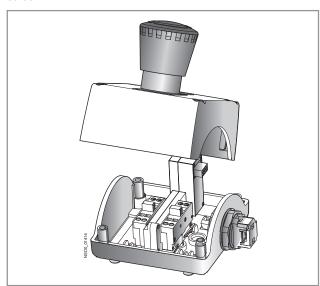
General data

Overview



AS-Interface enclosure with customized equipment

Distributed command devices of the 3SB3 series can be quickly connected to the AS-Interface using AS-Interface enclosures. Using suitable components you can make your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.



EMERGENCY-STOP enclosure

Enclosures

Color of enclosure cover:

- Gray, RAL 7035, or
- Yellow, RAL 1004, for EMERGENCY-STOP.

Color of enclosure base:

• Black, RAL 9005

Installation of AS-Interface slaves

The following slave types are available for connecting the command points:

- Slave in A/B technology with 4 inputs and 3 outputs
- Slave with 4 inputs and 4 outputs
- F Slave with two secure inputs for EMERGENCY-STOP mushroom pushbutton

The following table shows the maximum number of equippable slaves:

Enclosures for	Number of slaves for enclosures without EMERGENCY-STOP	Number of slaves for enclosures with EMERGENCY-STOP
1 command point	Not available	1 x F slave
2 command points	1 x slave 4I/4O or 4I/3O	Not available
3 command points	1 x slave 4I/4O or 4I/3O	1 x slave 4I/4O or 4I/3O + 1 x F slave
4 command points	2 x slave 4I/4O or 4I/3O ¹⁾	2 × slave 4I/4O or 4I/3O + 1 × F slave ¹⁾
6 command points	2 x slave 4I/4O or 4I/3O	2 x slave 4I/4O or 4I/3O + 1 x F slave

¹⁾ For metal enclosures with 4 command points, only 1 x slave 4I/4O or 4I/3O is possible.

Connection

One set of links is required in each case to connect a slave to contact blocks, to lamp holders and to the connection element.

The connection elements are mounted in the front-end cable glands and are used for connection of the AS-Interface or for bringing unused inputs or outputs out of the enclosure.

For connection to AS-Interface it can be selected between:

- Terminal for shaped AS-Interface cable. The cable is contacted by the insulation piercing method and routed past the enclosure on the outside (possible only with plastic enclosure)
- Cable gland for the shaped AS-Interface cable or round cable. The cable is routed into the enclosure (preferable for metal enclosure).
- Connection using M12 plug.

If less than all inputs/outputs of the installed slaves in an enclosure are used for connecting the command devices, free inputs and outputs can be routed on request to the outside through an M12 socket on the top or bottom side of the enclosure.

To supply inputs with power, the S+ connection of the slave must be assigned to the socket, for outputs the OUT– connection must be assigned

Addressing is performed using the AS-Interface connections or the integrated addressing socket. An external power supply is not required.

Customized enclosures (selection by configurator)

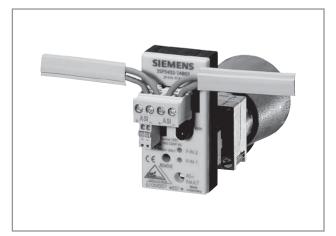
To order customized 3SF58 AS-Interface enclosures with the 3SB3 control devices, use the 3SB3/3SF5 configurator to select the blocks for equipping. An electronic order form will be generated for the additional options.

For related ordering notes see page 10/91

3SB3, Components for Actuators and Indicators, 22 mm

AS-Interface F adapters for EMERGENCY-STOP devices

Overview



EMERGENCY-STOP mushroom push button with F adapter for bus

The AS-Interface F adapter is used to connect an EMERGENCY-STOP device according to ISO 13850 from the 3SB3 series to the AS-Interface bus system. The F adapter is suitable for control devices with mounting on front plates.

The F adapter has a safe AS-Interface 2I slave and is snapped from behind onto the EMERGENCY-STOP mushroom push button. In the 2I/1O expanded version, an output is also available for actuating an indicator light with LED.

Depending on the version, screw terminals or spring-type terminals or the insulation piercing method are used for connecting to the AS-Interface bus cable. Addressing is performed using the AS-Interface connection or the integrated addressing socket.

Safety category 4 (SIL 3) is achieved with the adapter.

Selection and ordering data

3SF5 402-1AA03

	Version	DT	Screw terminals Order No.	PS
SIEMENS POPUL CAUSE POPUL CAUS	AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom push buttons For mounting on front plates • 2I • 2I/1O, with output for LED control		3SF5 402-1AA03 3SF5 402-1AB03	1 unit 1 unit

	Version	DT	Spring-type terminals	$\stackrel{\infty}{\sqcup}$	PS
			Order No.		
3SF5 402-1AA04	AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom push buttons For mounting on front plates • 2I • 2I/10, with output for LED control		3SF5 402-1AA04 3SF5 402-1AB04		1 unit 1 unit

	Version	DT	Insulation piercing method Order No.	PS
SIEMENS 1979 MAND 1979 MAN	AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom push buttons For mounting on front plates 2 2 1/10, with output for LED control		3SF5 402-1AA05 3SF5 402-1AB05	1 unit 1 unit
SF5 402-1AA05				

10/97

3SB3, Enclosures for AS-Interface, 22 mm

AS-Interface enclosures with standard fittings

Overview

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators

The enclosures without EMERGENCY-STOP each have one user module with 4I/3O; the enclosures with EMERGENCY-STOP mushroom push buttons have a safe AS-Interface slave integrated in the enclosure.

Enclosures with EMERGENCY-STOP mushroom push buttons are fitted with two NC contact blocks, which are wired to the safe slave. The contact blocks and lamp holders (with spring-type terminals) of the control device, and the AS-Interface slaves, are mounted in the base of the enclosure and are cable-connected.

The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is run passed the outside of the enclosure). For metal enclosures, the AS-Interface cable is run inside the enclosure.

The housing with EMERGENCY-STOP mushroom push buttons with an M12 connector is also available.

Selection and ordering data

	Equipping options (A, B, C = identification letters of the command points)	Number of command points	DT	Configurator	PU (UNIT, SET, M)	PS
				Order No.		
AS-Interface en	closures, plastic					
	With M12 top connector			2055 244 2442		
	A = EMERGENCY-STOP mushroom push buttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC, yellow enclosure top	1	В	3SF5 811-0AA10	1	1 unit
	With terminal for insulation piercing method at	top				
2055 244 244 22	A = EMERGENCY-STOP mushroom push buttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC					
3SF5 811-0AA08	Yellow enclosure top Yellow enclosure top, with protective collar	1 1	A A	3SF5 811-0AA08 3SF5 811-0AB08	1 1	1 unit 1 unit
6	B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	2	А	3SF5 812-0DA00	1	1 unit
	B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	2	Α	3SF5 812-0DB00	1	1 unit
	C = Indicator lights clear, label without inscription	3	А	3SF5 813-0DA00	1	1 unit
8	B = Pushbutton green, label "!", 1 NO A = Pushbutton red, label "0", 1 NO					
3SF5 812-0DA00	C = Indicator lights clear, label without inscription	3	Α	3SF5 813-0DC00	1	1 unit
	B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO					
	C = Pushbutton black, label "II", 1 NO B = Pushbutton black, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	А	3SF5 813-0DB00	1	1 unit
AS-Interface en	closures, metal					
1	With M12 top connector					
	A = EMERGENCY-STOP mushroom push buttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC					
	Yellow enclosure top Yellow enclosure top, with protective collar	1 1	C C	3SF58 11-2AA10 3SF58 11-2AB10	1	1 unit 1 unit
	With cable gland at top					
3SF5 811-2AB08	A = EMERGENCY-STOP mushroom push buttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC					
	Yellow enclosure topYellow enclosure top, with protective collar	1 1	A A	3SF5 811-2AA08 3SF5 811-2AB08	1 1	1 unit 1 unit
0	B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	2	А	3SF5 812-2DA00	1	1 unit
	B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	2	А	3SF5 812-2DB00	1	1 unit
	C = Indicator lights clear, label without inscription	3	Α	3SF5 813-2DA00	1	1 unit
	B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO					
3SF5 813-2DA00	C = Indicator lights clear, label without inscription B = Pushbutton white, label "I", 1 NO	3	Α	3SF5 813-2DC00	1	1 unit
	A = Pushbutton black, label "O", 1 NO					
	C = Pushbutton black, label "II", 1 NO B = Pushbutton black, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	А	3SF5 813-2DB00	1	1 unit

 ${\color{red} \underline{\textcircled{9}}} \ \, \text{For online configurator see www.siemens.com/sirius/configurators} \; .$

Components for AS-Interface enclosures

Selection and ordering data

For self-equipping of the enclosures

	Version	Number of command points	DT	Order No.	PU (UNIT, SET, M)	PS
For plastic enclo	osures					
	AS-Interface slaves					
10 A 10 A 10 A 10 A 10 A 10 A 10 A 10 A	F slave, 2 safe inputs, for plastic enclosure, EMERGENCY-STOP, without protective collar	1 6	А	3SF5 500-0BA	1	1 unit
3SF5 500-0BA	F slave, 2 safe inputs, for plastic or metal enclosure, EMERGENCY-STOP, with protective collar	1	А	3SF5 500-0DA	1	1 unit
Myster access a	A/B slave, 4I/3O for plastic enclosure	2 6	Α	3SF5 500-0BB	1	1 unit
3SF5 500-0BB	Slave, 4l/4O, for plastic enclosure	2 6	А	3SF5 500-0BC	1	1 unit
	Sets of links					
	For F slave		Α	3SF5 900-0BA	1	1 unit
3	For slave 4I/4O or A/B slave 4I(3O)		Α	3SF5 900-0BB	1	1 unit
0055,000,004	Connection elements					
3SF5 900-0CA	For AS-Interface shaped cable, connection by insulation piercing method, for plastic enclosure	1 3 4 6	A B	3SF5 900-0CA 3SF5 900-0CB	1 1	1 unit 1 unit
	For AS-Interface	1 3	В	3SF5 900-0CC	1	1 unit
	connection using M12 plug, for plastic enclosure	4 6	В	3SF5 900-0CD	1	1 unit
3SF5 900-0CC	For bringing out unused inputs/outputs through an M12 socket, for plastic enclosure	1 3	В	3SF5 900-0CE	1	1 unit
		4 6	В	3SF5 900-0CF	1	1 unit
	For AS-Interface shaped cable, cable is routed into the enclosure, for plastic or metal enclosure	1 3 4 6	A A	3SF5 900-0CG 3SF5 900-0CH	1	1 unit 1 unit
	For round cable,	1 3	Α	3SF5 900-0CJ	1	1 unit
3SF5 900-0CG	cable is routed into the enclosure, for plastic or metal enclosure	4 6	A	3SF5 900-0CK	1	1 unit
For metal enclos	sures					
SIEMENS	AS-Interface slaves					
227-1838 (197000-00) 277-1838 (19700-00) 277-1838 (19700-00) (19700-00) (19700-00) (19700-00) (19700-00) (19700-00)	F slave, 2 safe inputs, for metal enclosure, EMERGENCY-STOP, without protective collar	1 6	А	3SF5 500-0CA	1	1 unit
3SF5 500-0CB	F slave, 2 safe inputs, for plastic or metal enclosure, EMERGENCY-STOP, with protective collar	1	А	3SF5 500-0DA	1	1 unit
	A/B slave, 4I/3O, for metal enclosure	2 6	Α	3SF5 500-0CB	1	1 unit
	Slave, 4I/4O, for metal enclosure	2 6	Α	3SF5 500-0CC	1	1 unit
	Sets of links					
	For F slave		Α	3SF5 900-0BA	1	1 unit
A 33	For slave 4I/4O or A/B slave 4I(3O)		Α	3SF5 900-0BB	1	1 unit
	Connection elements		_			
3SF5 900-0CG	For AS-Interface connection using M12 plug, for metal enclosure	1 3	В	3SF5 900-2CC	1	1 unit
	9 , 9	4 6	В	3SF5 900-2CD	1	1 unit
	For bringing out unused inputs/outputs through an M12 socket, for metal enclosure	1 3	В	3SF5 900-2CE	1	1 unit
= = >		4 6	В	3SF5 900-2CF	1	1 unit
	For AS-Interface shaped cable, cable is routed into the enclosure,	1 3	A	3SF5 900-0CG	1	1 unit
0055 000 00 1	for plastic or metal enclosure	4 6	Α	3SF5 900-0CH	1	1 unit
3SF5 900-0CJ	For round cable,	1 3	Α	3SF5 900-0CJ	1	1 unit
	cable is routed into the enclosure, for plastic or metal enclosure	4 6	Α	3SF5 900-0CK	1	1 unit

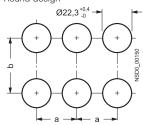
SIRIUS 3SB3

Dimension drawings (mm) Operator and indicator elements

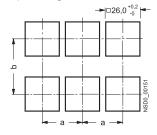
Dimension drawings

Mounting dimensions

Round design



Square design



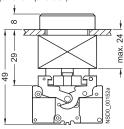
Minimum clearance	а	b	
Switch blocks (1 contact) and lampholder • for front plate mounting, with screw terminals • for front plate mounting, with spring-loaded terminals • for use on PCB, with solder pins	30 ¹) 30 ¹) 30 ¹)	45 30 ¹) 30 ¹)	
Switch blocks with 2 contacts • for front plate mounting	30 ¹)	50	
When using holders for labeling plates • 12.5 mm × 27 mm • 27.0 mm × 27 mm	30 ¹)	45 ²)	

- 1) For mushroom pushbutton, EMERGENCY-STOP and push-pull button: Note mushroom diameter d = 40 mm or 60 mm.
- 2) 60 mm with switch blocks having two contacts.

Molded-plastic version, round

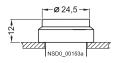
Pushbutton or illuminated pushbutton

with flat pushbutton and single-pole switch block (and lampholder)



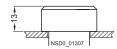
Pushbutton or illuminated pushbutton

with raised button

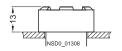


Pushbutton

with raised front ring



with raised front ring castellated



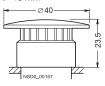
Mushroom pushbutton, illuminated mushroom pushbutton, push-pull-button or

illuminated push-pull-button,

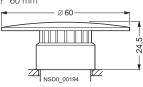


Mushroom pushbutton, illuminated mushroom pushbutton, push-pull-button or illuminated push-pull-button,

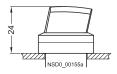
? 40 mm



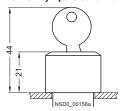
Mushroom pushbutton, illuminated mushroom pushbutton, push-pull-button or illuminated push-pull-button,



Selector switch or illuminated selector switch



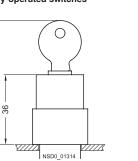
RONIS key-operated switch



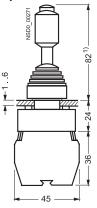
BKS, CES, IKON, O.M.R.

BKS/IKON: 61 CES/OMR: 64 36

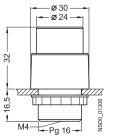
key-operated switches



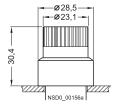
Joystick switch



Pushbutton with extended stroke



Pushbutton with raised button, latchable



Operating mechanism for potenti-

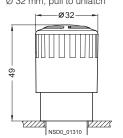
with shaft Ø 6 mm, 30 ... 32 mm long Ø29,5-Ø15

1) 82 with mechanical interlock, 77 without mechanical interlock

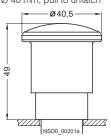
SIRIUS 3SB3

Dimension drawings (mm) Operator and indicator elements

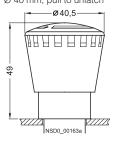
EMERGENCY-STOP mushroom pushbutton, Ø 32 mm, pull to unlatch



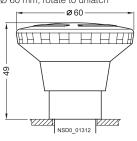
EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, pull to unlatch



EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, pull to unlatch

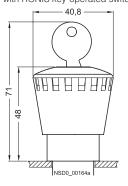


EMERGENCY-STOP mushroom pushbutton, Ø 60 mm, rotate to unlatch



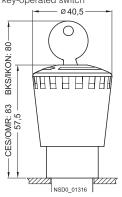
EMERGENCY-STOP mushroom pushbutton

with RONIS key-operated switch

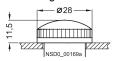


EMERGENCY-STOP mushroom pushbutton

with BKS, CES, IKON, O.M.R. key-operated switch



Indicator light



Gear Holder



Audible signal device

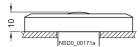


Hole plug



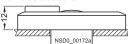
On-Off pushbutton

with flat buttons



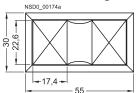
On-Off pushbutton

with raised buttons



On-Off pushbutton

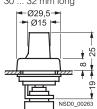
with or without indicator light



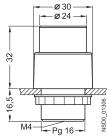
Top view

Operating mechanism for potentiometer

with shaft Ø 6 mm, 30 ... 32 mm long



Pushbutton with extended stroke





SIRIUS 3SB3

Dimension drawings (mm) Operator and indicator elements

Plastic version, square

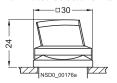
Pushbutton or illuminated pushbutton with flat pushbutton



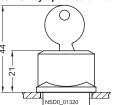
Indicator light



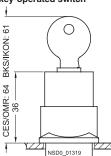
Selector switch or illuminated selector switch



RONIS key-operated switch

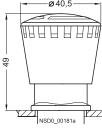


BKS, CES, IKON, O.M.R. key-operated switch



EMERGENCY-STOP mushroom pushbutton with safety lock

ø 40,5

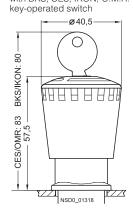


EMERGENCY-STOP mushroom pushbutton with RONIS key-operated switch

ø 40,8 7 48

NSD0_00182a

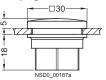
EMERGENCY-STOP mushroom pushbutton with BKS, CES, IKON, O.M.R.



Gear Holder



Hole plug



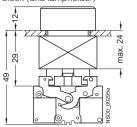
SIRIUS 3SB3

Dimension drawings (mm) Operator and indicator elements

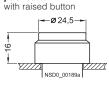
Metal version, round Pushbutton or

illuminated pushbutton

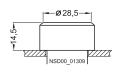
with flat button and single-pole switch block (and lampholder)



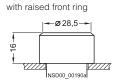
Pushbutton or illuminated pushbutton



Pushbutton or illuminated pushbutton, latching,



Pushbutton



Selector switch or illuminated selector switch,

standard

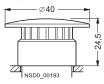


Mushroom pushbutton, illuminated mushroom pushbutton, push-pull-button or illuminated push-pull-button,? 30 mm



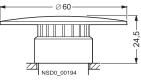
Mushroom pushbutton, illuminated mushroom pushbutton, push-pull-button or illuminated push-pull-button,



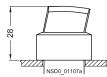


Mushroom pushbutton, illuminated mushroom pushbutton, push-pull-button or illuminated push-pull-button,

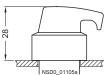




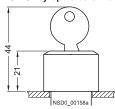
Selector switch or illuminated selector switch, heavy duty



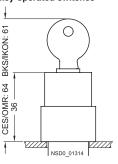
Selector switch or **illuminated selector switch** with long handle



RONIS key-operated switch

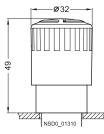


BKS, CES, IKON, O.M.R. key-operated switches

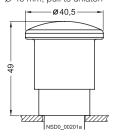


EMERGENCY-STOP mushroom pushbutton,

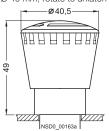
Ø 32 mm, rotate to unlatch



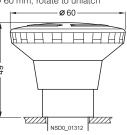
EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, pull to unlatch



EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, rotate to unlatch

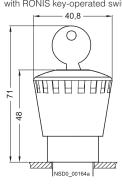


EMERGENCY-STOP mushroom pushbutton, Ø 60 mm, rotate to unlatch

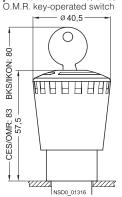


EMERGENCY-STOP mushroom pushbutton

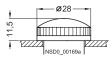
with RONIS key-operated switch



EMERGENCY-STOP mushroom pushbutton with BKS, CES, IKON,



Indicator light



Gear Holder



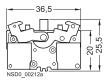
SIRIUS 3SB3

Dimension drawings (mm) Contact blocks and lamp holders

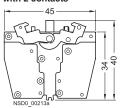
Contact blocks and lampholders

Screw connection, for front plate mounting

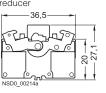
Switch block with 1 contact

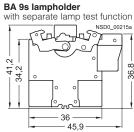


Switch block with 2 contacts

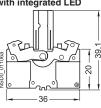


BA 9s lampholder with or without integrated voltage

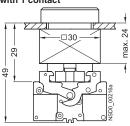




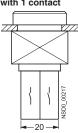
Lampholder with integrated LED



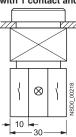
Pushbutton or illuminated pushbutton with switch blocks



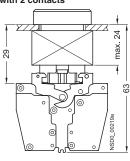
Pushbutton with switch blocks with 1 contact



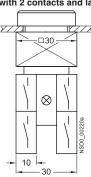
Illuminated pushbutton with switch blocks with 1 contact and lampholder



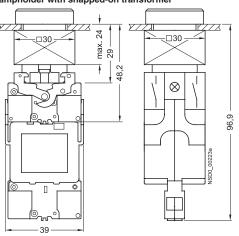
Pushbutton or illuminated pushbutton with switch blocks with 2 contacts



Illuminated pushbutton with switch blocks with 2 contacts and lampholder



Illuminated pushbutton with switch blocks with 1 contact and lampholder with snapped-on transformer

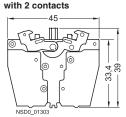


Spring-loaded terminals, for front plate mounting

Switch block with 1 contact



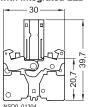
Switch block



Lampholder BA 9s



Lampholder with integrated LED



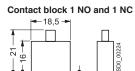
SIRIUS 3SB3

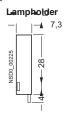
Accessories and enclosures

illuminated pushbutton

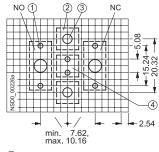
Pushbutton or

With solder pins, for use on PCB

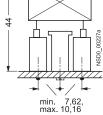




Solder pin spacing



- with contact blocks with 1 contact and PCB support
- Solder pin Ø1.3 *0.1
 PCB holder
 Centering hole Ø4.
 Lampholder
- Centering hole Ø4.2^{+0.1}

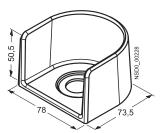


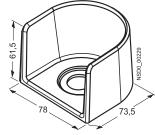
Accessories

3SB39 21-0AK shroud for front plate mounting 1) for EMERGENCY-STOP mushroom pushbutton without key-operated switch.

3SB39 21-0AX shroud

for front plate mounting 1) for EMERGENCY-STOP mushroom pushbutton with key-operated switch.





1) Can be used with a front plate thickness up to 4mm.

Holder for mounting 3 elements

Holder for pushbuttons



Holder for selector switch, key-operated switch and On-Off pushbutton,

with pressure plate

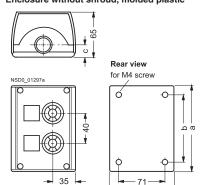


SIRIUS 3SB3

Dimension drawings (mm) Accessories and enclosures

Enclosures

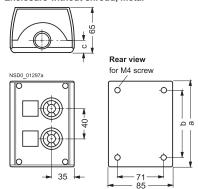
Enclosure without shroud, molded plastic



top and bottom with knockouts for one gland each

Number of com- mand points	Length a	Spacing b	Spacing c
1	85	54	17,5
2	114	83	17,5
3	154	123	17,5
4	194	163	17,5
6	280	249	20,5

Enclosure without shroud, metal



top and bottom with opening for one gland each

Number of com- mand points	Length a	Spacing b	Spacing c
1 2 3 4	85 114 154 194	54 83 123 163	21 21 21 21
6	280	249	21

Enclosure with shroud,



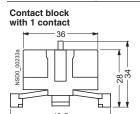
top and bottom with knockouts for one gland each

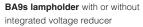
Enclosure with shroud, metal

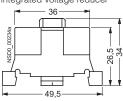


top and bottom with opening for one gland each

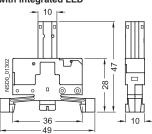
Screw connection, for base mounting



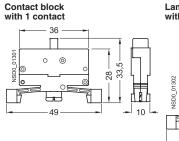


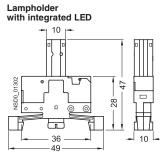


Lampholder with integrated LED

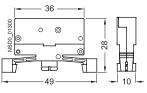


Spring-loaded terminals, for base mounting





Support terminal



Lamp holders with separate lamp test function

2

3

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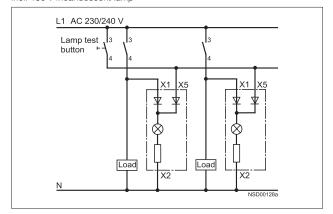
8

9

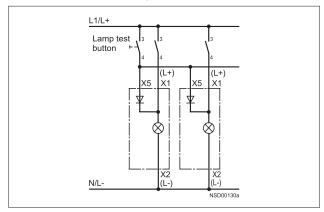
10

Typical circuits

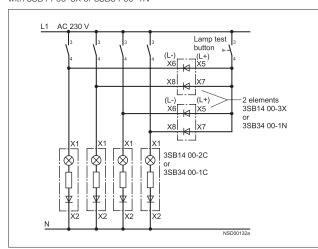
3SB14 00–2N or 3SB34 00–1F lampholder incl. 130 V incandescent lamp



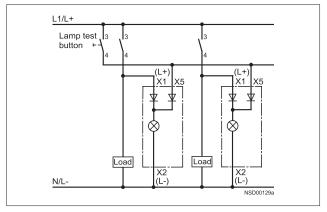
3SB14 00–2Q or 3SB34 00–1H lampholder for incandescent lamp to 2.6 W or AC neon bulbs or AC/DC LED lamps



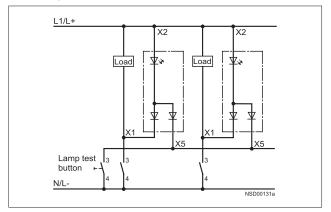
Typical lamp test circuit with with 3SB14 00-3X or 3SB34 00-1N



3SB14 00–2P or 3SB34 00–1G lampholder for incandescent lamps up to 2.6 W or AC/DC LED lamps



3SB34 00-1L lampholder for incandescent lamp up to 2.6 W or DC LED lamps



Application examples for 3SB14 00–3X and 3SB34 00–1N diode elements

- Lamp test circuit,
- Interference suppression,
- Limiting voltage peaks,
- · Limiting DC coils,
- Diode gates,
- Rectifier circuits.

The diode element contains two 1N 4007 diodes. The element can be snapped onto the gear holder as required.

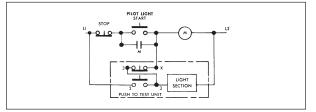
Notes on using the lampholders with separate lamp test function

When connected in parallel with inductive loads (e.g. contactors), surge suppression required.

The 3SB14 00–2Q and 3SB34 00–1H elements are not suitable for use with a parallel load.

Example of a typical push to test circuit using a standard, illuminated push-button transformer type with 1 NO + 1 NC contact. e.g. Illuminated Pilot Light components require to make-up a 120 V red raised push to test transformer type use (1) each of the following components:

- 3SB3 001-0BA213SB3 400-1A
- 52AABN
- 3SB3 400-0B
- 3SB3 400-3M
- 3SB3 400-0C



3SE2, 3SE3 Foot Switches

Plastic and metal enclosures

Overview



Foot switches with metal enclosures

Standard switches

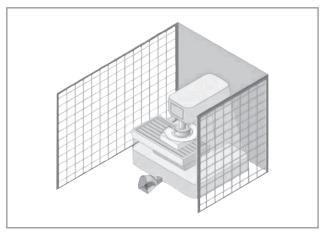
The 3SE2 9 and 3SE3 9 foot switch range encompasses versions in a metal enclosure for rugged applications as well as versions with plastic enclosure for less harsh environments. The devices can be supplied with or without a cover and have fixing holes for them to be screwed to the floor.

Depending on the particular application, the metal enclosures can be ordered in latching or momentary-contact versions. The momentary-contact pedal switch in the plastic enclosure has one microswitch (changeover contact) per actuating pedal.

Safety foot switches

The 3SE2 924-3AA20 single-pedal safety foot switches are used on machines and plants as OK switches when operation by hand is not possible and the EMERGENCY-STOP function must be available if a hazardous status arises. The switches are interlocked according to EN ISO 13850 and bear the CE mark in accordance with the machinery directive.

The safety foot switches are protected by a guard hood against accidental operation.



Application example

The switches have two contact blocks, each with one NO contact and one NC contact. The NO contacts and NC contacts of the two contact blocks are connected for easy connection of a single-phase motor. The normal workflow is initiated by pressing down the pedal as far as the pressure point so that the two NO contacts close and the motor starts to run.

If in the event of danger the pedal is pressed beyond the resistance of the pressure point, the positively driven NC contacts will open and the motor is stopped. At the same time the independent latching takes effect and holds the NC contacts in open position. This prevents the machine parts from continuing to run out of control or from being restarted.

After the hazard is eliminated, the machine can only be restarted after manually releasing the switch using a push button on the top of the enclosure. The contacts are then released again and return to their initial position (the NO contacts are open and the NC contacts are closed).

Technical specifications

Туре		3SE29	3SE39		
Metal and plastic enclosures					
Standards		IEC 60947-5-1			
Electrical load					
• At AC-15, 400 V					
- 1 NO + 1 NC	Α	16	_		
- 2 NO + 2 NC	Α	6	_		
- 3SE2 924-3AA20 (2 NO + 2 NC)	Α	16	_		
• At 250 V AC	Α	_	5		
Short-circuit protection					
- 1 NO + 1 NC / 3SE2 924-3AA20	Α	16 (slow)	_		
- 2 NO + 2 NC	Α	6 (slow)	_		
- 1 CO contact	Α	_	5 (slow)		
Mechanical endurance		> 10 ⁶ operating cycles			
Material					
• Enclosures		Aluminum casting	Impact-resistant thermoplast, self-extinguish- ing according to UL 94 VO		
• Covers		Thermoplast	_		
Guard hoods		Aluminum cast- ing	Metal		
Degree of protection		IP65	IP65		
Ambient temperature	°C	-25 +80	-10 +75		
Connection		Cable entry, metric	Cable AWG20, UL Style 2464, length 3 m		

Push Button Units and Indicator Lights 3SE2, 3SE3 Foot Switches

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u	lact	ic and	met		anc	osures
	เฉจเ	ıc anc	HICL	œ.	CIICI	USUIES

	Version	Slow-action co for each pedal		DT	Order No.	PU (UNIT, SET, M)	PS
etal enclosures, degr	ee of protection IP65						
	Momentary-contact foot switches, single pedal M20 x 1.5 cable entry						
	Without hood	1 NO + 1 NC	\odot	Α	3SE2 902-0AB20	1	1 unit
		2 NO + 2 NC	\odot	Α	3SE2 903-1AB20	1	1 unit
	With hood	1 NO + 1 NC	\odot	Α	3SE2 902-0AA20	1	1 unit
90AA20		2 NO + 2 NC	→	Α	3SE2 903-1AA20	1	1 unit
1AA20	Momentary-contact foot switches, single pedal M20 x 1.5 cable entry						
	Without hood	1 NO + 1 NC	\odot	С	3SE2 912-2AB20	1	1 unit
	With hood	1 NO + 1 NC	\widetilde{igota}	С	3SE2 912-2AA20	1	1 unit
	Momentary-contact foot switches, two pedals M25 x 1.5 cable entry						
	Without hood	1 NO + 1 NC	\odot	В	3SE2 932-0AB20	1	1 unit
	William Hood	2 NO + 2 NC	\widetilde{igota}	В	3SE2 932-1AB20	1	1 unit
		2110 12110					
2AB20	Name of the Control o			_			
1	With hood	1 NO + 1 NC 2 NO + 2 NC	→	B B	3SE2 932-0AA20 3SE2 932-1AA20	1	1 unit 1 unit
120							
	Safety foot switches, single pedal, with hood, M20 x 1.5 cable entry, with interlock according to ISO 13850, NO closes as momentary contact type, NC opens with latching	2 NO + 2 NC	→	С	3SE2 924-3AA20	1	1 unit
AA20							
enclosures, dec	gree of protection IP65						
	Momentary-contact pedal switches, 3 m cable	Microswitch					
	Single pedal						
	- Without hood	1 CO contact		В	3SE3 902-4CB20	1	1 unit
A	AARSI I			_	2052 202 40422		4 0
4CA20	- With hood	1 CO contact		В	3SE3 902-4CA20	1	1 unit
/	• Two pedals, without hood	2 × 1 CO		В	3SE3 934-5CB20	1	1 unit
3 934-5CB20							

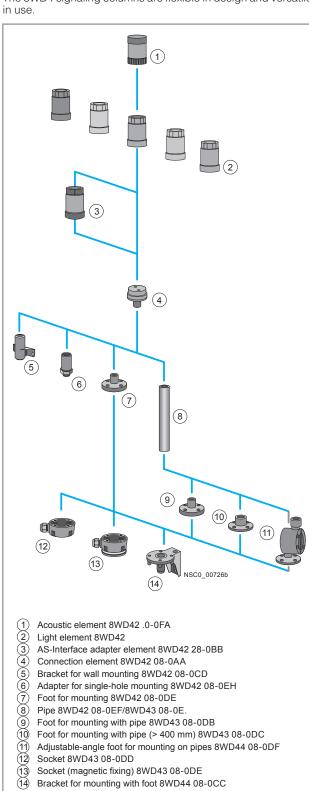
Positive opening according to IEC 60947-5-1, Appendix K.

8WD4 Signaling Columns

General Data

Overview

The 8WD4 signaling columns are flexible in design and versatile



- (10) Acoustic element 8WD44
 - Light element 8WD44
 - AS-Interface adapter element 8WD44 28-0BD/8WD44 28-0BE
 - Connection element for mounting on bracket, base and floor 8WD44 08-0AB/8WD44 08-0AE
 - Connection element for mounting on pipe 8WD44 08-0AA/8WD44 08-0AD
 - Bracket for wall mounting 8WD43 08-0CA 6789
 - Bracket for wall mounting (two-sided) 8WD43 08-0CB
 - Socket 8WD43 08-0DD
 - Bracket for base mounting 8WD44 08-0CD
 - Pipe 8WD42 08-0EF/8WD43 08-0E.
 - Foot with pipe 8WD43 08-0DA
- (1) (12) (13) (14) Foot for mounting with pipe 8WD43 08-0DB
- Foot for mounting with pipe (> 400 mm) 8WD43 08-0DC
- Adjustable-angle foot for mounting on pipes 8WD44 08-0DF
- <u>15</u> Socket (magnetic fixing) 8WD43 08-0DE
- Bracket for mounting with foot 8WD44 08-0CC

8WD42 signaling columns (width 50 mm) with up to 4 elements

8WD44 signaling columns (width 70 mm) with up to 5 elements

8WD4 Signaling Columns

General Data

Two product series are available:

• 8WD42

- Thermoplast enclosure, diameter 50 mm
- Degree of protection IP54
- Up to 4 elements can be mounted between the connection element and the cover

8WD44

- Thermoplast enclosure, diameter 70 mm
- Advanced design and significantly improved illumination
- Faster and more flexible connection using spring-type
- Integrated degree of protection IP65
- Up to 5 elements can be mounted between the connection element and the cover



Signaling columns, mounting examples

The illustrated examples are from the left:

- 8WD42: Cover (no No.), 4 light elements ②, connection element ④, pipe ③, foot ⑨
- 8WD44: Acoustic element with integral cover ①, 2 light elements ②, connection element ⑤, foot with pipe ⑪
- 8WD44: Cover (no No.), 4 light elements ②, AS-Interface adapter element ③, connection element ④, bracket for wall mounting ⑥
- 8WD44: Cover (no No.), 3 light elements ②, AS-Interface adapter element ③, connection element ⑤, foot with pipe ⑪

Note:

The cover is supplied with the connection element; it is not needed with the acoustic element.

Benefits

- Choice of various light and acoustic elements with different functions: continuous light, blinklight, flashlight and rotating light; buzzer and siren
- Light elements with particularly long-lasting LEDs
- · Variety of colors: red, yellow, green, white or blue
- Optimized illumination through improved prism technology with the 8WD44
- Acoustic elements can be adjusted in tone and volume
- Extremely resistant to shock and vibrations
- Easy connection and quick lamp change with secure bayonet mechanism
- Communication capability through connection to AS-Interface

Application

8WD4 signaling columns are used in machines or in automatic processes for monitoring complex procedures or as visual or acoustic warning devices in emergency situations, e.g. for displaying individual assembly stages.

Communication capability

Connection to AS-Interface

The 8WD4 signaling columns can be directly connected to the AS-Interface bus system through an adapter element that can be integrated in the column. Wiring outlay is reduced as the result. The two-wire bus cable is fixed to the terminals in the connection element. Up to four signaling elements can be mounted on it using an adapter element.

A/B technology enables the connection of up to 62 slaves on one AS-Interface system.

Connection

The signaling elements are wired up using the screw terminals in the connection element, screw terminals on the 8WD42 and screw or spring-type terminals on the 8WD44.

Cable outlet

The connecting cables can be guided either downwards or sideways through the cable gland using an adapter that can be screwed under the foot. This makes wiring easier if there is no access from below.

Connection to AS-Interface



8WD42:

The two-wire bus cable is fixed to the screw terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. A maximum of 4 signaling elements can then be mounted on it.

The adapter element 8WD42 28-0BB is a standard slave.

8WD44:

The two-wire bus cable is fixed to the screw or spring-type terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. The signaling elements can then be mounted on it.

The adapter element 8WD44 28-0BE is a standard slave. A maximum of 4 signaling elements can be mounted on it.

The adapter element 8WD44 28-0BD with A/B technology enables the connection of up to 62 slaves on one AS-Interface system. The addressing socket provides user-friendly parameterization of the AS-Interface elements. A maximum of 3 signaling elements can be mounted on it.

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General Data

Туре		8WD42	8WD44
General data		011542	011244
Approvals		UL, CSA	UL, CSA
Light and acoustic elements		OL, COA	OL, COA
Rated voltage, power consumption		(40 6 50/00 1)	(40 50/0011)
Light elements with incandescent lamp		(AC values for 50/60 Hz)	(AC values for 50/60 Hz)
Continuous light		12 V, 24 V, 115 V, 230 V AC/DC	12 V, 24 V, 115 V, 230 V AC/DC
• Blinklight		24 V AC/DC/125 mA; 115 V AC/20 mA; 230 V AC/15 mA	24 V AC/DC/125 mA; 115 V AC/20 mA; 230 V AC/15 mA
Flashlights		_	24 V DC/125 mA; 115 V AC/20 mA; 230 V AC/35 mA
Max. inrush current, blinklight/flashlight		_	500 mA
Light elements with integrated LED			
• Continuous light		24 V AC/DC/60 mA	24 V AC/DC/45 mA; 115 V AC/DC/25 mA; 230 V AC/25 mA
Blinklight		_	24 V AC/DC/40 mA
Rotating light		_	24 V AC/DC/70 mA
Acoustic elements			
Buzzer element (tone: pulsating or continuous, 85 dB)		24 V AC/DC/25 mA; 115 V AC/DC/25 mA; 230 V AC/25 mA	24 V AC/DC/25 mA; 115 V AC/DC/25 mA; 230 V AC/25 mA
Siren element (8 tones + amplification can be set, 100 dB)		_	24 V AC/DC/80 mA; 115 V AC/30 mA; 230 V AC/16 mA
Siren element (108 dB)		_	24 V DC/100 mA
Power consumption			
Incandescent lamps, base BA 15d Flashlight, flash energy	W Ws	max. 5	7 2
Endurance Flashlights		4 × 10 ⁶ flashes	4 × 10 ⁶ flashes
AS-Interface adapter elements			
O code/ID code		8/F	8/E
Power supply		Through bus cable	Through bus cable
Operational voltage Power consumption I _{max}	V mA	18.5 31.6 50	18.5 31.6 100
Protective measures			
Watchdog		✓	✓
Short-circuit/overload protection		External back-up fuse M 1.6 A	✓,
Reverse polarity protection Induction protection		✓ N/A	<i>y</i>
Outputs		4 Relay outputs	3 solid-state outputs
•			'
Load voltage	V V	External auxiliary voltage 0 30 DC 0 230 AC	through bus cable or external auxiliary voltages witch-selectable
• Current carrying capacity $\sum I_{max}$			
 With external auxiliary voltage 	Α	1.5	0.3
- Without external auxiliary voltage	A		0.2
Operating temperature	°C	–20 +50	–20 +50
Enclosures			
Enclosure material		Thermoplast (polyamide), impact-resistant, black	Thermoplast (polyamide), impact-resistant, black
light elements		Thermoplast (polycarbonate)	Thermoplast (polycarbonate)
Mounting			
Horizontal (floor mounting, foot with 25 mm Ø pipe)		✓	✓
Horizontal (single-hole mounting)		/	_
Vertical with bracket		7	✓
Degree of protection			
Light elements		IP54	IP65 (seal premounted with every module)
Acoustic elements, AS-i adapter elements		IP54	IP65
· · · · · · · · · · · · · · · · · · ·			
<u> </u>	°C	–20 +50	–20 + 50
Operating temperature Connection		M3 screw terminal	Spring-type terminals/M3 screw terminals
Operating temperature Connection Conductor cross-sections Tightening torque			

8WD4 Signaling Columns

8WD42 signaling columns, 50 mm diameter

Overview

Features:

- Thermoplast enclosure, diameter 50 mm
- Degree of protection IP54
 Up to 4 elements can be mounted

Selection and ordering data

	Version	Rated voltage	Color	DT	Order No.	PU (UNIT, SET, M)	PS	PG
		V						
Acoustic elem	ents ¹⁾							
	Buzzer elements 80 dB,	24 AC/DC	Black	Α	8WD42 20-0FA	1	1 unit	41J
3 2	pulsating or continuous tone, adjus able by means of a wire jumper	^{t-} 115 AC		Α	8WD42 40-0FA	1	1 unit	41J
11		230 AC		А	8WD42 50-0FA	1	1 unit	41J
Light elements	for incandescent lamps/LEDs, E	BA 15d bases ²⁾						
	Continuous light elements	24 230 AC/DC	Red	Α	8WD42 00-1AB	1	1 unit	41J
			Green	Α	8WD42 00-1AC	1	1 unit	41J
			Yellow	Α	8WD42 00-1AD	1	1 unit	41J
			Clear	Α	8WD42 00-1AE	1	1 unit	41J
			Blue	Α	8WD42 00-1AF	1	1 unit	41J
Light elements	with integrated LED							
SARAGE TO SARAGE	Continuous light elements	24 AC/DC	Red	А	8WD42 20-5AB	1	1 unit	41J
	•		Green	Α	8WD42 20-5AC	1	1 unit	41J
			Yellow	Α	8WD42 20-5AD	1	1 unit	41J
			Clear	Χ	8WD42 20-5AE	1	1 unit	41J
Tell 1			Blue	Χ	8WD42 20-5AF	1	1 unit	41J
	Blinklight elements	24 AC/DC	Red	Α	8WD42 20-5BB	1	1 unit	41J
AN THE			Green	Α	8WD42 20-5BC	1	1 unit	41J
			Yellow	Α	8WD42 20-5BD	1	1 unit	41J
			Clear	Α	8WD42 20-5BE	1	1 unit	41J
The same of			Blue	Α	8WD42 20-5BF	1	1 unit	41J
		115 AC	Red	Α	8WD42 40-5BB	1	1 unit	41J
(1) · 克图(1)			Green	Α	8WD42 40-5BC	1	1 unit	41J
II WILL			Yellow	Α	8WD42 40-5BD	1	1 unit	41J
			Clear	D	8WD42 40-5BE	1	1 unit	41J
0 0			Blue	D	8WD42 40-5BF	1	1 unit	41J
		230 AC	Red	Α	8WD42 50-5BB	1	1 unit	41J
MIE			Green	Α	8WD42 50-5BC	1	1 unit	41J
1000			Yellow	Α	8WD42 50-5BD	1	1 unit	41J
			Clear	Α	8WD42 50-5BE	1	1 unit	41J
			Blue	Α	8WD42 50-5BF	1	1 unit	41J
Adapter eleme	nts for AS-Interface							
	AS-Interface adapter elements with external auxiliary voltage	For 4 signaling elements 24 V DC	Black	А	8WD42 28-0BB	1	1 unit	41J
Connection ele		INTERPROCE						
SIEMENS	Connection elements with cover For mounting on pipes, floors and	angles	Black	Α	8WD42 08-0AA	1	1 unit	41J

 $[\]underline{^{1)}}$ $\underline{\text{One}}$ acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

Note:

For mounting and configuring aid see the publication "Versatile, robust, communication-capable: SIRIUS signaling columns and integrated signal lamps", Order No. E20001-A670-P305.

 $^{^{2)}\,}$ The lamp is not included in the scope of supply. Please order separately.

 $^{^{\}rm 3)}$ The connection element with cover is an essential part for assembling the signaling columns.

8WD4 Signaling Columns

8WD42 signaling columns, 50 mm diameter

	Version	Rated voltage	Color	DT	Order No.	PU (UNIT, SET, M)	PS
		V					
Lamps							
Land	Incandescent lamps, 5 W						
1	Base BA 15d	24 AC/DC		A	8WD43 28-1XX	1	10 units
		115 AC		A	8WD43 48-1XX	1	10 units
	LEDs	230 AC		Α	8WD43 58-1XX	1	10 units
SPIN	Base BA 15d	24 AC/DC	Red	Α	8WD44 28-6XB	1	1 unit
	Base Britisa	24710/00	Green	Α	8WD44 28-6XC	1	1 unit
			Yellow Clear	A	8WD44 28-6XD 8WD44 28-6XE	1 1	1 unit 1 unit
3			Blue	A A	8WD44 28-6XF	i	1 unit
		115 AC	Red	Α	8WD44 48-6XB	1	1 unit
			Green Yellow	A A	8WD44 48-6XC 8WD44 48-6XD	1 1	1 unit 1 unit
			Clear	A	8WD44 48-6XE	i	1 unit
			Blue	Α	8WD44 48-6XF	1	1 unit
		230 AC	Red Green	A A	8WD44 58-6XB 8WD44 58-6XC	1 1	1 unit 1 unit
			Yellow	A	8WD44 58-6XD	1	1 unit
			Clear Blue	A	8WD44 58-6XE 8WD44 58-6XF	1 1	1 unit
Mounting			Dide	А	0WD44 30-0AF	1	1 unit
	Feet, single	Plastic, for mounting on pipes		А	8WD43 08-0DB	1	1 unit
		Metal, for pipe lengths > 400 mm		Α	8WD43 08-0DC	1	1 unit
		Plastic, for floor mounting (without pipe)		Α	8WD42 08-0DE	1	1 unit
	Adjustable-angle feet for positioning in 7.5° increments ¹⁾	Plastic, for mounting on pipes, incl. rubber seal		Х	8WD44 08-0DF	1	1 unit
100	Pipes, single	Length 100 mm		Α	8WD42 08-0EF	1	1 unit
		Length 150 mm		Α	8WD43 08-0EE	1	1 unit
		Length 250 mm		Α	8WD43 08-0EA	1	1 unit
		Length 400 mm		Α	8WD43 08-0EB	1	1 unit
		Length 1000 mm		Α	8WD43 08-0ED	1	1 unit
	Sockets for feet	Side cable outlet		A	8WD43 08-0DD	1	1 unit
	Suckets for feet	Side Cable Outlet		А	6WD43 06-0DD	'	i unit
		Side cable outlet, with magnetic fixing ²⁾		А	8WD43 08-0DE	1	1 unit
THE	Brackets for mounting with foot			А	8WD44 08-0CC	1	1 unit
_	Brackets for wall mounting	Mounting without feet		Α	8WD42 08-0CD	1	1 unit
	(plastic)	and pipe					
	Adapters for single-hole mounting	Mounting without feet and pipe, with M18 thread and fixing nut		A	8WD42 08-0EH	1	1 unit

For labeling panels see 8WD44, page 10/118.

¹⁾ Markings for 30°, 45°, 60° and 90°.

²⁾ For horizontal mounting, only 1 element is recommended.

8WD4 Signaling Columns

8WD44 signaling columns, 70 mm diameter

Overview

Features:

- Thermoplast enclosure, diameter 70 mm
 Advanced design and significantly improved illumination
- Fast and flexible connection using spring-type terminals
- Integrated degree of protection IP65
- Up to 5 elements can be mounted

Selection and ordering data

	Version	Rated voltage	Color	DT	Order No.	PU (UNIT,	PS
		V				SET, M)	
Acoustic elem	ents ¹⁾	•					
	Buzzer elements 85 dB,	24 AC/DC	Black	А	8WD44 20-0FA	1	1 unit
夏 夏	pulsating or continuous tone, adjust-	115 AC		Α	8WD44 40-0FA	1	1 unit
	able by means of a wire jumper	230 AC		Α	8WD44 50-0FA	1	1 unit
	Siren elements,	24 AC/DC	Black	Α	8WD44 20-0EA2	1	1 unit
	multi-tone, 100 dB,	115 AC		Α	8WD44 40-0EA2	1	1 unit
	8 tones and volume are adjustable	230 AC		Α	8WD44 50-0EA2	1	1 unit
	Siren elements 108 dB, IP40	24 DC	Black	Α	8WD44 20-0EA	1	1 unit
Light elements	for incandescent lamps/LEDs, BA 1	5d bases ²⁾					
	Continuous light elements	12 230 AC/DC	Red	А	8WD44 00-1AB	1	1 unit
			Green	Α	8WD44 00-1AC	1	1 unit
			Yellow	Α	8WD44 00-1AD	1	1 unit
			Clear	Α	8WD44 00-1AE	1	1 unit
			Blue	Α	8WD44 00-1AF	1	1 unit
	Blinklight elements	24 AC/DC	Red	Α	8WD44 20-1BB	1	1 unit
			Green	Α	8WD44 20-1BC	1	1 unit
			Yellow	Α	8WD44 20-1BD	1	1 unit
			Clear	Α	8WD44 20-1BE	1	1 unit
			Blue	Α	8WD44 20-1BF	1	1 unit
Street and		115 AC	Red	Α	8WD44 40-1BB	1	1 unit
			Green	Α	8WD44 40-1BC	1	1 unit
			Yellow	Α	8WD44 40-1BD	1	1 unit
			Clear	Α	8WD44 40-1BE	1	1 unit
			Blue	Α	8WD44 40-1BF	1	1 unit
		230 AC	Red	Α	8WD44 50-1BB	1	1 unit
			Green	Α	8WD44 50-1BC	1	1 unit
			Yellow	Α	8WD44 50-1BD	1	1 unit
			Clear	Α	8WD44 50-1BE	1	1 unit
			Blue	Α	8WD44 50-1BF	1	1 unit
Light elements	s with integrated flash lamps ³⁾						
	Flashlight elements with integrated	24 DC	Red	Α	8WD44 20-0CB	1	1 unit
	electronic flash		Green	Α	8WD44 20-0CC	1	1 unit
			Yellow	Α	8WD44 20-0CD	1	1 unit
			Clear	Α	8WD44 20-0CE	1	1 unit
			Blue	Α	8WD44 20-0CF	1	1 unit
		115 AC	Red	Α	8WD44 40-0CB	1	1 unit
			Green	D	8WD44 40-0CC	1	1 unit
			Yellow	Α	8WD44 40-0CD	1	1 unit
			Clear	D	8WD44 40-0CE	1	1 unit
			Blue	D	8WD44 40-0CF	1	1 unit
		230 AC	Red	Α	8WD44 50-0CB	1	1 unit
			Green	Α	8WD44 50-0CC	1	1 unit
			Yellow	Α	8WD44 50-0CD	1	1 unit
			Clear	Α	8WD44 50-0CE	1	1 unit
Sea Barrier			Blue	Α	8WD44 50-0CF	1	1 unit

¹⁾ One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in

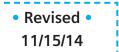
²⁾ The lamp is not included in the scope of supply. Please order separately.

³⁾ The lamp is included in the scope of supply.

8WD44 signaling columns, 70 mm diameter

	Version	Rated voltage	Color	DT	Order No.	PU (UNIT, SET, M)	PS
		V				- , ,	
Light elements	with integrated LED						
	Continuous light elements	24 AC/DC	Red	Α	8WD44 20-5AB	1	1 unit
			Green	Α	8WD44 20-5AC	1	1 unit
			Yellow	Α	8WD44 20-5AD	1	1 unit
			Clear	Α	8WD44 20-5AE	1	1 unit
			Blue	Α	8WD44 20-5AF	1	1 unit
		115 AC	Red	Α	8WD44 40-5AB	1	1 unit
			Green	Α	8WD44 40-5AC	1	1 unit
			Yellow	Α	8WD44 40-5AD	1	1 unit
			Clear	Α	8WD44 40-5AE	1	1 unit
			Blue	Α	8WD44 40-5AF	1	1 unit
		230 AC	Red	А	8WD44 50-5AB	1	1 unit
			Green	Α	8WD44 50-5AC	1	1 unit
			Yellow	Α	8WD44 50-5AD	1	1 unit
			Clear	Α	8WD44 50-5AE	1	1 unit
			Blue	Α	8WD44 50-5AF	1	1 unit
	Blinklight elements	24 AC/DC	Red	А	8WD44 20-5BB	1	1 unit
			Green	Α	8WD44 20-5BC	1	1 unit
			Yellow	Α	8WD44 20-5BD	1	1 unit
			Clear	Χ	8WD44 20-5BE	1	1 unit
			Blue	Α	8WD44 20-5BF	1	1 unit
		115 AC	Red	Α	8WD44 40-5BB	1	1 unit
and a			Green	Α	8WD44 40-5BC	1	1 unit
			Yellow	Α	8WD44 40-5BD	1	1 unit
			Clear	Α	8WD44 40-5BE	1	1 unit
Sea dilline			Blue	Α	8WD44 40-5BF	1	1 unit
		230 AC	Red	Α	8WD44 50-5BB	1	1 unit
			Green	Α	8WD44 50-5BC	1	1 unit
			Yellow	Α	8WD44 50-5BD	1	1 unit
			Clear	Α	8WD44 50-5BE	1	1 unit
			Blue	Α	8WD44 50-5BF	1	1 unit
	Rotating light elements	24 AC/DC	Red	Α	8WD44 20-5DB	1	1 unit
nge Hills and			Green	Α	8WD44 20-5DC	1	1 unit
			Yellow	Α	8WD44 20-5DD	1	1 unit
Adapter eleme	nts for AS-Interface						
Adapter ciente	AS-Interface adapter elements	•					
	With/without external auxiliary voltage,						
	switchable						
PAULT		/ BINTERFACE					
	A/B technology	For 3 signaling	Black	Α	8WD44 28-0BD	1	1 unit
Tallie	- A/B technology	elements 24 V DC	Diack	А	0WD44 20-0DD	'	1 UIIII
	Standard AS-i	For 4 signaling	Black	Α	8WD44 28-0BE	1	1 unit
Connection ele	ements ¹⁾	elements 24 V DC					
	Connection elements with cover		Black				
	Screw terminals		*****				
EAR	For mounting on pipes			А	8WD44 08-0AA	1	1 unit
(MARK)	For mounting on brackets and floors			Α	8WD44 08-0AB	1	1 unit
(1	Spring-type terminals			, ,			
	For mounting on pipes			Α	8WD44 08-0AD	1	1 unit
	For mounting on brackets and floors			Α	8WD44 08-0AE	1	1 unit
	Cover (replacement)			A	8WD44 08-0XA	1	1 unit
1)	Cover (replacement)			_	5.15 11 00 OAR		i uiiit

¹⁾ The connection element with cover is an essential part for assembling the signaling columns.



8WD44 signaling columns, 70 mm diameter

	Version		DT	Order No.	PU (UNIT, SET, M)	PS
Mounting						
	Foot with pipe	Plastic foot with pipe length 100 mm	А	8WD43 08-0DA	1	1 unit
	Feet, single	Plastic, for mounting on pipes	A	8WD43 08-0DB	1	1 unit
4	3.7.0	Metal, for pipe lengths > 400 mm	Α	8WD43 08-0DC	1	1 unit
	Adjustable-angle feet for positioning in 7.5° increments ¹⁾	Plastic, for mounting on pipes, incl. rubber seal	X	8WD44 08-0DF	1	1 unit
	Pipes, single	Length 100 mm	А	8WD42 08-0EF	1	1 unit
	r ipes, single	Length 150 mm	Α	8WD43 08-0EE	1	1 unit
		Length 250 mm	Α	8WD43 08-0EA	1	1 unit
		Length 400 mm	Α	8WD43 08-0EB	1	1 unit
		Length 1000 mm	Α	8WD43 08-0ED	1	1 unit
	Sockets for feet	Side cable outlet (can also be used without feet)	А	8WD43 08-0DD	1	1 unit
		Side cable outlet, with magnetic fixing ²⁾	Α	8WD43 08-0DE	1	1 unit
	Brackets for wall mounting (mounting without feet and pipe)	For single-sided mounting	A	8WD43 08-0CA	1	1 unit
		For double-sided mounting	А	8WD43 08-0CB	1	1 unit
	Brackets for mounting with foot		Α	8WD44 08-0CC	1	1 unit
(C)	Brackets for base mounting	Mounting without feet and pipe	A	8WD44 08-0CD	1	1 unit
Lo.						
	Adapter for mounting on pipes according to NPT	 Mounting on pipes, Ø 25 mm, with NPT 1/2" thread 	А	8WD43 08-0DF	1	1 unit

 $^{^{1)}}$ Markings for 30°, 45°, 60° and 90°.

Note:

For mounting and configuring aid see the publication "Versatile, robust, communication-capable: SIRIUS signaling columns and integrated signal lamps", Order No. E20001-A670-P305.

²⁾ For horizontal mounting, only 1 element is recommended.

8WD44 signaling columns, 70 mm diameter

	Version	Rated voltage	Color	DT	Order No.	PU (UNIT, SET, M)	PS
		V					
Lamps							
Par	Incandescent lamps, 5 W						
3/	Base BA 15d	24 AC/DC		Α	8WD43 28-1XX	1	10 units
		115 AC		Α	8WD43 48-1XX	1	10 units
		230 AC		Α	8WD43 58-1XX	1	10 units
S COM E	LEDs						
	Base BA 15d	24 AC/DC	Red Green Yellow Clear Blue	A A A A	8WD44 28-6XB 8WD44 28-6XC 8WD44 28-6XD 8WD44 28-6XE 8WD44 28-6XF	1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit
		115 AC	Red Green Yellow Clear Blue	A A A A	8WD44 48-6XB 8WD44 48-6XC 8WD44 48-6XD 8WD44 48-6XE 8WD44 48-6XF	1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit
		230 AC	Red Green Yellow Clear Blue	A A A A	8WD44 58-6XB 8WD44 58-6XC 8WD44 58-6XD 8WD44 58-6XE 8WD44 58-6XF	1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit
Inscriptions							
Störung Magazin Überhitzung Station 2 Maschine Hauft	Labeling panels With fixing accessories for mounting of Inscription area/ step 50 mm x 140 mm Suitable for standard labels, e.g. • Zweckform 3425 • Herma 4457			А	8WD44 08-0FA	1	1 unit

Push Button Units and Indicator Lights 8WD53 Beacons

8WD53 beacons, 70 mm diameter

Overview



Integrated signal lamps

Design

Features:

- Thermoplast enclosures, diameter 70 mm
- Degree of protection IP65
- Rated voltage 24 V, 115 V, 230 V AC/DC
- Ambient temperature -20 to +50 °C, incandescent lamp up to 60 °C

The special shape of the integrated signal lamps means that the light is emitted optimally in every direction (to the sides and upwards). Continuous lights (with incandescent lamp or LED) and single-flash lights are available in five colors.

The LED versions of the integrated signal lamps offer a considerably longer endurance than the incandescent lamp versions.

All integrated signal lamps have a high degree of protection IP65 and are made of a material highly resistant to impact.

Mounting

8WD53 integrated signal lamps can be mounted directly at any point of the machine for the purpose of giving visual signals. They are mounted by means of a PG29 screw base with nut.

Selection and ordering data

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS	PG
Luminaires fo	or incandescent lamps/LED, BA 15	V d base							
Lummanes re	Continuous light ¹⁾	12 230 AC/DC	Red	Α	8WD53 00-1AB		1	1 unit	41J
A WINNEY	3		Green	Α	8WD53 00-1AC		1	1 unit	41J
KIND			Yellow	Α	8WD53 00-1AD		1	1 unit	41J
1			Clear	Α	8WD53 00-1AE		1	1 unit	41J
1			Blue	Α	8WD53 00-1AF		1	1 unit	41J
Luminaires w	rith integrated flash lamp								
	Single-flash light with integrated	24 AC/DC	Red	Α	8WD53 20-0CB		1	1 unit	41J
y williams	electronic flash		Green	D	8WD53 20-0CC		1	1 unit	41J
5 1112			Yellow	Α	8WD53 20-0CD		1	1 unit	41J
The Late			Clear	Α	8WD53 20-0CE		1	1 unit	41J
			Blue	Α	8WD53 20-0CF		1	1 unit	41J
		115 AC	Red	Α	8WD53 40-0CB		1	1 unit	41J
1 Million			Green	D	8WD53 40-0CC		1	1 unit	41J
5 102			Yellow	D	8WD53 40-0CD		1	1 unit	41J
A STATE OF THE PARTY OF THE PAR			Clear	D	8WD53 40-0CE		1	1 unit	41J
			Blue	D	8WD53 40-0CF		1	1 unit	41J
		230 AC	Red	Α	8WD53 50-0CB		1	1 unit	41J
A WILLIAM WATER			Green	D	8WD53 50-0CC		1	1 unit	41J
5 1 10 2			Yellow	Α	8WD53 50-0CD		1	1 unit	41J
Name of the Party			Clear	Α	8WD53 50-0CE		1	1 unit	41J
			Blue	D	8WD53 50-0CF		1	1 unit	41J
Luminaires w	rith integrated LED								
	Continuous light	24 AC/DC	Red	Α	8WD53 20-5AB		1	1 unit	41J
TO THE REAL PROPERTY OF THE PAR			Green	Α	8WD53 20-5AC		1	1 unit	41J
等相拼型			Yellow	Α	8WD53 20-5AD		1	1 unit	41J
THE STATE OF THE S	Blinklight lamps	24 AC/DC	Red	Α	8WD53 20-5BB		1	1 unit	41J
11			Green	D	8WD53 20-5BC		1	1 unit	41J
			Yellow	A	8WD53 20-5BD		1	1 unit	41J
	Rotating light	24 AC/DC	Red	Α	8WD53 20-5DB		1	1 unit	41J
			Green	Α	8WD53 20-5DC		1	1 unit	41J

For incandescent lamps and LEDs see "Signaling Columns" page 10/118

A 8WD53 20-5DD

2

3

4

5

6

7

O ____

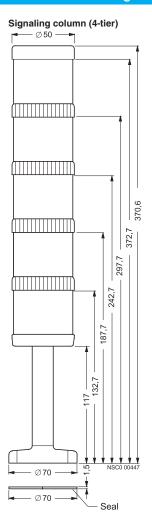
 \cap

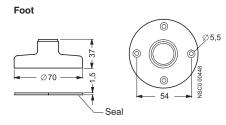
41J

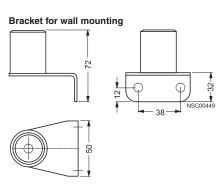
¹⁾ Lamp not included in scope of supply. Please order separately.

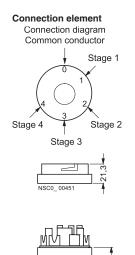
8WD4 Signaling Columns

Dimension drawings



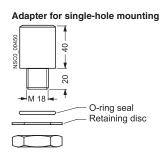






Ø21,6

Strain relief

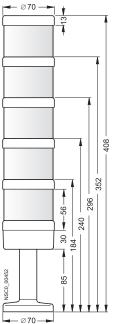


8WD4 Signaling Columns

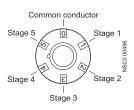
Dimension drawings

Dimension drawings

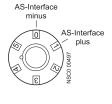
Signaling column (5-tier)



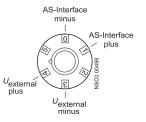
Connection diagrams



conventional

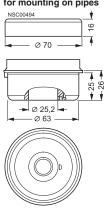


with AS-Interface, without external auxiliary voltage

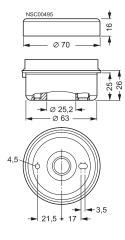


with external auxiliary voltage

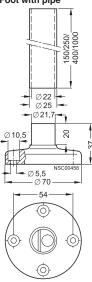
Connection element and cover for mounting on pipes



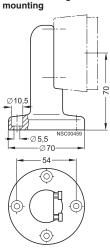
Connection element and cover for mounting on floor/bracket



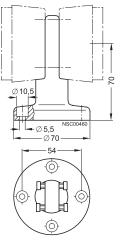
Foot with pipe



Bracket for single-sided



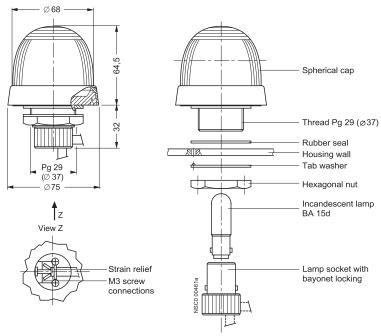
Bracket for double-sided mounting



8WD53 Beacons

Dimension drawings

Dimension drawings



Class 50 Standard Duty Pushbutton Stations

General

Features

- Snap In Legend Inserts
- Flush and Surface Mounted Types
- Convertible Selector
- **Double Break Contacts**
- Dual Voltage Pilot Light with Snap In Lens
- Conversion Kits
- UL Listed File #E22655
- CSA Certified File #LR6535

Application

Standard duty control stations are used with magnetic controllers to control the starting, stopping, reversing or speed of applicable motors.

Stations are assembled of one, two or three push button, selector switch or pilot light units in a variety of combinations to provide compact control units for remote control of magnetic starters and contactors.

Station enclosures are available in Type 1 surface mounted, 1B flush plate mounted and 4 watertight.

Features

Type 1 surface mounted bases are constructed of 14 gauge sheet steel, primed and finished in baked gray enamel. The base is predrilled to receive a variety of contact blocks, pilot lights and accessory devices. Covers are of 20 gauge sheet steel, wrap- around construction, primed and finished in baked gray enamel. Siemens Type 4 watertight heavy duty push button stations are supplied with a provision to padlock the stop button in the depressed position. Enclosures are predrilled and tapped for 3/4" conduit.

Contact blocks have double break, fine silver contacts with a NEMA B600 rating. Type 4 stations have a NEMA A600 rating.

The pilot light assembly is dual voltage with clearly marked pressure type terminals for 120 volt or 240 volt connection.

The lens of the pilot light snaps into the cover and is available in both red and green.

Push buttons are equipped with an operator into which a selected legend insert is snapped. Legend inserts are molded thermoplastic and come in a wide variety of legends and colors.

The selector switch operator can be instantly set for two or three positions at any time.

Mushroom Head

50ZMH mounts on any standard push button operator. The Mushroom Head is red molded thermoplastic, 1 1/2" in diameter, and provides a large operator for emergency stop or similar applications.

Mechanical Interlock

50ZAM is a base mounted zinc plate, dichromate dipped, steel assembly. When mounted in conjunction with Duplex Contact Block 50ZAC3 (one NO and one NO) the interlock prevents one contact from being closed while the other contact is closed.

Padlock Attachment Kit

50ZAL can be mounted to any Type 1 surface mounted station by the lower screw which fastens the cover to the station base. Made of heavy steel, chrome plated, the attachment provides for the padlocking of a push button in the depressed position or a selector switch in any position. When used with a push button operator, raised Legend Insert D53493003 (Red Stop) must be used.

Electrical Ratings

NEMA AC Ratings 50/60Hz

Nema B600 5 Continuous Amps

Volts	Make	Break
120	30	3
240	15	1.5
480	7.5	0.75
600	6	0.6
VA	3600	360

Ordering Information

- Legend Inserts see page 10/130.
- Accessories see page 10/130.



2 Push Buttons Surface Mounting, NEMA 1



1 Push Button **Surface Mounting**



1 Selector Switch Flush Mounting



2 Push Buttons Flush Mounting, NEMA 1B



2 Push Buttons 1 Selector Switch



1 Pilot Light 2 Push Buttons

Class 50 Standard Duty Pushbutton Stations

5A 600V AC NEMA B600

Selection	and	ordering	data
-----------	-----	----------	------

Selection and ord	dering data					
	Operator identification	Degree of protection	Contacts / voltage	Number of command points	Order No.	
1 unit surface mount-momentary	A = Momentary flush pushbutton green, surface, label "START"	NEMA 1	1NO - 1NC with common jumper (50ZAC1)	1	50AA3D	
pushbutton	A = Momentary flush pushbutton red, surface, label "STOP"	NEMA 1	1NO - 1NC with common jumper (50ZAC1)	1	50AA3E	
	A = Momentary raised pushbutton red, surface, label "STOP"	NEMA 1	1NO - 1NC with common jumper (50ZAC1)	1	50AA3F	
	A = Momentary mushroom head red, surface, label "STOP"	NEMA 1	1NO - 1NC with common jumper (50ZAC1)	1	50AA3G	
STOP	A = Momentary flush pushbutton less insert, surface	NEMA 1	1NO - 1NC with common jumper (50ZAC1)	1	50AA3A	
0 =	A = 3 position selector switch, surface, label "HAND-OFF-AUTO"	NEMA 1	2 NO 2SPST (50ZAC8)	1	50AA3C3	
	A = 2 position selector switch, surface, label "Off-On"	NEMA 1	2 NO 2SPST (50ZAC8)	1	50AA3C6	
	A = 2/3 selector switch, surface, multiple legends	NEMA 1	2 NO 2SPST (50ZAC8)	1	50AA3B9	
	A = Indicator light, red, surface	NEMA 1	120/240V dual voltage 120PSB lamp	1	50BA3Y	
	A = Indicator light, green, surface	NEMA 1	120/240V dual voltage 120PSB lamp	1	50BA3Z	
	A = Indicator light, less lens, surface	NEMA 1	120/240V dual voltage 120PSB lamp	1	50BA32	
	A = Momentary flush pushbutton green, flush, label "START"	NEMA 1B	1NO - 1NC with common jumper (50ZAC1)	1	50AA2D	
1 unit flush	A = Momentary flush pushbutton red, flush, label "STOP"	NEMA 1B	1NO - 1NC with common jumper (50ZAC1)	1	50AA2E	
mount-momentary pushbutton	A = Momentary raised pushbutton red, flush, label "STOP"	NEMA 1B	1NO - 1NC with common jumper (50ZAC1)	1	50AA2F	
(6)	A = Momentary flush pushbutton less insert, flush	NEMA 1B	1NO - 1NC with common jumper (50ZAC1)	1	50AA2A	
	A = Momentary flush pushbutton less insert, flush, chrome plate	NEMA 1B	1NO - 1NC with common jumper (50ZAC1)	1	50AA6A	
	A = 3 position selector switch, flush, label "HAND-OFF-AUTO"	NEMA 1B	2 NO 2SPST (50ZAC8)	1	50AA2C3	
	A = 3 position selector switch, flush, label "Off-On"	NEMA 1B	2 NO 2SPST (50ZAC8)	1	50AA2C6	
	A = 2/3 selector switch, multiple legends, flush	NEMA 1B	2 NO 2SPST (50ZAC8)	1	50AA2B9	
	A = 2/3 selector switch, multiple legends, chrome plate, flush	NEMA 1B	2 NO 2SPST (50ZAC8)	1	50AA6B9	
	A = Indicator light, red, flush	NEMA 1B	120/240V dual voltage	1	50BA2Y	
	A = Indicator light, green, flush	NEMA 1B	120/240V dual voltage	1	50BA2Z	
	A = Indicator light, less lens, flush	NEMA 1B	120/240V dual voltage	1	50BA22	
	A = Indicator light, less lens, chrome plate, flush	NEMA 1B	120PSB lamp	1	50BA62	
2 unit surface	B = Momentary pushbutton green, surface, label "START" A = Momentary pushbutton red, surface, label "STOP"	NEMA 1	1NO, 1NC (50ZAC2)	2	50CA3DE	
mount-momentary pushbutton	B = Momentary pushbutton green, surface, label "START" A = Momentary raised pushbutton red, surface, label "STOP"	NEMA 1	1NO, 1NC (50ZAC2)	2	50CA3DF	
	B = Momentary pushbutton green, surface, label "START" A = Momentary mushroom head pushbutton red, surface, label "STOP"	NEMA 1	1NO, 1NC (50ZAC2)	2	50CA3DG	
	D M 1 11 11 1 1 1	NIENAA 4	410 410 (5074.00)		5004044	



B = Momentary pushbutton, less insert,

A = Momentary pushbutton, less insert,

B = Momentary pushbutton, surface, label "FORWARD"

A = Momentary pushbutton, surface, label "REVERSE"

surface

NEMA 1

NEMA 1

1NO, 1NC (50ZAC2)

2 NO (50ZAC3)

50CA3AA

50DA3KL

2

2

Packs

Class 50 Standard Duty Pushbutton Stations

5A 600V AC NEMA B600

Selection and ordering data

2 unit surface mount-momentary pushbutton



or	dering data					
				Number	Order No.	Packs
	Onevetor identification	Degree of protection	Contacts / voltage	of com- mand points		
	Operator identification	NITNAN 1	0 NO (F07A C0)	2	50DA3HJ	Unit 1
у	B = Momentary pushbutton, surface, label "OPEN" A = Momentary pushbutton, surface, label "CLOSE"	NEMA 1	2 NO (50ZAC3)	2	SUDASHJ	'
	B = Momentary pushbutton, surface, label "UP" A = Momentary pushbutton, surface, label "DOWN"	NEMA 1	2 NO (50ZAC3)	2	50DA3NP	1
	B = Momentary pushbutton, surface, less insert A = Momentary pushbutton, surface, less insert	NEMA 1	2 NO (50ZAC3)	2	50DA3AA	1
	B = Momentary pushbutton, surface, label "FORWARD" A = Momentary pushbutton, surface, label "REVERSE"	NEMA 1	2 NO mechanically inter- locked (50ZA3C w/ 50ZAM)	2	50RA3KL	1
	B = Momentary pushbutton, surface, label "OPEN" A = Momentary pushbutton, surface, label "CLOSE"	NEMA 1	2 NO mechanically inter- locked (50ZA3C w/ 50ZAM)	2	50RA3HJ	1
	B = Momentary pushbutton, surface, label "UP" A = Momentary pushbutton, surface, label "DOWN"	NEMA 1	2 NO mechanically inter- locked (50ZA3C w/ 50ZAM)	2	50RA3NP	1
	B = Momentary pushbutton, surface, label "ON" A = Momentary pushbutton, surface, label "OFF"	NEMA 1	2 NO mechanically inter- locked (50ZA3C w/ 50ZAM)	2	50RA334	1
	B = Momentary pushbutton, less insert surface A = Momentary pushbutton, less insert, surface	NEMA 1	2 NO mechanically inter- locked (50ZA3C w/ 50ZAM)	2	50RA3AA	1
	B = Momentary pushbutton, surface, label "FORWARD" A = Momentary pushbutton, surface, label "REVERSE"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2)	2	50EA3KL	1
	B = Momentary pushbutton, surface, label "OPEN" A = Momentary pushbutton, surface, label "CLOSE"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2)	2	50EA3HJ	1
	B = Momentary pushbutton, surface, label "UP" A = Momentary pushbutton, surface, label "DOWN"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2)	2	50EA3NP	1
	B = Momentary pushbutton, surface, label "ON" A = Momentary pushbutton, surface, label "OFF"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2)	2	50EA334	1
	B = Momentary pushbutton, surface, less insert A = Momentary pushbutton, surface, less insert	NEMA 1	2 NO, 2 NC (2 - 50ZAC2)	2	50EA3AA	1
у	B = Momentary pushbutton green, flush, label "START" A = Momentary pushbutton red, flush, label "STOP"	NEMA 1B	1NO, 1NC (50ZAC2)	2	50CA2DE	1
	B =Momentary pushbutton, less insert, flush A = Momentary pushbutton, less insert, flush	NEMA 1B	1NO, 1NC (50ZAC2)	2	50CA2AA	1
	B = Momentary pushbutton green, flush, label "START" A = Momentary raised pushbutton red, flush, label "STOP"	NEMA 1B	1NO, 1NC (50ZAC2)	2	50CA2DF	1
	B = Momentary pushbutton green, flush,	NEMA 1B	1NO, 1NC (50ZAC2)	2	50CA2DG	1

2 unit flush mount-momentary pushbutton



B = Momentary pushbutton green, flush, label "START" 1NO, 1NC (50ZAC2) A = Momentary mushroom head pushbutton red, flush, label "STOP" B = Momentary pushbutton, less insert, flush NEMA 1B 1NO, 1NC (50ZAC2) 50CA6AA A = Momentary pushbutton, less insert, flush

5A 600V AC NEMA A600

Selection and ordering data

mount-momentary pushbutton

			Number	Order No.	Pa
	Degree of protection	Contacts / voltage	of com- mand		
perator identification	5.010011011		points		Un
B = Momentary pushbutton, flush, label "FORWARD" a = Momentary pushbutton, flush, label "REVERSE"	NEMA 1B	2 NO (50ZAC3)	2	50DA2KL	
= Momentary pushbutton, flush, label "OPEN" = Momentary pushbutton, flush, label "CLOSE"	NEMA 1B	2 NO (50ZAC3)	2	50DA2HJ	
= Momentary pushbutton, flush, label "UP" = Momentary pushbutton, flush, label "DOWN"	NEMA 1B	2 NO (50ZAC3)	2	50DA2NP	
= Momentary pushbutton, less insert, flush = Momentary pushbutton, less insert, flush	NEMA 1B	2 NO (50ZAC3)	2	50DA2AA	
Momentary pushbutton, less insert, chrome plate, flush Momentary pushbutton, less insert, chrome plate, flush	NEMA 1B	2 NO (50ZAC3)	2	50DA6AA	
= Momentary pushbutton, flush, label "FORWARD" = Momentary pushbutton, flush, label "REVERSE"	NEMA 1B	2 NO mechanically interlocked (50ZA3C w/ 50ZAM)	2	50RA2KL	
= Momentary pushbutton, flush, label "OPEN" = Momentary pushbutton, flush, label "CLOSE"	NEMA 1B	2 NO mechanically interlocked (50ZA3C w/ 50ZAM)	2	50RA2HJ	
= Momentary pushbutton, flush, label "UP" = Momentary pushbutton, flush, label "DOWN"	NEMA 1B	2 NO mechanically interlocked (50ZA3C w/ 50ZAM)	2	50RA2NP	
= Momentary pushbutton, flush, label "ON" = Momentary pushbutton, flush, label "OFF"	NEMA 1B	2 NO mechanically interlocked (50ZA3C w/ 50ZAM)	2	50RA234	
= Momentary pushbutton, less insert, flush = Momentary pushbutton, less insert, flush	NEMA 1B	2 NO mechanically interlocked (50ZA3C w/ 50ZAM)	2	50RA2AA	
Momentary pushbutton, less insert, chrome plate, flush Momentary pushbutton, less insert, chrome plate, flush	NEMA 1B	2 NO mechanically interlocked (50ZA3C w/ 50ZAM)	2	50RA6AA	
= Momentary pushbutton, flush, label "FORWARD" = Momentary pushbutton, flush, label "REVERSE"	NEMA 1B	2 NO, 2 NC (2 - 50ZAC2)	2	50EA2KL	
= Momentary pushbutton, flush, label "OPEN" = Momentary pushbutton, flush, label "CLOSE"	NEMA 1B	2 NO, 2 NC (2 - 50ZAC2)	2	50EA2HJ	
= Momentary pushbutton, flush, label "UP" = Momentary pushbutton, flush, label "DOWN"	NEMA 1B	2 NO, 2 NC (2 - 50ZAC2)	2	50EA2NP	
= Momentary pushbutton, flush, label "ON" = Momentary pushbutton, flush, label "OFF"	NEMA 1B	2 NO, 2 NC (2 - 50ZAC2)	2	50EA234	
= Momentary pushbutton, less insert, flush = Momentary pushbutton, less insert, flush	NEMA 1B	2 NO, 2 NC (2 - 50ZAC2)	2	50EA2AA	
= Momentary pushbutton, less insert, chrome plate, flush = Momentary pushbutton, less insert, chrome plate, flush	NEMA 1B	2 NO, 2 NC (2 - 50ZAC2)	2	50EA6AA	

5A 600V AC NEMA B600

Selection and ordering data

	dering data					
	Operator identification	Degree of protection	Contacts / voltage	Number of command points	Order No.	Packs Unit
2 unit surface mount-momentary pushbutton and	B = Momentary pushbutton green, surface, label "START" A = Maintained selector switch, surface, label	NEMA 1	1NO, 1NC (50ZAC1) 2 NO 2SPDT w/ common	2	50FA3DC3	1
selector switch	"HAND-OFF-AUTO" B = Momentary pushbutton less insert, surface	NEMA 1	jumper (50ZAC8) 1NO, 1NC (50ZAC1)	2	50FA3AB9	1
	A = Maintained selector switch, multiple legends, surface	NLIVIA	2 NO 2SPDT w/ common jumper (50ZAC8)	۷	SUPAGADS	'
	B = Indicator light, red, surface A = Maintained selector switch, surface, label "HAND-OFF-AUTO"	NEMA 1	120/240V dual voltage (120PSB lamp) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50HA3YC3	1
2 unit surface mount-momentary pushbutton and indicator light	B = Indicator light, red, surface A = Maintained selector switch, multiple legends, surface	NEMA 1	120/240V dual voltage (120PSB lamp) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50HA32B9	1
manacor ngm	B = Indicator light, green, surface A = Indicator light, red, surface	NEMA 1	120/240V dual voltage (120PSB lamp)	2	50GA3ZY	1
	B = Indicator light, less lens, surface A = Indicator light, less lens, surface	NEMA 1	120/240V dual voltage (120PSB lamp)	2	50GA322	1
2 unit flush mount-momentary pushbutton and selector switch	B = Momentary pushbutton green, flush, label "START" A = Maintained selector switch, flush, label "HAND-OFF-AUTO"	NEMA 1B	1NO, 1NC (50ZAC1) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50FA2DC3	1
	B = Momentary pushbutton less insert, flush A = Maintained selector switch, multiple legends, flush	NEMA 1B	1NO, 1NC (50ZAC1) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50FA2AB9	1
	B = Momentary pushbutton less insert chrome plate, flush A = Maintained selector switch, multiple legends, flush	NEMA 1B	1NO, 1NC (50ZAC1) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50FA6AB9	1
	B = Indicator light, red, flush A = Maintained selector switch, flush, label "HAND-OFF-AUTO"	NEMA 1B	120/240V dual voltage (120PSB lamp) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50HA2YC3	1
	B = Indicator light, less lens, flush A = Maintained selector switch, multiple legends, flush	NEMA 1B	120/240V dual voltage (120PSB lamp) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50HA22B9	1
	B = Indicator light, less lens, chrome plate, flush A = Maintained selector switch, multiple legends, flush	NEMA 1B	120/240V dual voltage (120PSB lamp) 2 NO 2SPDT w/ common jumper (50ZAC8)	2	50HA62B9	1
2 unit flush mount-momentary	B = Indicator light, green, flush A = Indicator light, red, flush	NEMA 1B	120/240V dual voltage (120PSB lamp)	2	50GA2ZY	1
pushbutton and indicator light	B = Indicator light, less lens, flush A = Indicator light, less lens, flush	NEMA 1B	120/240V dual voltage (120PSB lamp)	2	50GA222	1
	B = Indicator light, less lens, chrome plate, flush A = Indicator light, less lens, chrome plate, flush	NEMA 1B	120/240V dual voltage (120PSB lamp)	2	50GA622	1
3 unit surface mount-momentary pushbutton	C = Momentary pushbutton, surface, label "FORWARD" B = Momentary pushbutton, surface, label "REVERSE" A = Momentary pushbutton, surface, label	NEMA 1	2 NO, 2 NC (2 - 50ZAC2) 1NO - 1NC with common jumper (50ZAC1)	3	50MA3KLE	1
	"STOP" C = Momentary pushbutton, surface, label "UP" B = Momentary pushbutton, surface, label "DOWN" A = Momentary pushbutton, surface, label "STOP"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2) 1NO - 1NC with common jumper (50ZAC1)	3	50MA3NPE	1
	C = Momentary pushbutton, surface, label "OPEN" B = Momentary pushbutton, surface, label "CLOSE" A = Momentary pushbutton, surface, label "STOP"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2) 1NO - 1NC with common jumper (50ZAC1)	3	50MA3HJE	1

5A 600V AC NEMA B600

Selection and ordering data

Selection and ord	iering data					
				Number	Order No.	Packs
	On analysis of the state of the	Degree of protection	Contacts / voltage	of com- mand points		
3 unit surface mount-momentary pushbutton	Operator identification C = Momentary pushbutton, surface, label "FAST" B = Momentary pushbutton, surface, label "SLOW" A = Momentary pushbutton, surface, label "STOP"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2) 1NO - 1NC with common jumper (50ZAC1)	3	50MA3TUE	Unit 1
	C = Momentary pushbutton, surface, label "START" B = Momentary pushbutton, surface, label "JOG" A = Momentary pushbutton, surface, label "STOP"	NEMA 1	2 NO, 2 NC (2 - 50ZAC2) 1NO - 1NC with common jumper (50ZAC1)	3	50MA3DME	1
	C = Momentary pushbutton, surface, label less insert B = Momentary pushbutton, surface, label less insert A = Momentary pushbutton, surface. label less insert	NEMA 1	2 NO, 2 NC (2 - 50ZAC2) 1NO - 1NC with common jumper (50ZAC1)	3	50MA3AAA	1
3 unit surface mount-momentary pushbutton and selector switch	C = Momentary pushbutton, surface, label "START" B = Momentary pushbutton, surface, label "STOP" A = Maintained selector switch, surface, label "HAND-OFF-AUTO"	NEMA 1	1 NO, 1 NC (50ZAC2) 2 NO, 2 SPST with common jumper (50ZAC8)	3	50LA3DEC3	1
	C = Momentary pushbutton, less insert, surface B = Momentary pushbutton, less insert, surface A = Maintained selector switch, multiple legends, surface	NEMA 1	1 NO, 1 NC (50ZAC2) 2 NO, 2 SPST with common jumper (50ZAC8)	3	50LA3AAB9	1
3 unit surface mount-momentary pushbutton and indicator light	C = Indicator light, red, surface B = Momentary pushbutton, surface, label "START" A = Momentary pushbutton, surface, label "STOP"	NEMA 1	120/240V dual voltage (120PSB lamp) 1 NO, 1 NC (50ZAC2)	3	50JA3YDE	1
	C = Indicator light, green, surface B = Momentary pushbutton, surface, label "START" A = Momentary pushbutton, surface, label "STOP"	NEMA 1	120/240V dual voltage (120PSB lamp) 1 NO, 1 NC (50ZAC2)	3	50JA3ZDE	1
	C = Indicator light, less lens, surface B = Momentary pushbutton, less insert, surface A = Momentary pushbutton, less insert, surface	NEMA 1	120/240V dual voltage (120PSB lamp) 1 NO, 1 NC (50ZAC2)	3	50JA32AA	1
	C = Indicator light, green, surface B = Indicator light, red, surface A = Maintained selector switch, surface, label "HAND-OFF-AUTO"	NEMA 1	120/240V dual voltage (120PSB lamp) 2 NO, 2 SPST with common jumper (50ZAC8)	3	50NA3ZYC3	1
	C = Indicator light, less lens, surface B = Indicator light, less lens, surface A = Maintained selector switch, multiple legends, surface	NEMA 1	120/240V dual voltage (120PSB lamp) 2 NO, 2 SPST with common jumper (50ZAC8)	3	50NA322B9	1

Class 50 Standard Duty Pushbutton Stations

Number

2

2

50HA2E3

50HA2E4

Heavy duty - 10A 600V AC NEMA A600

Order No.

Selection and ordering data

C	
3	4

			1 401111001	Craci i to.	1 40140
Operator identification	Degree of protection	Contacts / voltage	of com- mand points		Unit
A = Momentary pushbutton green, surface, label "START""	NEMA 4	1NO - 1NC	1	50HA1E1	1
A = Momentary pushbutton red, surface, label "STOP"	NEMA 4	1NO - 1NC	1	50HA1E2	1
A = Momentary pushbutton green, surface, label "RESET"	NEMA 4	1NO - 1NC	1	50HA1E4	1
A = Momentary pushbutton green, surface, label "JOG"	NEMA 4	1NO - 1NC	1	50HA1E5	1
A = Maintained selector switch, surface, label "SAFE-RUN"	NEMA 4	1NO - 1NC	1	50HA1E6	1
A = Maintained selector switch, surface, label "OFF-ON"	NEMA 4	1NO - 1NC	1	50HA1E7	1
A = Maintained selector switch, surface, label "JOG-RUN"	NEMA 4	1NO - 1NC	1	50HA1E8	1
A = Maintained selector switch, surface, label "HAND-OFF-AUTO"	NEMA 4	1NO - 1NC	1	50HA1E9	1
B = Momentary pushbutton green, surface, label "START"	NEMA 4	1NO - 1NC	2	50HA2E1	1
A = Momentary pushbutton red, surface, label "STOP"		1NO - 1NC			
B = Momentary pushbutton green, surface, label "FORWARD"	NEMA 4	1NO - 1NC	2	50HA2E2	1

1NO - 1NC

1NO - 1NC

1NO - 1NC

1NO - 1NC

NEMA 4

NEMA 4



A = Momentary pushbutton red, surface, label "REVERSE"

A = Momentary pushbutton red, surface, label

B = Momentary pushbutton green, surface, label "UP"

B = Momentary pushbutton green, surface, label "OPEN"



	1NO - 1NC			
NEMA 4	1NO - 1NC	2	50HA2E5	1
	1NO - 1NC			
NEMA 4	1NO - 1NC	3	50HA3E1	1
	1NO - 1NC			
	1NO - 1NC			
NEMA 4	1NO - 1NC	3	50HA3E2	1
	1NO - 1NC			
	1NO - 1NC			
NEMA 4	1NO - 1NC	3	50HA3E3	1
	1NO - 1NC			
	1NO - 1NC			
NEMA 4	1NO - 1NC	3	50HA3E9	1
	1NO - 1NC			
	1NO - 1NC			
NEMA 4	1NO - 1NC	3	50HA3E4	1
	1NO - 1NC			
	1NO - 1NC			
	NEMA 4 NEMA 4	NEMA 4 1NO - 1NC	NEMA 4 1NO - 1NC 2 1NO - 1NC NEMA 4 1NO - 1NC 3 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 3 1NO - 1NC 1NO - 1NC 3 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 3 1NO - 1NC 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3 1NO - 1NC 3	NEMA 4 1NO - 1NC 2 50HA2E5 1NO - 1NC NEMA 4 1NO - 1NC 3 50HA3E1 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 3 50HA3E2 NEMA 4 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC 1NO - 1NC NEMA 4 1NO - 1NC 1NO - 1NC 3 50HA3E3 50HA3E3

Siemens Industry, Inc. Industrial Controls Catalog Packs

Standard duty station accessories

Selection and ordering data

Legend inscription insert for snap-on mounting

Inscription	Color	Order No.	Pack
			Unit
Close	Orange	50D53493005	1
Down	Orange	50D53493010	1
Fast	Black	50D53493013	1
Forward	Green	50D53493006	1
High	Black	50D53493015	1
Hoist	Green	50D53493011	1
Jog	Black	50D53493008	1
Low	Black	50D53493016	1
Lower	Orange	50D53493012	1
Off	Red	50D53493018	1
On	Green	50D53493017	1
Open	Green	50D53493004	1
Reverse	Orange	50D53493007	1
Slow	Black	50D53493014	1
Start	Green	50D53493001	1
Stop	Red	50D53493002	1
Stop (raised)	Red	50D53493003	1
Up	Green	50D53493009	1

50ZAC1	0 0 0 0 0 50ZAC2
50ZAC8	50ZAC3

Version	Suitable for	Color	Order No.	Pack
				Unit
Mushroom head		Red	50ZMH	1
Padlock attachment	Used only for raised buttons		50ZAL	1
Mechanical interlock kit			50ZAM	1
Contact blocks 1NO, 1NC 2NO, 2SPST 1NO, 1NC 1NO, 1NO	Single button Selector switch Two button Two button		50ZAC1 50ZAC8 50ZAC2 50ZAC3	1 1 1 1
Pilot light	120/240V Dual Voltage, no len	ıs	50ZAC6	1
Pilot light lens		Red Green	50ZPL01 50ZPL02	1
Replacement lamps Slide base, lamp type 120PSB	Class 50 type 1, 1B 120V		50D21983001	1

Heavy duty station accessories

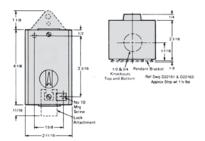
Version	Suitable for	Color	Order No.	Pack
				Unit
Pushbutton caps	NEMA 4 control stations	Red	BHP15X	1
	NEMA 4 control stations	Black	BHP16X	1

Pushbutton Units and Indicator Lights

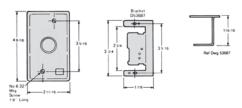
Class 50 Standard Duty Pushbutton Stations

Standard duty - 5A 600V AC NEMA B600

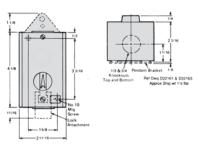
1 Unit Station Surface Mounting—Type 1



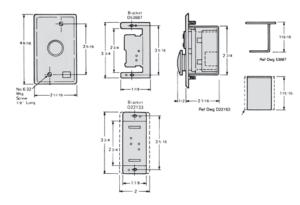
1 Unit Station Flush Mounting—Type 1B



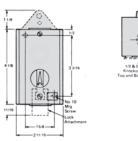
2 Pushbutton Stations Surface Mounting—Type 1



2 Pushbutton Stations Flush Mounting—Type 1B

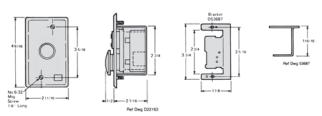


2 Unit Stations Surface Mounting—Type 1

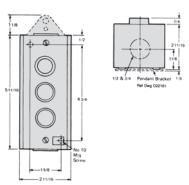




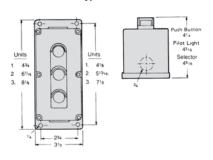
2 Unit Station Flush Mounting—Type 1B



3 Unit Stations Surface Mounting



1 Unit Stations—Type 4



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Pushbutton Units and Indicator Lights

Class 51 Pilot Devices

Hazardous location

Features

- UL Listed and cUL Listed for Class I, Groups C & D and Class II, Groups E, F & G
- Short or Long Bushing Lengths
- Mount into 3/4-14 NPSM Threaded Hole
- Sealing Lock Nut
- Similar in Appearance to Class 52 Oil Tight Pilot Devices
- Double Break Bifurcated Contacts Rated AC NEMA A600, DC NEMA P600
- Positively Driven Contacts
- Touchsafe Terminals
- UL Listed File # E39935

Application

When properly installed in a Type 7 & 9 en-closure, these components meet the National Electrical Code's requirements for Class I, Division 1 & 2, Groups C and D hazardous gases, Class II, Division 1, Groups E, F and G hazardous dust, and Class III, hazardous fibers and flyings. Class 51 pilot de-vices may be used in a location where the presence of flammable gases, vapors or finely pulverized dusts in the atmosphere are sufficient to create a threat of explosion or fire. They may also be required where easily ignitable fibers or flyings are present. Short bushing units are used in most standard Type 7 & 9 enclosures. Long bushings are used when an additional front panel is required or in enclosures up to 2 V8 inches thick. Class 51 devices also meet Type 4 applications.

Rugged

Hazardous location control units are durable one piece castings of a corrosion resistant copper free aluminum alloy with stainless steel springs and type 316 stainless steel shafts to provide a long dependable life. The "0" ring ensures the longest seal life available. Contact blocks have double break bifurcated contacts for increased reliability.

Flexible

Control units mount into industry standard 3/4-14 NPSM threaded holes. Both short bushings for enclosure mounting and long bushings for panel mounting are available.

Pilot light bulbs are removable from the front for ease of maintenance. Many common parts between the Class 51 hazardous location pilot devices and the Class 52 oil tight pilot devices allow for increased serviceability with fewer parts.

Industrial Appearance

Hazardous location control units add luster to panels. They are uniform in appearance and match 52 Class oil tight pilot devices.

Typical Applications

Class I

Class II

Class III

Electrical Ratings

NEMA AC Ratings 50/60Hz

Nema A600 10 Continuous Amps

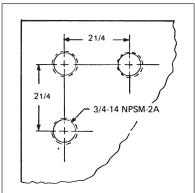
Volts	Make	Break
120	60	6
240	30	3
480	15	1.5
600	12	1.2
VA	7200	720

Ordering Information

- Accessories see page 10/140-10/141.
- Selector Operating Position and Contact Operation page 10/138.
- Legend Plates see page 10/177.
- Enclosures see page 10/139.
- Technical Specifications: page 10/179.

Sealing 3/4-inch Octagonal-'0" Ring Lock Nut Lock Nut NPSM Thread Molded-Contact Blocks Acrylic Rated A600/P600 Acutuator Stainless Steel Spring IP20 Touch Safe Copper-Free Terminals Additional Lock Nut 316 Stainless Aluminum Alloy Provided on Long Steel Shaft Construction **Bushing Units**

Panel Spacing



Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Operators only

Selection	and	ordering	data

Selection and orderin	g data				
	Version	Color of Contacts operator	Short bushing Order No.	Long bushing Order No.	Pack
Pushbutton with flat cap	Pushbutton with flush cap	Black Red Green	51PA8A1 51PA8A2 51PA8A3	51PA8A1LB 51PA8A2LB 51PA8A3LB	Unit 1 1 1
Pushbutton with extended cap	Pushbutton with extended cap	Black Red Green	51PA8B1 51PA8B2 51PA8B3	51PA8B1LB 51PA8B2LB 51PA8B3LB	1 1 1 1
Dual pushbutton	Dual Pushbutton	Flush Black Raised Red	51PD8A1B2	51PD8A1B2LB	1
	Pushbutton with mushroom cap 1 5/8"(41.3mm)	Black Red Green	51PA9D1 51PA9D2 51PA9D3	51PA9D1LB 51PA9D2LB 51PA9D3LB	1 1 1
	Pushbutton with mushroom cap 2 1/2'(63.5mm)	Black Red Green Less head	51PA9E1 51PA9E2 51PA9E3 51PA9	51PA9E1LB 51PA9E2LB 51PA9E3LB 51PA9LB	1 1 1 1 1
2 position push-pull	2 Position Push Pull Maintained, Non Illuminated Small Plastic Mushroom Head, 1 5/8" (41.3 mm)	Black Red Green	51PA2D1 51PA2D2 51PA2D3	51PA2D1LB 51PA2D2LB 51PA2D3LB	1 1 1
	Large Plastic Mushroom Head, 2 1/4" (57.2 mm)	Black Red Green Less head	51PA2E1 51PA2E2 51PA2E3 51PA2	51PA2E1LB 51PA2E2LB 51PA2E3LB 51PA2LB	1 1 1 1 1
	2 Position Push Pull Maintained, Non Illuminated Small Mushroom Head, 1 5/8"(41.3mm)	Red 1NC + 1NC	D 51PA2D1A D 51PA2D2A D 51PA2D3A	51PA2D1LBA 51PA2D2LBA 51PA2D3LBA	1 1 1
	Large Mushroom Head, 2 1/2*(63.5mm)	Red 1NC + 1NC	D 51PA2E1A D 51PA2E2A D 51PA2E3A	51PA2E1LBA 51PA2E2LBA 51PA2E3LBA	1 1 1
3 position push-pull	3 Position Push Pull Momentary, Non Illuminated Small Mushroom Head, 1 5/8"(41.3mm)	Red 1NC + 1NC	51PA3A1U 51PA3A2U 51PA3A3U	51PA3A1ULB 51PA3A2ULB 51PA3A3ULB	1 1 1

Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Indicator light

Selection and ordering data

	Version	Color of Operator	Contacts	Short bushing Order No.	Long bushing Order No.	Pack
		operator		Order No.	Order No.	Unit
Indicator light- full voltage	Indicator light with glass lens - Full voltage type AC/DC (with 6" pigtail leads) 1) 3) Operators with Incandescent Lamp 6-8V with 755 type	Red Green Amber Less lens		51PC5B2 51PC5B3 51PC5B9 51PC5BN	51PC5B2LB 51PC5B3LB 51PC5B9LB 51PC5BNLB	1
	12V with 756 type	Red Green Amber Less lens		51PC5C2 51PC5C3 51PC5C9 51PC5CN	51PC5C2LB 51PC5C3LB 51PC5C9LB 51PC5CNLB	1
	24V with 757 type	Red Green Amber Less lens		51PC5D2 51PC5D3 51PC5D9 51PC5DN	51PC5D2LB 51PC5D3LB 51PC5D9LB 51PC5DNLB	1
	Operators with LED Lamp ²) 6-8V with BA9 type LED	Red Green Amber		51PE5B2 51PE5B3 51PE5B9	51PE5B2LB 51PE5B3LB 51PE5B9LB	1
	24V with BA9 type LED	Red Green Amber		51PE5D2 51PE5D3 51PE5D9	51PE5D2LB 51PE5D3LB 51PE5D9LB	1
Indicator light-	Indicator light with glass lens - Transformer type AC/DC ¹) ³) Operators with Incandescent Lamp 120V with 6V 755 type lamp	Red Green Amber Less lens		51PC5G2 51PC5G3 51PC5G9 51PC5GN	51PC5G2LB 51PC5G3LB 51PC5G9LB 51PC5GNLB	1
transformer type	240V with 6V 755 type lamp	Red Green Amber Less lens		51PC5H2 51PC5H3 51PC5H9 51PC5HN	51PC5H2LB 51PC5H3LB 51PC5H9LB 51PC5HNLB	1
	480V with 6V 755 type lamp	Red Green Amber Less lens		51PC5J2 51PC5J3 51PC5J9 51PC5JN	51PC5J2LB 51PC5J3LB 51PC5J9LB 51PC5JNLB	1
	600V with 6V 755 type lamp	Red Green Amber Less lens		51PC5K2 51PC5K3 51PC5K9 51PC5KN	51PC5K2LB 51PC5K3LB 51PC5K9LB 51PC5KNLB	1
	Operators with LED Lamp ²) 120V with 6V BA9 type LED	Red Green Amber Less lens		51PE5G2 51PE5G3 51PE5G9	51PE5G2LB 51PE5G3LB 51PE5G9LB	1
	240V with 6V BA9 type LED	Red Green Amber Less lens		51PE5H2 51PE5H3 51PE5H9	51PE5H2LB 51PE5H3LB 51PE5H9LB	1
	480V with 6V BA9 type LED	Red Green Amber Less lens		51PE5J2 51PE5J3 51PE5J9	51PE5J3LB 51PE5J3LB 51PE5J9LB	1
	600V with 6V BA9 type LED	Red Green Amber Less lens		51PE5K2 51PE5K3 51PE5K9	51PE5K2LB 51PE5K3LB 51PE5K9LB —	1
	Indicator light with glass lens - Resistor type AC/DC* 120V with 24V 757 type lamp	Red Green Amber Less lens		51PC5M2 51PC5M3 51PC5M9 51PC5MN	51PC5M2LB 51PC5M3LB 51PC5M9LB 51PC5MNLB	1
	120V with 24V BA9 type LED lamp ²)	Red Green Amber		51PE5M2 51PE5M3 51PE5M9	51PE5M2LB 51PE5M3LB 51PE5M9LB	1

¹⁾ For other colors not listed, order operator less lens and separate lens from page 10/127.

²⁾ LED color must match lens color.

³⁾ All illuminated devices come with std. Touchsafe shield per UL stds.

Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Push to test complete units

Selection and ordering data

Push to test full voltage
o pay les

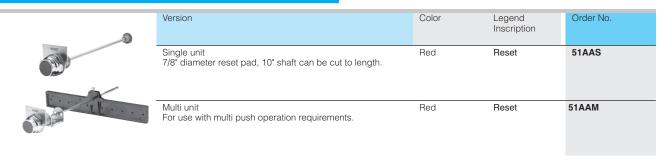
Push to test transformer type

ng	data					
	Version	Color of operator	Contacts	Short bushing Order No.	Long bushing Order No.	Pack
	Push to test/Illuminated pushbutton with glass lens - Full voltage type AC/DC ¹) ³) Operators with Incandescent Lamp 6V with 755 type lamp	Red Green Amber Less lens	1NO + 1NC 1NO + 1NC 1NO + 1NC 1NO + 1NC	51PC6B2A 51PC6B3A 51PC6B9A 51PC6BNA	51PC6B2ALB 51PC6B3ALB 51PC6B9ALB 51PC6BNALB	1 1 1 1
	24V with 757 type lamp	Red Amber Green Less lens	1NO + 1NC 1NO + 1NC 1NO + 1NC 1NO + 1NC	51PC6D2A 51PC6D3A 51PC6D9A 51PC6DNA	51PC6D2ALB 51PC6D3ALB 51PC6D9ALB 51PC6DNALB	1 1 1 1
	Operators with LED Lamp ²) 6-8V with BA9 type LED	Red Green Amber	1NO + 1NC 1NO + 1NC 1NO + 1NC	51PE6B2A 51PE6B3A 51PE6B9A	51PE6B2ALB 51PE6B3ALB 51PE6B9ALB	1 1 1
	24V with BA9 type LED	Red Green Amber	1NO + 1NC 1NO + 1NC 1NO + 1NC	51PE6D2A 51PE6D3A 51PE6D9A	51PE6D2ALB 51PE6D3ALB 51PE6D9ALB	1 1 1
	Push to test/Illuminated pushbutton with glass lens - Transformer type (50/60 Hz) 1) 3) Operators with Incandescent Lamp 120V with 6V 755 type lamp	Red Green Amber Less lens	1NO + 1NC 1NO + 1NC 1NO + 1NC 1NO + 1NC	51PC6G2A 51PC6G3A 51PC6G9A 51PC6GNA	51PC6G2ALB 51PC6G3ALB 51PC6G9ALB 51PC6GNALB	1 1 1 1
	240V with 6V 755 type lamp	Red Green Amber Less lens	1NO + 1NC 1NO + 1NC 1NO + 1NC 1NO + 1NC	51PC6H2A 51PC6H3A 51PC6H9A 51PC6HNA	51PC6H2ALB 51PC6H3ALB 51PC6H9ALB 51PC6HNALB	1 1 1 1
	480V with 6V 755 type lamp	Red Green Amber Less lens	1NO + 1NC 1NO + 1NC 1NO + 1NC 1NO + 1NC	51PC6J2A 51PC6J3A 51PC6J9A 51PC6JNA	51PC6J2ALB 51PC6J3ALB 51PC6J9ALB 51PC6JNALB	1 1 1 1
	600V with 6V 755 type lamp	Red Green Amber Less lens	1NO + 1NC 1NO + 1NC 1NO + 1NC 1NO + 1NC	51PC6K2A 51PC6K3A 51PC6K9A 51PC6KNA	51PC6K2ALB 51PC6K3ALB 51PC6K9ALB 51PC6KNALB	1 1 1 1
	Operators with LED Lamp ²) 120V with 6V BA9 type LED	Red Green Amber	1NO + 1NC 1NO + 1NC 1NO + 1NC	51PE6G2A 51PE6G3A 51PE6G9A	51PE6G2ALB 51PE6G3ALB 51PE6G9ALB	1 1 1
	240V with 6V BA9 type LED	Red Green Amber	1NO + 1NC 1NO + 1NC 1NO + 1NC	51PE6H2A 51PE6H3A 51PE6H9A	51PE6H2ALB 51PE6H3ALB 51PE6H9ALB	1 1 1
	480V with 6V BA9 type LED	Red Green Amber	1NO + 1NC 1NO + 1NC 1NO + 1NC	51PE6J2A 51PE6J3A 51PE6J9A	51PE6J2ALB 51PE6J3ALB 51PE6J9ALB	1 1 1
	600V with 6V BA9 type LED	Red	1NO + 1NC	51PE6K2A	51PE6K2ALB	1

1NO + 1NC 51PE6K3A

1NO + 1NC 51PE6K9A'

Overload reset operators with reset legend plate



Green

51PE6K3ALB

51PE6K9ALB

¹⁾ For other colors not listed, order operator less lens and separate lens from page 10/127.

²⁾ LED color must match lens color.

³⁾ All illuminated devices come with std. Touchsafe shield per UL stds.

Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Selector switch operators

Selection and ordering data

Version	Lever type	Color of insert	Cam Code 1) 2)	Short bushing Order No.	Long bushing Order No.	Pack
			, ,	0.00.110.	0.00.110.	Unit
Selector switches with	Short lever, non-Illuminated	White	А	51SA2AA	51SA2AALB	1
2 switching positions Maintained operation	Long lever, non-Illuminated	White	Α	51SB2AA	51SB2AALB	
Spring return from	Short lever, non-Illuminated	White	Α	51SA2AC	51SA2ACLB	1
right operation	Long lever, non-Illuminated	White	Α	51SB2AC	51SB2ACLB	
Selector switches with	Short lever, non-Illuminated	White	В	51SA2BA	51SA2BALB	1
3 switching positions	Long lever, non-Illuminated	White	В	51SB2BA	51SB2BALB	
Maintained operation	Short lever, non-Illuminated	White	С	51SA2CA	51SA2CALB	
	Long lever, non-Illuminated	White	С	51SB2CA	51SB2CALB	
	Short lever, non-Illuminated	White	D	51SA2DA	51SA2DALB	
	Long lever, non-Illuminated	White	D	51SB2DA	51SB2DALB	
	Short lever, non-Illuminated	White	Е	51SA2EA	51SA2EALB	
	Long lever, non-Illuminated	White	Е	51SB2EA	51SB2EALB	
	Short lever, non-Illuminated	White	G	51SA2GA	51SA2GALB	
	Long lever, non-Illuminated	White	G	51SB2GA	51SB2GALB	
Spring return from	Short lever, non-Illuminated	White	В	51SA2BC	51SA2BCLB	1
right operation	Long lever, non-Illuminated	White	В	51SB2BC	51SB2BCLB	
	Short lever, non-Illuminated	White	С	51SA2CC	51SA2CCLB	
	Long lever, non-Illuminated	White	С	51SB2CC	51SB2CCLB	
	Short lever, non-Illuminated	White	D	51SA2DC	51SA2DCLB	
	Long lever, non-Illuminated	White	D	51SB2DC	51SB2DCLB	
	Short lever, non-Illuminated	White	Ε	51SA2EC	51SA2ECLB	
	Long lever, non-Illuminated	White	Ε	51SB2EC	51SB2ECLB	
	Short lever, non-Illuminated	White	G	51SA2GC	51SA2GCLB	
	Long lever, non-Illuminated	White	G	51SB2GC	51SB2GCLB	
Spring return from	Short lever, non-Illuminated	White	В	51SA2BB	51SA2BBLB	1
left operation	Long lever, non-Illuminated	White	В	51SB2BB	51SB2BBLB	
	Short lever, non-Illuminated	White	С	51SA2CB	51SA2CBLB	
	Long lever, non-Illuminated	White	С	51SB2CB	51SB2CBLB	
	Short lever, non-Illuminated	White	D	51SA2DB	51SA2DBLB	
	Long lever, non-Illuminated	White	D	51SB2DB	51SB2DBLB	
	Short lever, non-Illuminated	White	Е	51SA2EB	51SA2EBLB	
	Long lever, non-Illuminated	White	Е	51SB2EB	51SB2EBLB	
	Short lever, non-Illuminated	White	G	51SA2GB	51SA2GBLB	
	Long lever, non-Illuminated	White	G	51SB2GB	51SB2GBLB	
Spring return from left	Short lever, non-Illuminated	White	В	51SA2BD	51SA2BDLB	1
and right operation	Long lever, non-Illuminated	White	В	51SB2BD	51SB2BDLB	
	Short lever, non-Illuminated	White	С	51SA2CD	51SA2CDLB	
	Long lever, non-Illuminated	White	С	51SB2CD	51SB2CDLB	
	Short lever, non-Illuminated	White	D	51SA2DD	51SA2DDLB	
	Long lever, non-Illuminated	White	D	51SB2DD	51SB2DDLB	
	Short lever, non-Illuminated	White	Ε	51SA2ED	51SA2EDLB	
	Long lever, non-Illuminated	White	Ε	51SB2ED	51SB2EDLB	
	Short lever, non-Illuminated	White	G	51SA2GD	51SA2GDLB	
	Long lever, non-Illuminated	White	G	51SB2GD	51SB2GDLB	

¹⁾C CAM limited to 4 single or double pole blocks on spring return operators.

²⁾ For contact operation, see CAM selection chart on page 10/138.

Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Selector switch operators

Selection and ordering



lata						
Version	Key	Lock	CAM	Short	Long	Pa
	removal	number	Code	bushing	bushing	
	position		¹) ²)	Order No.	Order No.	Un
Key-operated selector switches with	Both	550CH	А	51SA6AE	51SA6AELB	OII
2 switching positions	Left	550CH	Α	51SA6AF	51SA6AFLB	
Maintained operation	Lon	000011	, ,	o i o no ni	OTOAGAI EB	
Spring return from right operation	Left	550CH	A	51SA6AC	51SA6ACLB	
Key-operated selector switches with	All	550CH	В	51SA6BE	51SA6BELB	
3 switching positions	7 111	000011	C	51SA6CE	51SA6CELB	
Maintained operation			D	51SA6DE	51SA6DELB	
Walliamod oporation			E	51SA6EE	51SA6EELB	
			G	51SA6GE	51SA6GELB	
	Left	550CH	В	51SA6BF	51SA6BFLB	
	Lon	330011	С	51SA6CF	51SA6CFLB	
			D	51SA6DF	51SA6DFLB	
			E	51SA6EF	51SA6EFLB	
			G	51SA6GF	51SA6GFLB	
	Right	550CH	В	51SA6BG	51SA6BGLB	
	rugiii	JJUUN	С	51SA6CG	51SA6CGLB	
			D	51SA6DG	51SA6DGLB	
			E	51SA6EG	51SA6EGLB	
			G	51SA6GG	51SA6GGLB	
	Center	550CH	В	51SA6BH	51SA6BHLB	
	Center	550011	С	51SA6CH	51SA6CHLB	
			D			
				51SA6DH	51SA6DHLB	
			E	51SA6EH	51SA6EHLB	
	1 - 6	550011	G	51SA6GH	51SA6GHLB	
	Left and Center	550CH	В	51SA6BK	51SA6BKLB	
	Cerner		С	51SA6CK	51SA6CKLB	
			D	51SA6DK	51SA6DKLB	
			E	51SA6EK	51SA6EKLB	
			G	51SA6GK	51SA6GKLB	
Spring return from right operation	Center	550CH	В	51SA6BU	51SA6BULB	
			С	51SA6CU	51SA6CULB	
			D	51SA6DU	51SA6DULB	
			Е	51SA6EU	51SA6EULB	
			G	51SA6GU	51SA6GULB	
Spring return from left operation	Center	550CH	В	51SA6BT	51SA6BTLB	
			С	51SA6CT	51SA6CTLB	
			D	51SA6DT	51SA6DTLB	
			Е	51SA6ET	51SA6ETLB	
			G	51SA6GT	51SA6GTLB	
Spring return from left and right operation	Center	550CH	В	51SA6BV	51SA6BVLB	
			С	51SA6CV	51SA6CVLB	
			D	51SA6DV	51SA6DVLB	
To order 1 to 25 special locks for keyed se			Ε	51SA6EV	51SA6EVLB	
simply replace the 6 in the 5th digit of the			G	51SA6GV	51SA6GVLB	
with a 5 when entering your order. (Orderi 52SC6AE is changed to 52SC5AE and all				5	5	
To order special locks for keyed selecto switches, append corresponding 'X' suf to part number						
•		#5.40CL	1	X639		
Ordering example: 51SA6AEX298		#549CH #548CH		X639 X640		
U IUAUALAZIO						
		#547CH	1	X641		1
		#501CH	4	X642		1

¹⁾C CAM limited to 4 single or double pole blocks on spring return operators.

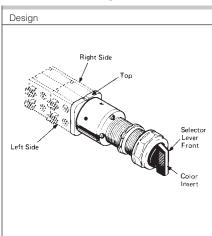
²⁾ For contact operation, see CAM selection chart on page 10/138.

Pushbutton Units and Indicator Lights

Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Cam selection

Selection and ordering data



Ordering Information

- Contact blocks are ordered separately, see page 10/141.
- Determine which table to use based upon the type of selector (non-illuminated & keyed on top, illuminated on bottom).
- Find the correct number of selector positions (2, 3 or 4 positions).
- Select the contact operation required for each selector position. X indicates the contacts are closed, while O indicates the contacts are open. (For the selector pushbutton, N=normal and D=depressed). Contact block must be assembled in position shown for each circuit application.
- Identify the CAM letter required for the chosen contact operation (only 1 CAM can be used per selector switch or selector pushbutton).
- Contact blocks must be assembled in the position shown for each circuit application. The mounting position is viewed from the front of the device.

Ordering CAMs D, E or G

 CAM D, E or G may be ordered at the same price by changing the 6th character of the selector catalog number. Example: Selector with D cam 51SA2DA.

Size Requirements

- C CAM on spring return selectors is limited to 4 contact blocks. Standard push buttons accept 4 contact blocks on each side, for a maximum of 8 contact blocks.
- Selector operators in enclosures are limited to depth of 1 contact block. (2 blocks wide).

Non-illuminated and keyed selector switches (viewed from front)

2 Selecto	r Positions		Contact Blocks	CAM	Mounting	
Left		Right			Left	Right
X O		O X	52BAJ (NC) 52BAK (NO)	A A	L or L or	R R
3 Selecto	r Positions		Contact Blocks	CAM	Mounting	
Left	Center	Right			Left	Right
X O X O	O O X X	O X O X	52BAK (NO) 52BAK (NO) 52BAJ (NC) 52BAJ (NC)	В В В В	L L R	R
O X	0	X O	52BAK (NO) 52BAJ (NC)	C C	L or L or	R R
0	O X	X O	52BAK (NO) 52BAJ (NC)	D D	L or L or	R R
X O	O X	0	52BAK (NO) 52BAJ (NC)	E E	L or L or	R R
X O O	O X O	O O X	52BAJ (NC) 52BAJ (NC) 52BAK (NO)	G G G	L L or	R R

Illuminated selector switches

2 Selector Positions		Contact Blocks	CAM	Mounting	
Left	Right			Left	Right
X	0	52BAJ (NC)	А	L	
Ο	Χ	52BAK (NO)	Α	L	

¹⁾ Wired in parallel.

Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Control stations

Selection and ordering data

2 0	Operator Identification ¹)	Degree of operator	Contacts/ voltage	Number of command points	Order No.	Pack
	A = Momentary flush pushbutton black, label "START"	NEMA 7/9	1NO - 1NC	1	51C101H	Unit 1
	A = Momentary raised pushbut- ton red, label "STOP"	NEMA 7/9	1NO - 1NC	1	51C103H	1
100	A = Momentary 1 5/8" mushroom head red label "STOP"	NEMA 7/9	1NO - 1NC	1	51C104H	1
	A = Momentary dual pushbut- ton red label "START, STOP"	NEMA 7/9	1NO - 1NC	1	51C105H	1
6	A = 2 position selector switch label "Off-On"	NEMA 7/9	1NO - 1NC	1	51C159H	1
	A = 3 position selector switch label "HAND-OFF-AUTO"	NEMA 7/9	1NO - 1NC	1	51C156H	1
	A = Indicator light, green, 120 V	NEMA 7/9		1	51C131H	1
	A = Indicator light, red, 120 V	NEMA 7/9		1	51C135H	1
	B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbut- ton red, label "STOP"	NEMA 7/9	1NO - 1NC 1NO - 1NC	2	51C201H	1
	B = Momentary flush pushbutton black, label " FORWARD" A = Momentary flush pushbutton label "REV"		1NO - 1NC 1NO - 1NC	2	51C204H	1
	B = Momentary flush pushbutton black, label "START" A = Momentary 1 5/8" mushroom head pushbutton red, label "STOP"	NEMA 7/9	1NO - 1NC 1NO - 1NC	2	51C202H	1
	B = Indicator light, red, 120 V A = Indicator light, green, 120 V	NEMA 7/9	1NO - 1NC 1NO - 1NC	2	51C230H	1
	C = Momentary flush pushbutton black, label "FORWARD" B = Momentary flush pushbutton black, label "REVERSE" A = Momentary raised pushbut- ton red, label "STOP"	NEMA 7/9	1NO - 1NC 1NO - 1NC 1NO - 1NC	3	51C301H	1
	C = Momentary flush pushbutton black, label "OPEN" B = Momentary flush pushbutton black, label "CLOSE" A = Momentary raised pushbut- ton red, label "STOP"	NEMA 7/9	1NO - 1NC 1NO - 1NC 1NO - 1NC	3	51C303H	1
	C = Indicator light, green, 120 V B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbut- ton red, label "STOP"	NEMA 7/9	1NO - 1NC 1NO - 1NC	3	51C307H	1

Enclosures only²)



For field assembly of Type 7 & 9 UL listed and cUL listed control stations. Devices may be installed for either horizontal or vertical mounting using a stand-ard legend. Limited to depth of 1 contact block.

51EA1H 2 51EA2H 3 51EA3H

¹⁾ All enclosures come standard with one conduit entry on top. To get two conduit entries, append X-311 to the end of the

²⁾ For legend plates see page 10/177.

Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Accessories and spare parts

	Version	Suitable for	Conduit Color size (in.)	Order No.	Pack Unit
	Mushroom head cap - Plastic	For small 1 5/8" (41.3mm) type,	Black	52RB3D1	1
		non-illuminated mushroom push- buttons	Red	52RB3D2	
		buttoris	Green	52RB3D3	
			Yellow	52RB3D4	
			Blue	52RB3D5	
			Gray	52RB3D6	
			Orange	52RB3D8	
			1 kit of each	52RB3DN	
	Mushroom head cap - Plastic	For large 2 1/2" (63.5mm) type,	Black	52RB3E1	1
		non-illuminated mushroom push- buttons	Red	52RB3E2	
		buttoris	Green	52RB3E3	
			Yellow	52RB3E4	
			Blue	52RB3E5	
			Gray	52RB3E6	
			Orange	52RB3E8	
			1 kit of each	52RB3EN	
	Replacement lens for pilot light	s	Red	51RC4G2	1
	rieplacement lens for phot light	3	Green	51RC4G3	
	Glass lens		Blue	51RC4G5	
	Glass letis			51RC4G9	
			Amber		
	Barda anno ant laura fau anno h-ta		Clear	51RC4GA	-
	Replacement lens for push to test/illuminated pushbuttons		Red	51RC5G2	1
N. A. C. C. C. C. C. C. C. C. C. C. C. C. C.	•		Green	51RC5G3	
	Glass lens		Amber	51RC5G9	
	Guards Prevents accidental operation	Non-illuminated Pushbuttons & Push Pull Operators with Mushro Head Caps 1 5/8" to 1 3/4" in diam		51AAGM	1
	Lever inserts		Red	52RA2A2	1
	Short lever		Green	52RA2A3	
			Blue	52RA2A4	
66666			Amber	52RA2A5	
			Gray	52RA2A6	
			Orange	52RA2A8	
			White	52RA2AB	
	Long lever		Red	52RA2B2	1
	Long level		Green	52RA2B2 52RA2B3	
			Blue	52RA2B3 52RA2B4	
			Amber	52RA2B5	
			Gray	52RA2B6	
			Orange	52RA2B8	
			White	52RA2BB	
	Padlock attachment	Only for raised pushbutton operators		51AAL	1
	Breather/drain (Stainless Steel)	Installs in bottom as a drain or in the top as a breather. Suitable for Class 1 groups C & D and for Class 2 groups F & G applications only. Fits 1/2" NPT.		51AADB	1
	Lock nut wrench	All devices		52MAWB	1
	Spare keys	550CH (1 key)		52KEY-550CH	1

Pushbutton Units and Indicator Lights

Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Accessories and spare parts

ection and orderin	ng data					
	Version	Suitable for	Conduit size (in.)	Color	Order No.	Pacl
			0/4 4/0		5444BB4	Unit
	Reducer bushings	Cast aluminum, UL recognized and CSA certified. Used to	3/4 - 1/2		51AARBA	1
		reduce existing tapered NPT	1 - 1/2		51AARCA	
		conduit opening when required.	1 1/2 - 3/4		51AARDB	
			1 1/2 - 1		51AARDC	
Illina			2 1/2- 3/4		51AARFB	
Miller			2 1/2 - 1		51AARFC	
			2 1/2 - 1 1/2		51AARFD	
			2 1/2 - 2		51AARFE	
			3 - 1		51AARGC	
			3 - 1 1/2		51AARGD	
			3 - 2		51AARGE	
			3 - 2 1/2		51AARGF	
	Lamps with screw connection, incandescent lamps	miniature bayonet				
	Flashing, type 267 lamp (replaces 755 lamp)	51, 52	6V		52AABNF	1
	6V Full voltage, transformer type 755 lamp	51, 52	6V		52AABN	1
	12V full voltage, type 756	51, 52	12V		52AACN	1
	24V full voltage, 120/240V resistor push-to-test type 757	51, 52	24V		52AADN	1
	Neon (uses resistors) type B2A (NE-51H)	51, 52	120V		52AAPN	1
	120V, full voltage type 3S6/5	51, 52	120V		52AAENC	1
	LEDs, Single element	51, 52	6V	Red	52AEB2	1
		51, 52	6V	Green	52AEB3	
		51, 52	6V	Yellow	52AEB4	
		51, 52	6V	White	52AEBB	
		51, 52	6V	Blue	52AEB5	
		51, 52	24V	Red	52AED2	
		51, 52	24V	Green	52AED3	
		51, 52	24V	Yellow	52AED4	

51, 52

51, 52

51, 52

51, 52

51, 52

51, 52

51, 52

White

Blue

Red

Green

Yellow

White

Blue

24V

24V

120V

120V

120V

120V

120V

52AEDB

52AED5

52AEE2

52AEE3

52AEE4

52AEEB

52AEE5

1

2

3

4

5

7

8

10

Pushbutton Units and Indicator Lights Class 51, Hazardous Location NEMA Type 7 & 9 Devices

Accessories and spare parts

Selection and ordering data

•	Version	Suitable for	Conduit size (in.)	Color	Order No.	Pack
Raleal	Touchsafe contact blocks	s with gold flashing				OTHE
-	1 NO				52BAK	1
52BAJ	1 NC				52BAJ 2)	
Contract of the Contract of th	1 NO - 1 NC				52BJK ²⁾	
00000	1 NO early make	closes before 52BAK			52BAH	
-	1 NC late break	opens after 52BAJ			52BAE	
52BAK	1 NO - 1 NC	Reed switch			52BAR ¹⁾	
2 4		UL listed for class 1 division 2 .25A Max, 200V AC, 10 Watt max .5A Max, 200V DC, 10 Watt max				
52BAR	1 NC extra late break				52BAU	

① Hermetically sealed.

② Positive opening according to IEC 60947-5-1, Appendix K.

Pushbutton Units and Indicator Lights

30 mm Heavy Duty, Watertight/Oiltight, Class 52

Pushbutton complete units

Features

- Octagonal Mounting Nuts
- Meets Type 1, 3, 3R, 4, 4X, 12, 13 and Automotive Standards
- Heavy Duty Rated NEMA A600/P600 Contacts
- Positively Driven Contacts
- Positive Indexing Selectors
- Bifurcated Movable Contacts
- Attractive Chrome Plating
- Boots Not Required for Type 4
- UL Listed File # E22655
- CSA Certified File # LR6535
- Touchsafe Terminals

Application

Oil tight pilot controls and accessories are designed to provide long, trouble free service in the most demanding industrial applications. These controls are oil and dust tight and meet Type 3, 4, 4X, 12 and 13 specifications.

Rugged

Industrial control operators are durable one piece castings. Heavy duty plastic buttons resist oils and corrosion. Silver contacts carry heavy duty ratings.

Flexible

Accessories modify standard push buttons, selector switches and pilot lights. Building block construction of contact blocks makes possible many circuitry combinations.

Industrial Appearance

Pilot controls add luster to panels. Chrome plating covers exposed metal parts.

Push Button Operators

The Operator Base consists of a durable, one piece casting equipped with a heavy duty actuator with a stainless steel spring, a neoprene actuator sealing ring to prevent oil and dust from penetrating to the contact blocks, a neoprene gasket to seal operator mounting hole and a chrome plated lock nut.

Mushroom Head Push Button Operators

The Mushroom Head base construction is identical to the push button base. The actuator is molded of high impact material for either a 1 5/8 inch or 2 1/2 inch diameter molded head.

E-STOP Mushroom Head Operators according to EN 60947-5-5 Cat. No. 52BP, 52BR, 52PP, and 52PR, 2 Position, Twist-To-Release & 2 Position, Push Pull Maintained operators provided with red operating heads and 52BJK contact blocks meet the requirements of EN 60947-5-5 for Electrical Emergency Stop Device With Mechanical Latching Function (e-stop).

Contact Blocks

Contact Blocks have double break bifurcated silver contacts, with gold flashing as standard, which improves contact reliability. Contact blocks are heavy duty rated NEMA A600 and suitable for applications down to 5V/1MA solid state outputs. 52BJK offers

→ Positive Opening Contacts according to IEC 60947-5-1, Appendix K. Molded bodies and pushers resist arcing and tracking. All units have stainless steel springs that resist corrosion and provide strong contact pressure. Captive mounting screws speed panel assembly.

Push Pull Operators

Push Pull Operators combine two or three functions in one unit. The maintained operator has two positions, typically pull to start, push to stop. The momentary operator with three positions provides spring return from both pull and push positions. In addition, a three position push maintained, pull momentary operator is available. The actuator come is 1 3/4 inch or 2 1/2 inch diameter and is available in an illuminated version.

2 Button Maintained Operator

Maintained Push Buttons consist of two push buttons and a latching assembly. When actuated the button remains depressed and is freed only by the release operator to which it is linked. The button assembly adjusts for mounting from a 1 13/16 inch to a 2 5/8 inch center

Transformer Type Pilot Lights

Transformer Type Pilot Lights are available with a 120, 240, 480 or 600 Volt primary (50/60 Hertz) and a separate secondary winding which supplies reduced voltage to a miniature bayonet base 6 Volt lamp. These units are suitable for applications where vibration is present and long bulb life is desirable.

Full Voltage Type Pilot Lights

Full Voltage Pilot Lights are available for 6,12, 24 and 120 Volt AC and DC applications.

Electrical Ratings

NEMA AC Ratings 50/60Hz NEMA A600 10 Continuous Amps

Volts	Make	Break
120	60	6
240	30	3
480	15	1.5
600	12	1.2
VA	7200	720

Ordering Information

- Accessories: pages 10/166 10/169
- Selector Position and Contact Operation: page 10/164 10/165.
- Legend Plates: page 10/177.
- Enclosures: page 10/178.
- Technical Specifications: page 10/179.

Resistor Type Pilot Lights

Resistor Type Pilot Lights are available for 240 Volt AC and DC applications. The 240 Volt pilot light is supplied with a 120 Volt lamp and a voltage dropping resistor.

LED Type Pilot Lights

LED's (light emitting diodes) can be used in pilot lights instead of incandescent bulbs because of their long life (up to 10 years), resistance to vibration and ambient sensitivity. Clusted LED options are available for standard pilot lights only. Cluster LED options are not available on Push to test Pilot Lights, Illuminated Pushbuttons, Push-pull, or Twist-to-Release Operators.

Integrated LED Module Type Pilot Lights

The integrated LED module is available for 24, 120, and 240 V. LED modules are vibration resistant and have a long life (up to 10 years). The integrated LED module is available for 24, 120, and 240 V. LED modules are vibration resistant and have a long life (up to 10 yrs.).

Selector Operators

Selector Operators have positive action indexing. Operators are available with either a short or long lever. The molded black lever is designed to accept a color insert. A white insert is provided as standard. Each operator is equipped with a cam to actuate plungers of contact blocks assembled behind the operator. Two, three and four position operators are available with seven different cams.

Lever color inserts are available in 8 colors.





Push Button





Selector Switch Selector Push Button

Indicator Light

Siemens Industry, Inc. Industrial Controls Catalog 10/143

Revised 08/15/14

Push Button

Selection Guid

Momentary Push Button - Non-Illuminated









Flush Head

Extended Head

Large Mushroom Head 2 1/2"

Small Mushroom Head 1 3/4"

Part Number	52		M			
Fait Number		a	b	C	d	e ¹

а	Code	Finish
	Р	Chrome - Command 52
	В	Epoxy Coated - Black Max
b	Code	Туре
	М	Momentary Push Button
C	Code	Style / Head Type
		Flush / Extended Cap ²
	8A	Flush / Extended Cap ²
	8A 8B	•
		Flush
		Flush Extended
	8B	Flush Extended Mushroom Head Metal

d	Code	Plastic	Metal
	1	Black	_
	2	Red	Red
	3	Green	Green
	4	Yellow	_
	5	Blue	_
	6	Gray	_
	7	All Color Caps	_
	8	Orange	
	С	_	Chrome

e ¹	Code	Contact Blocks
	Α	1 NO + 1 NC
	В	2 NO + 2 NC
	С	3 NO + 3 NC
	D	4 NO + 4 NC
	Е	1 NC (LB)
	F	2 NO
	G	2 NC
	Н	1NO (EM)
	J	1 NC
	K	1 NO

9٧

Large Mushroom Head 2 1/2" (63.5mm)

¹ For operator without contact blocks leave position e blank.

² Products available fall 2014. For current product offer please refer to the 2010 Industrial Control Catalog.

Push Buttons

Selection Tables

Momentary Push Button - Non-Illumniated

				Finish
Head Style	Contacts	Color	Chrome	Black Max
		Less cap	52PM8	52BM8
		Black	52PM8A1	52BM8A1
	_	Red	52PM8A2	52BM8A2
		Green	52PM8A3	52BM8A3
		Yellow	52PM8A4	52BM8A4
		Black	52PM8A1A	52BM8A1A
ilush	1 NO - 1 NC	Red	52PM8A2A	52BM8A2A
		Green	52PM8A3A	52BM8A3A
		Black	52PM8A1K	52BM8A1K
	1 NO	Red	52PM8A2K	52BM8A2K
		Green	52PM8A3K	52BM8A3K
	1 NC	Red	52PM8A2J	52BM8A2J
	-	Black	52PM8B1	52BM8B1
		Red	52PM8B2	52BM8B2
		Green	52PM8B3	52BM8B3
extended		Black	52PM8B1K	52BM8B1K
	1 NO	Red	52PM8B2K	52BM8B2K
	1 NC	Red	52PM8B2J	52BM8B2J
		Less cap	52PM9	52BM9
	_	Red	52PM9W2	52BM9W2
Mushroom	1 NO	Green	52PM9W3K	52BM9W3K
Head Plastic ð 1 3/4"	1 NO 1 NO	Black	52PM9W1A	52BM9W1A
	1 NO - 1 NC	Red	52PM9W2A	52BM9W2A
	1 NO - 1 NC	Green	52PM9W3A	52BM9W3A
	_	Red	52PM9V2	52BM9V2
Mushroom		Black	52PM9V1A	52BM9V1A
Head Plastic 3 2 1/2"	1 NO - 1 NC	Red	52PM9V2A	52BM9V2A
		Green	52PM9V3A	52BM9V3A

Readily available items are in **bold**.

This is a small representation of stocked items.

10/145

Push Buttons & Signaling Devices

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Non-Illuminated Push Pull

Selection Guide

2 & 3 Position Push-Pull Mushroom Head Devices - Non-Illuminated







Mushroom Head Plastic Ø 2 1/2"



Mushroom Head Plastic Ø 1 3/4"

Part Number	52				d	е	f³
-------------	----	--	--	--	---	---	----

а	Code	Finish
Р		Chrome-Command 52
	В	Epoxy Coated-Black Max
b	Code	Туре
	Р	Push Pull

C	Code	Function
	2	2 positions - maintained ¹
	3	3 positions - momentary in - momentary out
	7	3 positions - maintained in - momentary out

d	Code	Style
-	Α	Small metal 1-3/4" (44.5 mm)
	W	Small plastic 1-3/4" (44.5 mm)
	V	Large plastic 2-1/2" (63.5 mm)

е	Code	Col	or
		Plastic	Metal
	1	Black	_
	2	Red ¹	Red ¹
	3	Green	Green
	4	Yellow	_
	5	Blue	_
	6	Gray	_
	8	Orange	_
	С	_	Chrome
		No Operat	ing Head
	Z	No he	ead

f 3	Code	Contact Blocks
		2 Position
	Α	1 NO + 1 NC ¹
	В	2 NO + 2 NC ¹
	С	3 NO + 3 NC ¹
	D	4 NO + 4 NC ¹
	E	1 NC (LB)
	F	2 NO
	G	2 NC ¹
	Н	1 NO (EM)
	J	1 NC ¹
	K	1 NO
	Q	1 NO - 1 NC (ELB)
		3 Position
	U	1 NO - 1 NC extra late break ²

¹ EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and positively driven NC contact blocks. Positive opening contacts according to IEC 60947-5-1, Appendix K.

² Blocks cannot be interchanged (stop-start circuit - pull to start, push to stop).

³ For operator without contact blocks leave position f blank.

Non-Illuminated Push Pull

Selection Tables

2 & 3 Position Push-Pull Mushroom Head Devices - Non-Illuminated

			2 pos - maintained						
		Meta	Ø 1 3/4"	Plastic	Ø 1 3/4"	Plasti	c Ø 2 1/2"		
Contacts	Color	Chrome	Black Max	Chrome	Black Max	Chrome	Black Max		
	Black	_	_	52PP2W1	52BP2W1	52PP2V1	2BP2V1		
	Red	52PP2A2	52BP2A2	52PP2W2	52BP2W2	52PP2V2	52BP2V2		
_	Green	52PP2A3	52BP2A3	52PP2W3	52BP2W3	52PP2V3	52BP2V3		
	Yellow	_	_	52PP2W4	52BP2W4	52PP2V4	52BP2V4		
	Red	52PP2A2A1	52BP2A2A1	52PP2W2A ¹	52BP2W2A1	52PP2V2A ¹	52BP2V2A1		
1 10 1 10	Green	52PP2A3A	52BP2A3A	52PP2W3A	52BP2W3A	52PP2V3A	_		
1 NO - 1 NC	Yellow	_	_	52PP2W4A	52BP2W4A	52BP2V4A	52BP2V4A		
	Chrome	52PP2ACA	52BP2ACA	_	_	_	_		

			3 pos	- momentary	in - momentar	y out	
		Metal 6	ð 1 3/4"	Plastic	Ø 1 3/4"	Plastic	Ø 2 1/2"
Contacts	Color	Chrome	Black Max	Chrome	Black Max	Chrome	Black Max
	Black	_	_	52PP3W1	52BP3W1	52PP3V1	52BP3V1
	Red	52PP3A2	52BP3A2	52PP3W2	52BP3W2	52PP3V2	52BP3V2
_	Green	52PP3A3	52BP3A3	52PP3W3	52BP3W3	52PP3V3	2BP3V3
	Chrome	52PP3AC	52BP3AC	_	_	_	_
1 NO - 1 NCELB	Red	52PP3A2U	52BP3A2U	52PP3W2U	52BP3W2U	52PP3V2U	52BP3V2U
TINO - TINGELB	Green	52PP3A3U	52BP3A3U	52PP3W3U	52BP3W3U	52PP3V3U	52BP3V3U

			3 po	s - maintaine	d in - momenta	ary out	
		Metal	Ø 1 3/4"	Plasti	ic Ø 1 3/4"	Plast	ic Ø 2 1/2"
Contacts	Color	Chrome	Black Max	Chrome	Black Max	Chrome	Black Max
	Black	_	_	52PP7W1	52BP7W1	52PP7V1	52BP7V1
	Red	52PP7A2	52BP7A2	52PP7W2	52BP7W2	52PP7V2	52BP7V2
_	Green	52PP7A3	52BP7A3	52PP7W3	52BP7W3	52PP7V3	52BP7V3
	Chrome	52PP7AC	52BP7AC	_	_	_	_
1 NO - 1 NCELB	Red	52PP7A2U1	52BP7A2U	52PP7W2U	52BP7W2U	52PP7V2U	52BP7V2U
I NO - I NCELB	Green	52PP7A3U	52BP7A3U	52PP7W3U	52BP7W3U	52PP7V3U	52BP7V3U

Readily available items are in **bold**.

This is a small representation of stocked items.

¹ EMERGENCY-STOP control devices according to IEC 60947-5-5

Push Buttons & Signaling Devices

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Revised 11/15/14

Illuminated Push Pull & Push Button

Selection Guide

2 & 3 Position Push-Pull Mushroom Head Devices - Illuminated







Mushroom Head Plastic Ø 2 1/2"



Mushroom Head Plastic Ø 1 3/4"

Part Number	52		P					
		a	b	C	d	е	f	g

а	Code	Finish
<u> </u>	Р	Chrome-Command 52
	В	Epoxy Coated-Black Max

b	Code	Туре
	Р	Push Pull Operator

C	Code	Function
	2	2 positions - maintained ¹
	3	3 positions - momentary in - momentary out ²
	7	3 positions - maintained in - momentary out ²

d	Code	Operat	ion
		Full Voltage ³	(AC/DC)
		Incandescent	LED ⁴
	В	6-8V	6V
	С	12-13V	_
	D	24-28V	24-28V
	Е	120V	120V
	F	_	240V
		Transforr	mer ³
	G	120V A	С
	Н	240V A	С
	J	480V A	С
	K	600V A	С

	f Code	Contact Blocks
Transformer ³		2 Position
120V AC	Δ	1 NO + 1 NC ¹
240V AC	A B	2 NO - 2 NC ¹
480V AC	F	2 NO
600V AC	G	2 NC ¹
	J	1 NC ¹
	K	1 NO
	Q	1 NO - 1 NC (ELB)
		3 Position
according to IEC 60947-5-5 when provided with	- 11	1 NO. 1 NO outro loto brooks

1 EMERGENCY-STOP control device red operating head and positively driven NC contact blocks.

Positive opening contacts according to IEC 60947-5-1, Appendix K,

- 2 Blocks cannot be interchanged (stop-start circuit pull to start, push to stop).
- 3 Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold "no head".
- 4 LED voltages apply to table g option code B and Y. 6V and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.
- 5 Not available in 240V.

е	Code	Style / Color
		Mushroom Head Metal Ø 1 3/4" (44.5mm)
	2	Red ¹
	3	Green
	5	Blue
	9	Amber
	Α	Clear
	В	White
		Mushroom Head Plastic Ø 1 3/4" (44.5 mm)
	R	Red ¹
	S	Green
	T	Amber
		Mushroom Head Plastic Ø 2 1/2" (63.5mm)
	D	Red ¹
	Е	Green
	F	Amber
		No Head (full voltage & transformer only)
	Z	No head

f	Code	Contact Blocks
		2 Position
	Α	1 NO + 1 NC ¹
	В	2 NO - 2 NC ¹
	F	2 NO
	G	2 NC ¹
	J	1 NC ¹
	K	1 NO
	Q	1 NO - 1 NC (ELB)
		3 Position
	U	1 NO - 1 NC extra late break ²

g	Code	Bulb Type				
3	Blank	Incandescent				
	В	LED				
	Υ	Super-Bright LED ⁵				

Illuminated Push Pull

52BP2GSA

Selection Tables

Type

Full Voltage (AC/DC)

Transformer (AC)

				Operator Type				
				2 pos - maintained				
				Metal 9	ð 1 3/4"	Plastic	Ø 1 3/4"	
Lamp Type	Voltage	Color	Contacts	Chrome	Black Max	Chrome	Black Max	
LED	24V	Red	1 NO - 1 NC	52PP2D2AB1	52BP2D2AB1	52PP2DRAB1	52BP2DRAB1	
LED		Green	1 NO - 1 NC	52PP2D3AB	52BP2D3AB	52PP2DSAB	52BP2DSAB	
	24V	Red	1 NO - 1 NC	52PP2D2A1	52BP2D2A ¹	52PP2DRA ¹	52BP2DRA1	
Incondessent		Green	1 NO - 1 NC	52PP2D3A	52BP2D3A	52PP2DSA	52BP2DSA	
Incandescent	120V		Deal	1 NO - 1 NC	52PP2E2A ¹	52BP2E2A ¹	52PP2ERA ¹	52BP2ERA ¹
		Red	_	52PP2E2	52BP2E2	52PP2ER	52BP2ER	
LED	1001/	Red	1 NO - 1 NC	52PP2G2AB1	52BP2G2AB1	52PP2GRAB1	52BP2GRAB1	
LED	120V	Green	1 NO - 1 NC	52PP2G3AB	52BP2G3AB	52PP2GSAB	52BP2GSAB	
Incandescent	100//	Red	1 NO - 1 NC	52PP2G2A ¹	52BP2G2A ¹	52PP2GRA ¹	52BP2GRA ¹	
	120V	_	4 110 4 110				50000004	

52PP2G3A

Туре	Lamp Type	Voltage	Color	Contacts
	LED	24V	Green	1 NO - 1 NCELB
Full Voltage		24V	Green	1 NO - 1 NCELB
(AC/DC)	Incandescent		Red	1 NO - 1 NCELB
		120V	Red	_
	LED	120V	Red	1 NO - 1 NCELB
Transformer	LED	1200	Green	1 NO - 1 NCELB
(AC)	Incandescent	120V	Red	1 NO - 1 NCELB
	meandescent	12UV	Green	1 NO - 1 NCFLB

Green

1 NO - 1 NC

	Metal @	ð 1 3/4"	Plastic Ø 1 3/4"			
	Chrome	Black Max	Chrome	Black Max		
3	52PP3D3UB	52BP3D3UB	52PP3DRUB	52BP3DRUB		
3	52PP3D3U	52BP3D3U	52PP3DSU	52BP3DSU		
3	52PP3D2U	52BP3D2U	52PP3DRU	52BP3DRU		
_	52PP3E2	52BP3E2	52PP3ER	52BP3ER		
3	52PP3G2UB	52BP3G2UB	52PP3GRUB	52BP3GRUB		
3	52PP3G3UB	52BP3G3UB	52PP3GSUB	52BP3GSUB		
3	52PP3G2U	52BP3G2U	52PP3GRU	52BP3GRU		
3	52PP3G3U	52BP3G3U	52PP3GRU	52BP3GRU		

Туре	Lamp Type	Voltage	Color	Contacts
	LED	24V	Green	1 NO - 1 NCELB
Full Voltage		24V	Green	1 NO - 1 NCELB
(AC/DC)	Incandescent		Red	1 NO - 1 NCELB
		120V	Red	_
	LED	120V	Red	1 NO - 1 NCELB
Transformer			Green	1 NO - 1 NCELB
(AC)	Incandescent	120V	Red	1 NO - 1 NCELB
			Green	1 NO - 1 NCELB

Readily available items are in **bold**.

Siemens Industry, Inc.

Industrial Controls Catalog

This is a small representation of stocked items.

Operator Type

3 pos - momentary in - momentary out

52PP2GSA

52BP2G3A

Operator Type 3 pos - maintained in - momentary out

Metal	Ø 1 3/4"	Plastic	Ø 1 3/4"
Chrome	Black Max	Chrome	Black Max
52PP7D3UB	52BP7D3UB	52PP7DSUB	52BP7DSUB
52PP7D3U	52BP7D3U	52PP7DSU	52BP7DSU
52PP7D2U	52BP7D2U	52PP7DRU	52BP7DRU
52PP7E2	52BP7E2	52PP7ER	52BP7ER
52PP7G2UB	52BP7G2UB	52PP7GRUB	52BP7GRUB
52PP7G3UB	52BP7G3UB	52PP7GSUB	52BP7GSUB
52PP7G2U	52BP7G2U	52PP7GRU	52BP7GRU
52PP7G3U	52BP7G3U	52PP7GRU	52BP7GRU

¹ EMERGENCY-STOP control devices according to IEC 60947-5-5

Push Buttons & Signaling Devices

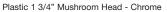
30mm Water, Oil Tight & Corrosion Resistant - Class 52

Non-Illuminated Twist-to-Release

Selection Guide

2 Position Twist-to-Release Devices Mushroom Head - Non-Illuminated







Plastic 1 3/4" Mushroom Head - Black Max

Part Number

52

____a

R b 8 C W d

<u>е</u>



Finish	Function	Style	Color	Contacts	Part Number
Chrome	2 Position Twist-to-Release	Plastic 1 3/4" Mushroom Head	Red	1 NO - 1 NC	52PR8W2A
Black Max	2 Position Twist-to-Release	Plastic 1 3/4" Mushroom Head	Red	1 NO - 1 NC	52BR8W2A
Chrome	2 Position Twist-to-Release	Plastic 1 3/4" Mushroom Head	Red	None	52PR8W2

Readily available items are in bold.

This is a small representation of stocked items.

а	Code	Finish			
•	Р	Chrome-Command 52			
	В	Epoxy Coated-Black Max			
b	Code	Function			
	R	2 Position Twist-to-Release, Maintained ¹			
C	Code	Style			
	8	Plastic 1 3/4" Mushroom Head			
d	Code	Lamp Type			
	W	Non-Illuminated			

е	Code	Color		
	2	Red ¹		
	3	Green		
	4	Yellow		
	Z	No head		

f 2	Code	Contact Blocks	
	Α	1 NO + 1 NC ¹	
	В	2 NO + 2 NC ¹	
	С	3 NO + 3 NC ¹	
	D	4 NO + 4 NC ¹	
	E	1 NC (LB)	
	F	2 NO	
	G	2NC ¹	
	Н	1NO (EM)	
	J	1 NC ¹	
	K	1 NO	

¹ EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and positively driven NC contact blocks. Positive opening contacts according to IEC 60947-5-1, Appendix K.

² For operator without contact blocks leave position f blank.

Push Buttons & Signaling Devices

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Illuminated Twist-to-Release

Selection Guide

2 Position Twist-to-Release Mushroom Head Devices - Illuminated







Plastic 1 3/4" Mushroom Head - Black Max

Part Number	52		R	8				
, are realised		a	b	C	d	е	f	g

Finish	Style	Voltage	Bulb Type	Color	Contacts	Part Number
Chrome	Plastic 1 3/4" Mushroom Head	24V	LED	Red	1 NO - 1 NC	52PR8DRAB
Chrome	Plastic 1 3/4" Mushroom Head	120V	Incandescent	Red	1 NO - 1 NC	52PR8ERA
Chrome	Plastic 1 3/4" Mushroom Head	120V	LED	Red	1 NO - 1 NC	52PR8GRAB

Readily available items are in bold.

This is a small representation of stocked items.

а	Code	Finish
Р		Chrome-Command 52
	В	Epoxy Coated-Black Max
b	Code	Function
	R	2 Position Twist-to-Release, Maintained
C	Code	Style
	8	Plastic 1 3/4" Mushroom Head

	8	Plastic 1 3/4" Mushroom Head				
d	Code	Operati	on			
		Full Voltage ² (AC/DC)				
		Incandescent	LED ³			
	В	6-8V	6V			
	С	12-13V	_			
	D	24-28V	24-28V			
	Е	120V	120V			
	F	_	240V			
		Transform	ner ²			
	G	120V AC				
	Н	240V A0				
	J	480V A0)			
	K	600V AC	;			

е	Code	Color
	R	Red ¹
	S	Green
	Т	Amber
	Z	No head

f	Code	Contact Blocks
	Α	1 NO + 1 NC ¹
	В	2 NO + 2 NC ¹
	С	3 NO + 3 NC ¹
	D	4 NO + 4 NC ¹
	Е	1 NC (LB)
	F	2 NO
	G	2NC ¹
	Н	1NO (EM)
	J	1 NC ¹
	K	1 NO

g	Code	Bulb Type
3	Blank	Incandescent
	В	LED
	Υ	Super-Bright LED ⁴

9

10

¹ EMERGENCY-STOP control devices according to IEC 60947-5-5 when provided with red operating head and positively driven NC contact blocks. Positive opening contacts according to IEC 60947-5-1, Appendix K, Molded bodies.

² Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold "no head."

³ LED voltages apply to table g option code B and Y. 6V and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.

⁴ Not available in 240V.

Revised 11/15/14

Indicator Light

Selection Guide

Indicator Light





Part Number	52		L_				
		a	b	C	d	е	f

а	Code	Finish
Р		Chrome-Command 52
	В	Epoxy Coated-Black Max

b	Code	Туре
	L	Indicator Light

C	Code	Style
	4	Plastic Lens
	5	Glass Lens

d	Code	Operation	on
		Full Voltage ¹ (AC/DC)
		Incandescent	LED ²
	В	6-8V	6V
	С	12-13V	_
	D	24-28V	24-28V
	Е	120V	120V
	F	_	240V
		Transform	ner ¹
	G	120V AC	;
	Н	240V AC	;
	J	480V AC	
	K	600V AC)

	Code	Color
е	2	Red
	3	Green
	5	Blue
	7	All Colors
	9	Amber
	Α	Clear
	В	White
	N	No Lens

f	Code	Bulb Type
	Blank	Incandescent
	XB	LED
	XY	Super-Bright LED ³

¹ Default bulb type is incandescent. For LED options, append field f. LED option not available on units sold "No Lens".

² LED voltages apply to table f option code XB and XY. 6V, 24V (Super Bright only) and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.

³ Not available in 240V.

Selection Tables

Indicator Light

				Plasti	c Lens
Туре	Lamp Type	Voltage	Color	Chrome	Black Max
			Red	52PL4D2XB	52BL4D2XB
			Green	52PL4D3XB	52BL4D3XB
		24V	Blue	52PL4D5XB	52BL4D5XB
			Amber	52PL4D9XB	52BL4D9XB
	LED		White	52PL4DBXB	52BL4DBXB
	LED		Red	52PL4E2XB	52BL4E2XB
			Green	52PL4E3XB	52BL4E3XB
		120V	Amber	52PL4E9XB	52BL4E9XB
			Clear	52PL4EAXB	52BL4EAXB
Full Voltage			White	52PL4EBXB	52BL4EBXB
(AC/DC)			Red	52PL4D2	52BL4D2
			Green	52PL4D3	52BL4D3
		0.417	Blue	52PL4D5	52BL4D5
		24V	Amber	52PL4D9	52BL4D9
			White	52PL4DB	52BL4DB
	Incandescent		No Lens	52PL4DN	52BL4DN
			Red	52PL4E2	52BL4E2
		400)/	Green	52PL4E3	52BL4E3
		120V	Amber	52PL4E9	52BL4E9
			No Lens	52PL4EN	52BL4EN
			Red	52PL4G2XB	52BL4G2XB
			Green	52PL4G3XB	52BL4G3XB
		120V	Amber	52PL4G9XB	52BL4G9XB
	LED		White	52PL4GBXB	52BL4GBXB
			Red	52PL4J2XB	52BL4J2XB
		480V	Green	52PL4J3XB	52BL4J3XB
			White	52PL4JBXB	52BL4JBXB
			Red	52PL4G2	52BL4G2
Transformer (AC)			Green	52PL4G3	52BL4G3
(10)		120V	Amber	52PL4G9	52BL4G9
			White	52PL4GB	52BL4GB
	la a a a da a a a d		No Lens	52PL4GN	52BL4GN
	Incandescent	0.4017	Red	52PL4H2	52BL4H2
		240V	Green	52PL4H3	52BL4H3
			Red	52PL4J2	52BL4J2
		480V	Green	52PL4J3	52BL4J3
			Amber	52PL4J9	52BL4J9

Readily available items are in **bold**.

This is a small representation of stocked items.

Indicator Lights

Push Buttons & Signaling Devices

30mm Water, Oil Tight & Corrosion Resistant - Class 52

• Revised • 11/15/14

Illuminated Push Button & Push-to-Test

Selection Guide

Push Button & Push-to-Test - Illuminated



Extended Lens



Flush Lens

Part Number	52		T					
		a	b	C	d	е	Ť	g

а	Code	Finish	
	Р	Chrome-Command 52	
	В	Epoxy Coated-Black Max	
		· · · · · · · · · · · · · · · · · · ·	

b	Code	Function
	Т	Illuminated Push Button / Push-to-Test ¹

C	Code	Style
	6	Extended Lens
	8	Flush Lens ²

d	Code	Operation					
		Full Voltage ³ (AC/DC)				
		Incandescent	LED ⁴				
	В	6-8V	6V				
	С	12-13V	_				
	D	24-28V	24-28V				
	Е	120V	120V				
	F	_	240V				
		Transform	ner ³				
	G	120V AC					
	Н	240V AC					
	J	480V AC					
	K	600V AC					

1	For push-to-test	functionality,	wire	according t	to	wiring	diagram	below.
---	------------------	----------------	------	-------------	----	--------	---------	--------

² Products available fall 2014.

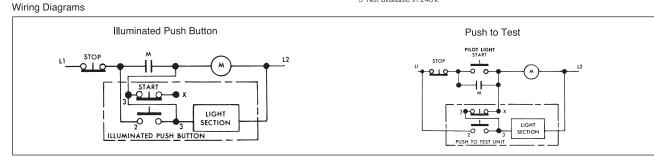
е	Code	Color
	2	Red
	3	Green
	5	Blue
	7	All Colors
	9	Amber
	Α	Clear
	В	White
	N	No Lens

f	Code	Contact Blocks
	Α	1 NO - 1 NC
	В	2 NO + 2 NC
	С	3 NO + 3 NC
	D	4 NO + 4 NC
	Е	1 NC (LB)
	F	2 NO
	G	2 NC
	Н	1NO (EM)
	J	1 NC
	K	1 NO

g	Code	Bulb Type			
9	Blank	Incandescent			
	В	LED			
	Υ	Super-Bright LED ⁵			

³ Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold "No Lens".

⁵ Not available in 240V



⁴ LED voltages apply to table g option code B and Y.
6V and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.

Illuminated Push Buttons & Push-to-Test

Selection Tables

Push Button & Push-to-Test - Illuminated

					Exter	nded Lens
Туре	Lamp Type	Voltage	Color	Contacts	Chrome	Black Max
			Red	1 NO - 1 NC	52PT6D2AB	52BT6D2AB
			Green	1 NO - 1 NC	52PT6D3AB	52BT6D3AB
		24V	Blue	1 NO - 1 NC	52PT6D5AB	52BT6D5AB
	LED		Amber	1 NO - 1 NC	52PT6D9AB	52BT6D9AB
			White	1 NO - 1 NC	52PT6DBAB	52BT6DBAB
		100\/	Red	1 NO - 1 NC	52PT6E2AB	52BT6E2AB
Full Voltage		120V	Green	1 NO - 1 NC	52PT6E3AB	52BT6E3AB
(AC/DC)			Red	1 NO - 1 NC	52PT6D2A	52BT6D2A
			Green	1 NO - 1 NC	52PT6D3A	52BT6D3A
		24V	Blue	1 NO - 1 NC	52PT6D5A	52BT6D5A
	Incandescent		Amber	1 NO - 1 NC	52PT6D9A	52BT6D9A
			White	1 NO - 1 NC	52PT6DBA	52BT6DBA
		100\/	Red	1 NO - 1 NC	52PT6E2A	52BT6E2A
		120V	Green	1 NO - 1 NC	52PT6E3A	52BT6E3A
			Red	1 NO - 1 NC	52PT6G2AB	52BT6G2AB
		120V	Green	1 NO - 1 NC	52PT6G3AB	52BT6G3AB
	LED	240V	Amber	1 NO - 1 NC	52PT6G9AB	52BT6G9AB
	LED		White	1 NO - 1 NC	52PT6GBAB	52BT6GBAB
			Red	1 NO - 1 NC	52PT6H2AB	52BT6H2AB
			Green	1 NO - 1 NC	52PT6H3AB	52BT6H3AB
Transformer AC)			Red	1 NO - 1 NC	52PT6G2A	52BT6G2A
,,			Green	1 NO - 1 NC	52PT6G3A	52BT6G3A
		120V	Amber	1 NO - 1 NC	52PT6G9A	52BT6G9A
	Incandescent		White	1 NO - 1 NC	52PT6GBA	52BT6GBA
			No Lens	1 NO - 1 NC	52PT6GNA	52BT6GNA
		240V	Green	1 NO - 1 NC	52PT6H3A	52BT6H3A
		480V	Clear	1 NO - 1 NC	52PT6JAA	52BT6JAA

Readily available items are in **bold**.

This is a small representation of stocked items.

Push Buttons & Signaling Devices

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Revised11/15/14

Illuminated Push Button

Selection Guide

Push Button Mushroom Head Devices - Illuminated⁴







Mushroom Head Plastic Ø 2 1/2"



Mushroom Head Plastic Ø 1 3/4"

Part Number	52		T	9				
Tart Number		a	b	C	d	е	f	g

а	Code	Finish
a	Р	Chrome-Command 52
	В	Epoxy Coated-Black Max

h	Code	Туре
	Т	Push Button Operator

C	Code	Function
	9	2 positions – momentary in

d	Code	Operation		
		Full Voltage ² (AC/DC)		
		Incandescent	LED ³	
	В	6-8V	6V	
	С	12-13V	_	
	D	24-28V	24-28V	
	E	120V	120V	
	F	_	240V	
		Transfor	mer ²	
	G	120V A	(C	
	Н	240V A	vC	
	J	480V A	(C	
	K	600V A	vC	

е	Code	Style / Color
		Mushroom Head Metal Ø 1 3/4" (44.5mm)
	2	Red ¹
	3	Green
	5	Blue
	9	Amber
	Α	Clear
	В	White
		Mushroom Head Plastic Ø 1 3/4" (44.5 mm)
	R	Red
	S	Green
	Т	Amber
		Mushroom Head Plastic Ø 2 1/2" (63.5mm)
	D	Red ¹
	Е	Green
	F	Amber
		No Head (full voltage & transformer only)
	Z	No head

f	Code	Contact Blocks
•	Α	1 NO + 1 NC
	В	2 NO + 2 NC
	С	3 NO + 3 NC
	D	4 NO + 4 NC
	Е	1 NC (LB)
	F	2 NO
	G	2 NC
	Н	1NO (EM)
	J	1 NC
	K	1 NO

g	Code	Bulb Type			
3	Blank	Incandescent			
	В	LED			
	Υ	Super-Bright LED ⁵			

¹ Positive opening according to IEC 60947-5-1, Appendix K.

² Default bulb type is incandescent. For LED options, append field g. LED option not available on units sold "no head".

³ LED voltages apply to table g option code B and Y. 6V and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.

⁴ Products available fall 2014.

⁵ Not available in 240V.

Illuminated Selector Switches

Selection Guide

Selector Switches - Illuminated



Short Lever - Chrome

3 Position: CAM C

Epoxy Coated - Black Max



Short Lever - Black Max

Chrome

Maintained

No Insert

None

52SA7CGN

Finish	Style	Cam Type	Function	Color	Contacts	Part Number
T IIIIOII	Otylo	oum type	Turiotion	00101	Contacto	T di C Marrison
Chrome	Maintained	2 Position: CAM A	24-28V AC/DC	No Insert	None	52SA7ADN
011101110		Z 1 CORROTT. C/ W17 (ETEOVITO/DO	140 1110011	140110	OZOF II TIBIT
Chrome	Maintained	2 Position: CAM A	120V AC (Transformer)	No Insert	None	52SA7AGN

120V AC

Readily available items are in **bold**. This is a small representation of stocked items.

Х

a	Code	Туре		
<u> </u>	S	Selector Switch		
b	Code	Finish		
	Α	Chrome - Command 52		

C	Code	Style			
	7	Maintained			

Ь	Code	Function		
u	Α	2 Position: CAM A		
	В	3 Position: CAM B		
	С	3 Position: CAM C		

е	Code	Operation			
		Full Voltage ¹	(AC/DC)		
		Incandescent	LED ²		
	В	6-8V	6V		
	С	12-13V	_		
	D	24-28V	24-28V		
	E	120V	120V		
	F	_	240V		
		Transfor	mer ¹		
	G	120V	AC .		
	Н	240V /	AC .		
	J	480V /	AC		
	K	600V	AC		

¹ Default bulb type is incandescent. For LED options, append field i. LED option not available on units sold "no head".

Code	Color
2	Red
3	Green
5	Blue
9	Amber
Α	Clear
N	No Insert
	2 3 5 9

g	Code	Contact Blocks
9	Α	1 NO - 1 NC
	E	1 NC (LB)
	Н	1 NO (EM)
	J	1 NC
	K	1 NO

h	Code	Contact Quantity & Location					
		Left	Right				
	0	1	_				
	1	_	1				
	2	1	1				
	3	2	_				
	4	_	2				
	5	2	1				
	6	1	2				
	7	2	2				
	8	3	_				
	9	_	3				

i	Code	Bulb Type
_	Blank	Incandescent
	В	LED
	Υ	Super-Bright LED ³

For CAM selection see page 10/164.

² LED voltages apply to table i option code B and Y. 6V and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.

³ Not available in 240V.

Revised 08/15/14

Non-Illuminated Selector Switch

Selection Guide

Code

Selector Switch - Non-Illuminated



Type



Part Number	52	S		2					
r art Hamber		a	b	C	d	е	f	\mathbf{g}^2	h ²

	S	Selector Switch			
	Code	Finish			
b	Code	Finish			
	Α	Chrome - Short Lever			
	В	Chrome - Long Lever			
	Χ	BlackMax - Short Lever			
	W	BlackMax - Long Lever			

C	Code	Style		
	2	Non-Illuminated		

d	Code	Function
	Α	2 Position: CAM A
	В	3 Position: CAM B
	С	3 Position: CAM C ¹
	D	3 Position: CAM D
	E	3 Position: CAM E
	G	3 Position: CAM G
	Н	4 Position: CAM H

е	Code	Турє	
		2 Positi	ion
		Maintained	Spring Return
	Α	All	_
	С	Left	Right
		3 Positi	ion
		Maintained	Spring Return
	Α	All	_
	В	Center, Right	Left
	С	Center, Left	Right
	D	Center	Left, Right
		4 Positi	ion
		Maintained Position	Spring Return
	Α	All	_

f	Code	Color
	2	Red
	3	Green
	4	Yellow
	5	Blue
	6	Gray
	8	Orange
	В	White
	N	No Insert (Black)

\mathbf{g}^2	Code	Contact Blocks
	Α	1 NO - 1 NC
	Е	1 NC (LB)
	Н	1 NO (EM)
	J	1 NC
	K	1 NO

2	Code	Contact Quan	tity & Location
		Left	Right
	0	1	_
	1	_	1
	2	1	1
	3	2	_
	4	_	2
	5	2	1
	6	1	2
	7	2	2
	8	3	_
	9	_	3

¹ C CAM on spring return selectors is limited to 4 contact blocks. For CAM selection see page 10/164.

² For operator without contact blocks leave positions g and h blank.

Non-Illuminated Selector Switch

Selector Switch, Non-Illuminated1)

		Switch	Position	Туре	Chrome		Black Max	
Contact Type	Contact	Left	Right	M = Maintained S = Spring Return	Short Lever	Long Lever	Short Lever	Long Lever
		S	Ø			2-Position	n Operator	
No Contacts				M M	52SA2AAB	52SB2AAB	52SX2AAB	52SW2AAB
NO CONTACTS	_	_	_	M <s< td=""><td>52SA2ACB</td><td>52SB2ACB</td><td>52SX2ACB</td><td>52SW2ACB</td></s<>	52SA2ACB	52SB2ACB	52SX2ACB	52SW2ACB
1 N.O.	А	0	X	M M	52SA2AABK1	52SB2AABK1	52SX2AABK1	52SW2AABK1
TN.O.	A	U	^	M <s< td=""><td>52SA2ACBK1</td><td>52SB2ACBK1</td><td>52SX2ACBK1</td><td>52SW2ACBK1</td></s<>	52SA2ACBK1	52SB2ACBK1	52SX2ACBK1	52SW2ACBK1
1 N.O.	А	0	X	M M	52SA2AABA1	52SB2AABA1	52SX2AABA1	52SW2AABA1
1 N.C.	В	Х	0	M <s< td=""><td>52SA2ACBA1</td><td>52SB2ACBA1</td><td>52SX2ACBA1</td><td>52SW2ACBA1</td></s<>	52SA2ACBA1	52SB2ACBA1	52SX2ACBA1	52SW2ACBA1

		Switch Position		Туре	Chr	rome	Black Max		
Contact Type	Contact	Left	Center	Right	M = Maintained S = Spring Return	Short Lever	Long Lever	Short Lever	Long Lever
		(S)	1	Ø			3-Position	n Operator	
					м м м	52SA2CAB	52SB2CAB	52SX2CAB	52SW2CAB
					м м м	52SA2BAB	52SB2BAB	52SX2BAB	52SW2BAB
No Contacts	_	_	_	_	S>M M	52SA2BBB	52SB2BBB	52SX2BBB	52SW2BBB
					M M <s< td=""><td>52SA2BCB</td><td>52SB2BCB</td><td>52SX2BCB</td><td>52SW2BCB</td></s<>	52SA2BCB	52SB2BCB	52SX2BCB	52SW2BCB
					S>M <s< td=""><td>52SA2BDB</td><td>52SB2BDB</td><td>52SX2BDB</td><td>52SW2BDB</td></s<>	52SA2BDB	52SB2BDB	52SX2BDB	52SW2BDB
1 N.O.	^		0	X	м м м	52SA2CABA1	52SB2CABA1	52SX2CABA1	52SW2CABA1
I N.O.	А	0		X	S>M M	52SA2CBBA1	52SB2CBBA1	52SX2CBBA1	52SW2CBBA1
1 N.C.	В	×	0	0	M M <s< td=""><td>52SA2CCBA1</td><td>52SB2CCBA1</td><td>52SX2CCBA1</td><td>52SW2CCBA1</td></s<>	52SA2CCBA1	52SB2CCBA1	52SX2CCBA1	52SW2CCBA1
I N.C.	В	_ ^			S>M <s< td=""><td>52SA2CDBA1</td><td>52SB2CDBA1</td><td>52SX2CDBA1</td><td>52SW2CDBA1</td></s<>	52SA2CDBA1	52SB2CDBA1	52SX2CDBA1	52SW2CDBA1
1 N.O.	А	0	0	Х	м м м	52SA2CABA2	52SB2CABA2	52SX2CABA2	52SW2CABA2
1 N.C.	В	X	0	0	S>M M	52SA2CBBA2	52SB2CBBA2	52SX2CBBA2	52SW2CBBA2
1 N.O.	С	0	0	X	M M <s< td=""><td>52SA2CCBA2</td><td>52SB2CCBA2</td><td>52SX2CCBA2</td><td>52SW2CCBA2</td></s<>	52SA2CCBA2	52SB2CCBA2	52SX2CCBA2	52SW2CCBA2
1 N.C.	D	X	0	0	S>M <s< td=""><td>52SA2CDBA2</td><td>52SB2CDBA2</td><td>52SX2CDBA2</td><td>52SW2CDBA2</td></s<>	52SA2CDBA2	52SB2CDBA2	52SX2CDBA2	52SW2CDBA2
1 N.O.	А	0	0	Х					
1 N.C.	В	X	0	0	м м м	52SA2GABJ2K1	52SB2GABJ2K1	52SX2GABJ2K1	52SW2GABJ2K1
1 N.C.	С	0	×	0					

		Switc	h Positio	on		Тур	е			Chr	ome	Black Max			
Contact Type	Contact	Left	Left Center	Right Center	Right				ined Return	Short Lever	Long Lever	Short Lever	Long Lever		
		(S	Ø	Ø						4-Position	Operator	erator		
No Contacts	_	_	_	_	_	М	М	М	М	52SA2HAB	52SB2HAB	52SX2HAB	52SW2HAB		
1 N.O.	А	Х	0	0	0										
1 N.C.	В	0	×	0	0	М	Μ	Μ	М	52SA2HABJ2K1	52SB2HABJ2K1	52SX2HABJ2K1	52SW2HABJ2K1		
1 N.C.	С	0	0	×	0										
1 N.O.	А	0	0	0	Х										
1 N.O.	В	X	0	0	0					50040114510140	5000011401016	500V0LIAD 10V0	500/4/01/14 P 10/40		
1 N.C.	С	0	X	0	0	M	М	М	М	52SA2HABJ2K2	52SB2HABJ2K2	52SX2HABJ2K2	52SW2HABJ2K2		
1 N.C.	D	0	0	X	0										

Note: X = Closed / O = Open

 $\overline{\Box}$

3

4

6

<u>/</u>

9

10

Siemens Industry, Inc. Industrial Controls Catalog

¹⁾ Readily available items are in **bold**.

This is a small representation of stocked items.

Push Buttons & Signaling Devices

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Keyed Selector Switch

Selection Guide

Keyed Selector Switch

Part Number	52	S	С						
r art Number		а	b	С	d	е	f 3	g ³	h

a	Code	lype
•	S	Selector Switch
b	Code	Finish
	С	Chrome – Command 52
C	Code	Style
	5	Non-Standard Lock/Key ^{1a}
	6	Standard Lock/Key
d	Code	Function
d	Code A	Function 2 Position: CAM A
d		1000
d	Α	2 Position: CAM A
d	A B	2 Position: CAM A 3 Postion: CAM B
d	A B C	2 Position: CAM A 3 Postion: CAM B 3 Postion: CAM C ²
d	A B C D	2 Position: CAM A 3 Postion: CAM B 3 Postion: CAM C ² 3 Postion: CAM D
d	A B C D	2 Position: CAM A 3 Postion: CAM B 3 Postion: CAM C ² 3 Postion: CAM D 3 Postion: CAM E

Code	Contact Quan	tity & Location
	Left	Right
0	1	_
1	_	1
2	1	1
3	2	_
4	_	2
5	2	1
6	1	2
7	2	2
8	3	_
9	_	3
	0 1 2 3 4 5 6 7	Left 0 1 1 — 2 1 3 2 4 — 5 2 6 1 7 2 8 3

Contact Blocks

1 NO - 1 NC

1 NC

1 NO

1 NC (LB)

1 NO (EM)

Code

Α

J

K

Е

Н

Code	Lock Type							
		2 Position	osition					
	Maintained /	Key F	Removal					
	Spring Return	Left	Right					
E	All Maintained	X	X					
F	All Maintained	X	_					
G	All Maintained	_	X					
X	Spring from Right	X	_					

9		
Code	Кеу Тур	oe ^{1b}
Blank	501CH	1
X298	550CH	1
X299	549CH	+
X300	548CH	1
X301	547CH	1
X302	506CH	1

	3 Position								
	Maintained	Spring		Key Removal					
	Position	Return	Left	Center	Right				
Е	All	_	Χ	X	X				
F	All	_	Χ	_	_				
G	All	_	_	_	X				
Н	All	_	_	X					
J	All	_	Х	_	X				
K	All	_	Χ	X	_				
M	All	_	_	X	X				
Т	Center, Right	Left	_	X	_				
U	Left, Center	Right	_	Χ	_				
V	Center	Left, Right	_	X	_				
W	Center, Right	Left	_	_	X				
Υ	Center, Right	Left	_	X	X				
Z	Left, Center	Right	Χ	X	X				

Standard Lock/Key

1a. To Order 1 to 25 special locks for keyed selector switches simply replace the 6 in the 5th digit of the catalog number with a 5 when entering your order.

(Ordering Example: 52SC6AE is changed to 52SC5AE and all locks - up to 25 will be unique).

Per order, line will be uniquely keyed.

1b. b. To order the specific lock types shown in table **h**, simply append the corresponding "X" suffix to a standard part number (Ordering Example: 52SC6AEX298).

Note: Same list price applies as standard keyed locks.

- 2. C CAM on spring return selectors is limited to 4 contact blocks. For CAM selection see page 10/164.
- 3 For operator without contact blocks leave positions f and g

4 Position Key Removal Maintained Position Left Left Center Right Center Right Е ΑII Χ Χ Χ Χ F Αll Χ G AllΧ

e

Keyed Selector Switch

Key-operated Selector Switch, Non-Illuminated1)

		Switch Position		Туре	Key R	emoval
Contact Type	Contact	Left	Right	M = Maintained S = Spring Return	Left	Both
		S	Ø		2-Positior	n Operator
No Contacts				м м	52SC6AF	52SC6AE
NO CORRACTS	_			M <s< td=""><td>52SC6AX</td><td>_</td></s<>	52SC6AX	_
1 N.O.	A	0	×	м м	52SC6AFK1	52SC6AEK1
TN:O.	A		_ ^	M <s< td=""><td>52SC6AXK1</td><td>_</td></s<>	52SC6AXK1	_
1 N.O.	А	0	X	м м	52SC6AFA1	52SC6AEA1
1 N.C.	В	X	0	M <s< td=""><td>52SC6AXA1</td><td>-</td></s<>	52SC6AXA1	-

	Switch Position Type								Key Remova	al		
Contact Type	Con- tact	Left	Cen- ter	Right	M = Maintained S = Spring Return	Left	Right	Center	Left & Center	Left & Right	Center & Right	All Positions
			1	Ø				3-Pc	osition Ope	erator		
					м м м	52SC6CF	52SC6CG	52SC6CH	52SC6CK	52SC6CJ	52SC6CM	52SC6CE
					M M M	52SC6BF	52SC6BG	52SC6BH	52SC6BK	52SC6BJ	52SC6BM	52SC6BE
No Con- tacts	_	-	_	_	S>M M	_	52SC6BW	52SC6BT	_	_	52SC6BY	_
taoto					M M <s< td=""><td>_</td><td>_</td><td>52SC6BU</td><td>52SC6BZ</td><td>_</td><td>_</td><td>_</td></s<>	_	_	52SC6BU	52SC6BZ	_	_	_
					S>M <s< td=""><td>_</td><td>_</td><td>52SC6BV</td><td>_</td><td>_</td><td>_</td><td>_</td></s<>	_	_	52SC6BV	_	_	_	_
1 N.O.	_			×	M M M	52SC6CFA1	52SC6CGA1	52SC6CHA1	52SC6CKA1	52SC6CJA1	52SC6CMA1	52SC6CEA1
I N.O.	A	0	0	\ \	S>M M	_	52SC6CWA1	52SC6CTA1	_	_	52SC6CYA1	_
1 N O					M M <s< td=""><td>_</td><td>_</td><td>52SC6CUA1</td><td>52SC6CZA1</td><td>_</td><td>_</td><td>_</td></s<>	_	_	52SC6CUA1	52SC6CZA1	_	_	_
1 N.C.	В	X	0	0	S>M <s< td=""><td>_</td><td>_</td><td>52SC6CVA1</td><td>_</td><td>_</td><td>_</td><td>_</td></s<>	_	_	52SC6CVA1	_	_	_	_
1 N.O.	А	0	0	Х	M M M	52SC6CFA2	52SC6CGA2	52SC6CHA2	52SC6CKA2	52SC6CJA2	52SC6CMA2	52SC6CEA2
1 N.C.	В	X	0	0	S>M M	_	52SC6CWA2	52SC6CTA2	_	_	52SC6CYA2	_
1 N.O.	С	0	0	X	M M <s< td=""><td>_</td><td>_</td><td>52SC6CUA2</td><td>52SC6CZA2</td><td>_</td><td>_</td><td>_</td></s<>	_	_	52SC6CUA2	52SC6CZA2	_	_	_
1 N.C.	D	X	0	0	S>M <s< td=""><td>_</td><td>_</td><td>52SC6CVA2</td><td>_</td><td>_</td><td>_</td><td>_</td></s<>	_	_	52SC6CVA2	_	_	_	_
1 N.O.	А	0	0	Х								
1 N.C.	В	X	0	0	M M M	52SC6GFJ2K1	52SC6GGJ2K1	52SC6GHJ2K1	52SC6GKJ2K1	52SC6GJJ2K1	52SC6GMJ2K1	52SC6GEJ2K1
1 N.C.	С	0	X	0								

	Switch Position					Туре	Key Removal	
Contact Type	Contact	Left	Left Center	Right Center	Right	M = Maintained S = Spring Return	Right	All Positions
		\odot	S	Ø	Ø		4-Positior	Operator
No Contacts	_	_	_	_	_	M M M M	52SC6HG	52SC6HE
1 N.O.	А	X	0	0	0			
1 N.C.	В	0	×	0	0	M M M M	52SC6HGJ2K1	52SC6HEJ2K1
1 N.C.	С	0	0	X	0			
1 N.O.	А	0	0	0	X			
1 N.O.	В	X	0	0	0	M M M M	52SC6HGJ2K2	52SC6HEJ2K2
1 N.C.	С	0	X	0	0	I IVI IVI IVI IVI	JZJOUI IGUZINZ	JZJOUI ILJZNZ
1 N.C.	D	0	0	X	0			

Note: X = Closed / O = Open

All Operatores listed above are furnished with Lock No. 501CH

1) Readily available items are in bold.

This is a small representation of stocked items.

4

6

7

9

10

Selector Push Button

Selection Guide

Selector Push Button

Part Number

Finish	Style	Function	Color	Contacts	Part Number
Chrome	Flush Selector Push Button	2 Position CAM Q	Black	None	52SA3Q1
Chrome	Flush Selector Push Button	2 Position CAM R	Black	None	52SA3R1
Chrome	Flush Selector Push Button	2 Position CAM P	Black	None	52SA3P1



Selector Push Buttons

Readily available items are in **bold**.

This is a small representation of stocked items.

а	Code	Туре					
	S	Selector Push Buttons					
b	Code	Finish					
~	Α	Chrome - Command 52					
C	Code	Style					
	3	Flush Button					
	4	Extended Button - 1/2"					

d	Code	Function
· ·	Р	2 Position: CAM P
	Q	2 Position: CAM Q
	R	2 Position: CAM R
	S	3 Position: CAM S

е	Code	Color
•	1	Black
	2	Red

1	Code				C	ontact Blo	ocks					
		CAM P (2 Selector Position)										
		Le	eft	Ce	nter	F	Right	Contact	Mounting			
		N	D	N/A	N/A	N	D	Blocks	Position			
	J0	X	0	_	_	0	0	NC	Left			
	K0	0	Χ	_	_	X	Χ	NO	Left			
			CAM Q (2 Selector Position)									
		Le	eft	Ce	nter	F	Right	Contact	Mounting			
		N	D	N/A	N/A	N	D	Blocks	Position			
	J0	X	X	_	_	0	0	NC	Left			
	J1	Х	0	_	_	0	0	NC	Right			
	K0	0	0	_	_	0	X	NO	Left			
	K1	0	Χ	_	_	0	Χ	NO	Right			
					CAM F	R (2 Selector	Position)					
		Le	eft	Ce	nter	F	Right	Contact	Mounting			
		N	D	N/A	N/A	N	D	Blocks	Position			
	J0	Х	Х	_	_	Х	0	NC	Left			
	J1	Х	0	_	_	Х	X	NC	Left			
	K0	0	0	_	_	0	X	NO	Right			
	K1	0	Χ	_	_	0	0	NO	Right			
					CAM S	3 (3 Selector	Position)					
		Le	eft	Contact	Mounting							
		N	D	N	D	N	D	Blocks	Position			
	J0	Χ	0	0	0	0	0	NC	Left			
	J1	Χ	0	Χ	Χ	0	0	NC	Right			
	K0	0	0	0	Х	0	X	NO	Left			
	K1	0	Χ	0	0	0	X	NO	Right			

Note: X = Closed / O = Open

1 For operator without contact blocks leave position f blank

Revised 11/15/14

Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant – Class 52

Special devices

Selection and ordering	data			
	Version	Ohms / color	Order no.	Pack
				I Inda
	Potentiometer operator 2 Watts, 500 V AC/DC (NEMA Type 4)	50 150 250 500 750 1 K 2.5 K 5 K 10 K 15 K 25 K 50 K 100 K 150 K 250 K 500 K 1M 1.5 M 2 M 5 M	52MA3B01 52MA3B03 52MA3B04 52MA3B06 52MA3B07 52MA3B08 52MA3B10 52MA3B12 52MA3B14 52MA3B16 52MA3B16 52MA3B20 52MA3B21 52MA3B22 52MA3B22 52MA3B22 52MA3B24 52MA3B24 52MA3B26 52MA3B28 52MA3B28	Unit 1
	2 Button maintained operator	black (flush) / red (flush) black (flush) / red (extended) black (flush) / yellow (mushroom) green (flush) / red (flush) green (flush) / red (extended) green (flush) / red (mushroom) green (flush) / green (mushroom)	52MA2A1A2 52MA2A1B2 52MA2A1D4 52MA2A3A2 52MA2A3B2 52MA2A3D2 52MA2A3D3	1
	Button remains depressed when pushed	less caps	52MA2	
	Wobble stick 2.5" operator For use with 52BAJ (NC) contact block	red green grey	52ABW2 ^① 52ABW3 ^① 52ABW6 ^①	1
	Maintained toggle operator		52ABT	1

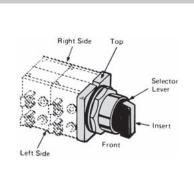
① For use with 52BAJ (NC) contact block

Pushbutton Units and Indicator Lights

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Cam selection

Selection and ordering data



Ordering Information

- Contact blocks are ordered separately, see page 10/164
- Determine which table to use based upon the type of selector (non-illum selector switch-top, illum selector switch-middle, and selector pushbutton-bottom).
- Find the correct number of selector positions (2, 3 or 4 positions).
- Select the contact operation required for each selector position. X indicates the contacts are closed, while O indicates the contacts are open. (For the selector pushbutton, N=normal and D=depressed). Contact block must be assembled in position shown for each circuit application.
- Identify the CAM letter required for the chosen contact operation (only 1 CAM can be used per selector switch or selector pushbutton).
- Contact blocks must be assembled in the position shown for each circuit application. The mounting
 position is viewed from the front of the device.

Ordering CAMs D, E or G

 CAM D, E or G may be ordered at the same price by changing the 6th character of the selector catalog number. Example: Selector with D cam 52SX2DAB.

Size Requirements

- C CAM on spring return selectors is limited to 4 contact blocks.
- Selector operators in enclosures are limited to depth of 1 contact block. (2 blocks wide).

Non-illuminated and keyed selector switches (viewed from front)

2 Selecto Left	or Positions	Rigi	ht	Contact Blocks	CAM	Mountin Left	g	Right
X O		O X		NC (52BAJ) NO (52BAK)	A A	L L	or or	R R
3 Selecto Left	or Positions Center	Rigl	ht	Contact Blocks	CAM	Mountin Left	g	Right
X O X O	O O X X	O X O X		NO (52BAK) NO (52BAK) NC (52BAJ) NC (52BAJ)	B B B B	L L		R R
X X O	0 0 0 X	X O X		2NO (2-52BAK) NC (52BAJ) NO (52BAK)	B C C	L L L	and or or	R R R
0 X 0	0 0 X	0 X 0 0		NC (52BAJ) NO (52BAK) NO (52BAK) NC (52BAJ)	D E E	L L L	or or or	R R R R
X O O	O X O	O O X		NC (52BAJ) NC (52BAJ) NO (52BAK)	G G G	L L	or	R R
	or Positions Left Center	Right Center	Right	Contact Blocks	CAM	Mountin Left	g	Right
X (0 0) 0 (0	0 X O O	O O X O	0 0 0 X	NO (52BAK) NC (52BAJ) NC (52BAJ) NO (52BAK)	H H H H	L L		R R

Illuminated selector switches (viewed from front)

2 Selecto	r Positions		Contact Blocks	CAM	Mounting	
Left		Right		• 7	Left	Right
X O		O X	NC (52BAJ) NO (52BAK)	A A	L L	
3 Selector Positions Left Center Right			Contact Blocks	CAM	Mounting Left	Right
0	O X	X	NC (52BAJ) NO (52BAK)	В В		R R
X	0	O X	NC (52BAJ) NO (52BAK)	C C	L	

Selector Pushbuttons (viewed from front)

2 Sele Left N	ector I	Position	ıs	Right N	t D	Contact Blocks	CAM	Mounting Left	Right
X X O	O X X O			0 0 0	0 0 X X	NC (52BAJ) NC (52BAJ) NO (52BAK) NO (52BAK)	a a a	L L	R R
X	O X			O X	O X	NC (52BAJ) NO (52BAK)	P P	L or L or	R R
X O O	X O X O			X O O	O X O X	NC (52BAJ) NC (52BAJ) NO (52BAK) NO (52BAK)	R R R R	L	R R
3 Sele Left N	ector I	Position Cente N		Right N	t D	Contact Blocks	CAM	Mounting Left	Right
X X O	0 0 X 0	0 X 0 0	O X O X	0 0 0	O O X X	NC (52BAJ) NC (52BAJ) NO (52BAK) NO (52BAK)	S S S	L L	R R

Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant – Class 52

Custom selector switch designs

Selection and ordering data

Assembled Non-illuminated Selector Switches

- Determine contact block and location from above.
- Select block suffix. Ex: **J** = **52BAJ**.
- Now select position suffix.
- 1-52BAJ block mounted on right side, suffix will be ${\bf J}$ 1.

- Additional suffixes allow for multiple quantities and locations.
- Repeat process for next block if required.
- Add list price of blocks to operator list price.
- Consult factory for delivery.

Example 1: X O O	Block Suffix	Position Suffix		
0 0 X			Quantity and L	ocation
HAND-OFF-AUTO Maintained Switch	A = 1 NO - 1 NC, 52BJK	Suffix	Left	Right
Catalog No 52SA2CAB A 1 = 52A2CABA1	E = NC Late Break, 52BAE	0	1	_
(52BJK block mounted on right side)	H = NO Early Make, 52BAH	1	l —	1
,	J = NC, 52BAJ	2	1	1
Example 2: X O O 52BAJ (L)	K = NO, 52BAK	3	2	_
O X O 52BAJ (R)		4	<u> </u>	2
O O X 52BAK (L or R) }K1		5	2	1
G Cam required		6	1	2
Catalog No 52SA2GAB J2 K1 = 52SA2GABJ2K1		7	2	2
		8	3	_
		9	_	3

Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant – Class 52

Revised11/15/14

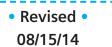
Accessories and spare parts

ction and o	rdering data			
	Version	Suitable for	Color	Order no.
	Flush actuator lens cap	For flush type, non-illuminated pushbuttons bag of 20 caps	black red green yellow blue gray orange kit- all colors	52RA1A1 52RA1A2 52RA1A3 52RA1A4 52RA1A5 52RA1A6 52RA1A8 52RA1AN
	Extended actuator lens cap	For extended type, non-illuminated pushbuttons bag of 20 caps	black red green yellow blue gray orange 1 of each color cap	52RA1B1 52RA1B2 52RA1B3 52RA1B4 52RA1B5 52RA1B6 52RA1B8 52RA1BN
	Mushroom head cap - Plastic set-screw type	For large 2 1/2"(63.5mm) type, set screw non-illuminated mushroom pushbuttons	black red green yellow blue gray orange 1 kit of each color cap	52RB3E1 52RB3E2 52RB3E3 52RB3E4 52RB3E5 52RB3E6 52RB3E8 52RB3EN
		For small 1 5/8"(41.3mm) type, non-illuminated mushroom pushbuttons	black red green yellow blue gray orange 1 of each color cap	52RB3D1 52RB3D2 52RB3D3 52RB3D4 52RB3D5 52RB3D6 52RB3D8 52RB3DN
	Mushroom head cap - Metal set-screw type	For small 1 5/8"(41.3mm) type, set screw non-illuminated mushroom pushbuttons	chrome red green	52RB3FC 52RB3F2 52RB3F3
	Replacement Lens for Indicator Lights	For catalog numbers starting with 52PL or 52BL [©] Plastic Glass	red green blue amber clear white 1 of each color red green blue amber clear	52RA4S2 52RA4S3 52RA4S5 52RA4S9 52RA4SA 52RA4SB 52RA4SN 52RA4T2 52RA4T2 52RA4T3 52RA4T5 52RA4T9
	Replacement Lens forPush to Test/Illuminated Pushbuttons	For catalog numbers starting with 52PT or 52BT ² ³ Plastic	white 1 of each color red green blue amber clear	52RA4TB 52RA4TN 52RA5S2 52RA5S3 52RA5S5 52RA5S9 52RA5S9 52RA5SA

① To order replacement lens for indicator lights starting with 52PA, 52PE, or 52PX, change the 6th digit to P for plastic and G for glass.

② It is possible to retrofit catalog numbers starting with 52PA, 52PE and 52PX with the replacement lens. The new lens have concentric ribs for improved light distribution.

③ To order replacement lens for push to test / illuminated pushbuttons starting with 52PA, 52PE, or 52PX, change the 6th digit to a P.



Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant – Class 52

Accessories and spare parts

			1

	Version	Suitable for	Color	Order no.
	VIOIOIT	Contable for	Ooloi	order no.
	Mushroom head push pull	For small 1 3/4" type, push-pull units	red	52RC3JR
	illuminated plastic screw-on type		green amber	52RC3JS 52RC3JT
		For large 2 1/2" type, push-pull units	red	52RC3KR
			green amber	52RC3KS 52RC3KT
75	Mushroom head push pull illuminated metal	Chrome, for small 1 3/4" type, push-pull units	red green	52RB3H2 52RB3H3
100	screw-on type	2	amber	52RB3H9
			white	52RB3HB
100		BlackMax, for small 1 3/4" type, push-pull	red	52RX3H2
10		units	green amber	52RX3H3 52RX3H9
			white	52RX3HB
	Mushroom head push pull	For small 1 3/4" type, push-pull units	black	52RC3D1
	non-illuminated plastic screw-on type	(catalog numbers starting with 52PP or 52BP) ^①	red green	52RC3D2 52RC3D3
	colon-on type	32D1 /-	yellow	52RC3D3
			blue	52RC3D5
			gray	52RC3D6
P			orange 1 of each color	52RC3D8 52RC3DN
		For large 2 1/2" type, push-pull units	black	52RC3E1
		(catalog numbers starting with 52PP or 52BP) ^①	red	52RC3E2
		JZDFJ [©]	green	52RC3E3
			yellow blue	52RC3E4 52RC3E5
				52RC3E6
			gray	SZNUSEO
			orange	52RC3E8
				52RC3E8 52RC3EN
	Mushroom head push pull	For small 1 3/4" type, push-pull units	orange 1 of each color red	52RC3E8 52RC3EN 52RC3F2
	Mushroom head push pull non-illuminated metal screw-on type	For small 1 3/4" type, push-pull units (catalog numbers starting with 52PP or 52BP)	orange 1 of each color	52RC3E8 52RC3EN
	non-illuminated metal screw-on type Twist to release head	(catalog numbers starting with 52PP or	orange 1 of each color red green chrome	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR
	non-illuminated metal screw-on type	(catalog numbers starting with 52PP or 52BP) [©]	orange 1 of each color red green chrome	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head	(catalog numbers starting with 52PP or 52BP) [©]	orange 1 of each color red green chrome red green amber red	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RT 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R3 52RC3R4 52RC3R4
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2 52RA6P3 52RA6P5
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R3 52RC3R4 52RC3R4
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2 52RA6P3 52RA6P9
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R4 52RA6P2 52RA6P3 52RA6P3 52RA6P4 52RA6P4 52RA6PB
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert)	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PB 52RA6PB
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PB 52RA6PB
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PB 52RA6PB
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PB 52RA6PB 52RA2A2 52RA2A2 52RA2A3 52RA2A4 52RA2A4 52RA2A4 52RA2A8
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts Short lever	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow blue gray orange white	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PA 52RA6PA 52RA6PB 52RA2A2 52RA2A3 52RA2A3 52RA2A4 52RA2A4 52RA2A5 52RA2A8 52RA2A8 52RA2A8
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow blue gray orange white red	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2 52RA6P9 52RA6P9 52RA6PB 52RA6PB 52RA2A2 52RA2A3 52RA2A3 52RA2A4 52RA2A5 52RA2A5 52RA2A6 52RA2A5 52RA2A6 52RA2A6 52RA2A6 52RA2A6 52RA2A6 52RA2A6 52RA2A6 52RA2A6 52RA2A8 52RA2A8 52RA2A8 52RA2A8
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts Short lever	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow bue gray orange white red green greyen	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PA 52RA6PB 52RA2A2 52RA2A3 52RA2A3 52RA2A4 52RA2A4 52RA2A4 52RA2A5 52RA2A8 52RA2A8 52RA2A8
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts Short lever	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow blue gray orange white red	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R2 52RC3R3 52RA6P2 52RA6P3 52RA6P5 52RA6P9 52RA6PA 52RA6PB 52RA2A2 52RA2A3 52RA2A4 52RA2A5 52RA2A8 52RA2A8 52RA2A8 52RA2A8 52RA2B3 52RA2B3 52RA2B3 52RA2B3
	non-illuminated metal screw-on type Twist to release head illuminated plastic screw-on type Twist to release head non-illuminated plastic screw-on type Replacement lens kit for Illuminated selector switches (Knob with Insert) Lever inserts Short lever	(catalog numbers starting with 52PP or 52BP) [©] For small twist to release units	orange 1 of each color red green chrome red green amber red green yellow red green blue amber clear white red green yellow blue gray orange white red green yellow	52RC3E8 52RC3EN 52RC3F2 52RC3F3 52RC3FC 52RC3RR 52RC3RS 52RC3RT 52RC3R3 52RC3R4 52RA6P2 52RA6P3 52RA6P9 52RA6PA 52RA6PB 52RA2A2 52RA2A3 52RA2A4 52RA2A3 52RA2A4 52RA2A8 52RA2A8 52RA2A8 52RA2A8 52RA2B3 52RA2B3 52RA2B3

① For push-pull units whose catalog numbers that start with 52PX, 52PA or 52PE, replacement heads are available. Order from the 52RB type "Mushroom head pushbutton cap" section on page 10/164.

Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant – Class 52

Accessories and spare parts

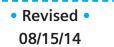
	nd ordering data			
	Version	Suitable for	Color	Order no.
	Protective boot Offers protection from ice and foreign substances from interfering with button operation	Flush pushbutton operations	clear black	52AABA 52AAB1
	Guards Prevents accidental operation	Non-illuminated basic pushbuttons	chrome blackmax	52AAGP 52AXGP
		1 5/8" mushroom pushbuttons, 1 3/4" push-pull units ^① , and twist to release units	chrome blackmax	52AAGM 52AXGM
		Push to test/illuminated pushbutton and indicator lights	chrome blackmax	52AAGL 52AXGL
DENCY	EMERGENCY-STOP Lock Out	Class 52 Illuminated Mushroom Head Pushbuttons; 304 Stainless Steel	chrome (304 SS)	52AALE
	EMERGENCY-STOP Backing Ring	Yellow 90mm E-STOP Backing Ring		52AAR
	Locknuts Replacement front ring	Non-illuminated basic pushbuttons	chrome blackmax	52AANP 52AXNP
		Non-illuminated mushroom pushbuttons	chrome blackmax	52AANL 52AXNL
		Push-pull and twist-to-release units (only for push-pull units starting with 52PP or 52BP) [©]	chrome blackmax	52CANP 52CXNP
		Indicator Lights	blue amber	52AANL 52AXNL
		Selector switches	chrome blackmax	52AANS 52AXNS
	Mounting Accessories	Class 52 Trim Washer Kit (Set of 10 pcs) Class 52 Washer Kit (Include 2-Neoprene Gaskets, 1-Trim Washer, 1-Index Locking Ring (chrome)	chrome	52AAQ 52AAD
	Padlock attachments	Non-illuminated basic pushbuttons	flush extended	52AALA 52AALB
•	Padlock cover Lock devices in off position	Pushbuttons, selector switches, and non-illuminated mushroom heads		52AALS
,0	Lock nut wrench	All devices		52MAWB
	Hole plugs		corrosion resistant steel, grey stainless steel	52AAH6 52ABH6 52ABHS
	Spare keys	Class 52 Standard Keyed Selector Switch.	501CH	52KEY-501CH
	(Kit includes 1 Key)	Keyed Selector Switch ordered with Suffix X302. Keyed Selector Switch ordered with Suffix X301.	506CH 547CH	52KEY-506CH 52KEY-547CH
		Keyed Selector Switch ordered with Suffix X300.	548CH	52KEY-548CH
		Keyed Selector Switch ordered with Suffix X299.	549CH	52KEY-549CH
		Keyed Selector Switch ordered with Suffix X298.	550CH	52KEY-550CF
	Grounding kit	All devices		52AL109145
	Touchsafe contact blocks with gold flashin	g		
DAL	1 NO			52BAK
BAJ	1 NC 1 NO - 1 NC			52BAJ ⁴ 52BJK ⁴
0 4	1 NO early make	closes before 52BAK		52BAH
4(88)	1 NC late break	opens after 52 BAJ		52BAE
BAK	1 NO - 1 NC	Reed switch; UL listed for class 1 division 2; .25A Max, 200V AC, 10 Watt max .5A Max, 200V DC, 10 Watt max		52BAR ³
		, 2001 20, 10 114111101		52BAU

① These can also be used with the 1 5/8" push-pull devices.

② For push-pull units starting with part numbers 52PA, 52PE or 52PX, replacement locknuts can be ordered using 52AANL (Chrome) and 52AXNL (BlackMax).

³ Hermetically Sealed

④ Positive opening according to IEC 60947-5-1, Appendix K.



Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant – Class 52

Accessories and spare parts

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	Version	Suitable for	Lamp voltage	Color	Order no.
	Lamps with screw connection, miniature bayo	onet (BA 9s style)			
	Incandescent lamps,				
	Flashing, type 267 lamp (replaces 755 lamp)	51, 52	6 V		52AABNF
163	6V type 755 lamp (Rated 150 mA)	51, 52	6 V		52AABN
21	12V type 756 (Rated 80 mA)	51, 52	12 V		52AACN
M	,	51, 52	24 V		52AADN
	24V type 757 (Rated 80 mA)	51, 52			3SB1902-1AP
	48V, 2W		48 V		
	60V, 2W	52	60 V		3SR9424
	120V, 2.5W, type #120MB (Rated 250 mA)	52	120 V		52AAENC1
	Neon (uses resistors) type B2A (NE-51H)	52	120 V		52AAPN
	Candelabra, 120V, 3W, Full voltage type 3S6/5	52 older revision styles	120 V		52AAENC
	LED bulbs ^①				
	LED, BA9s type [®]	Class 52	6 V AC/DC		52AEB□
			24 V AC/DC		52AED□
			120 V AC/DC		52AEE□
	Super-Bright LED ²	Class 52	6 V AC/DC		52AEB□7
	Super Bright LEBS	01033 02	24 V AC/DC		52AED□7
			120 V AC/DC		52AEE□7
			120 V DC		52AEV□7
					
	LED lighting module with integrated LED.				
	Single LED (Rated 35 mA Maximum)	Class 52	24 V AC/DC		52AAIL□
			120 V AC		52AAIM□
			240 V AC		52AAIN□
	Full voltage lighting module accessory with B		,		
	LED [®]	Class 52	6 V AC/DC		52AAFB□B
			24 V AC/DC		52AAFD□B
			120 V AC/DC		52AAFE□B
	Super-Bright LED®	Class 52	6 V AC/DC		52AAFB□Y
	odpor Bright 228	0.00002	24 V AC/DC		52AAFD□Y
			120 V AC/DC		52AAFE□Y
	Incandescent bulb	Class 52	6 V AC/DC		52AAFB
			24 V AC/DC		52AAFD
			120 V AC/DC		52AAFE
	Transformer lighting module accessory with E	RA9s tyne lamn①			
	LED	Class 52	120 V AC		52AATG□B
		2.300 02	240 V AC		52AATH□B
			480 V AC		52AATJ□B
			600 V AC		52AATK□B
	Super-Bright LED	Class 52	120 V AC		52AATG□Y
		J.300 0L	240 V AC		52AATH□Y
			480 V AC		52AATJ□Y
			600 V AC		52AATK□Y
	Incandescent bulb	Class 52	120 V AC		52AATGN
			240 V AC		52AATHN
			480 V AC		52AATJN
			600 V AC		52AATKN
			Color options:	red	2 3
				green	3
				yellow/amber	4

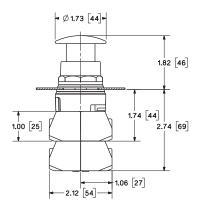
① Standard LED lamps are recommended for indoor applications, Super-Bright LED Lamps are recommended for outdoor applications.

^{© 6}V, 24V (Super Bright only) and 120V are currently AC only. Replaced by AC/DC rated versions end of 2014.

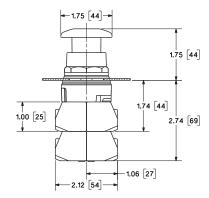
30mm Water, Oil Tight & Corrosion Resistant - Class 52

Dimensional drawings

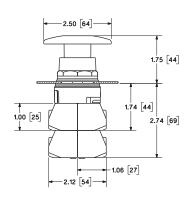
Non-Illuminated Push-Pull Metal Mushroom Head



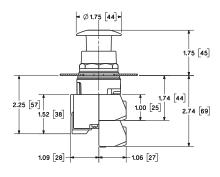
Non-Illuminated Push-Pull Small Plastic Mushroom Head



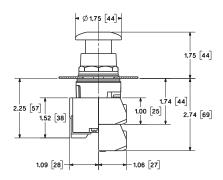
Non-Illuminated Push-Pull Large Plastic Mushroom Head



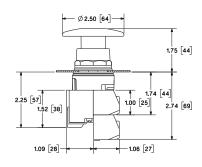
Illuminated Push-Pull Metal Mushroom Head



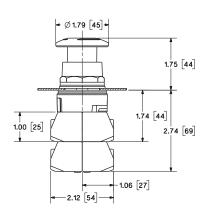
Fully Illuminated Push-Pull Small Plastic Mushroom Head



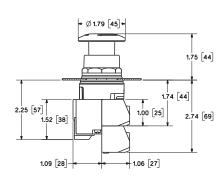
Illuminated Push-Pull Large Plastic Mushroom Head



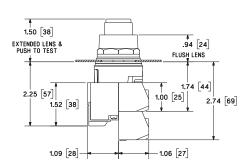
Non-Illuminated Twist Release Plastic Mushroom Head



Illuminated Twist Release Plastic Mushroom Head



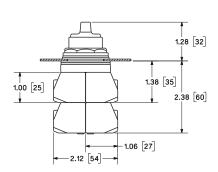
Illuminated Pushbutton Flush Lens Illuminated Pushbutton Extended Lens Illuminated Push to Test



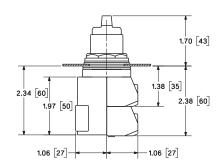
30mm Water, Oil Tight & Corrosion Resistant - Class 52

Dimensional drawings

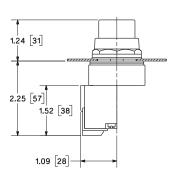
Selector Switch Non-Illuminated



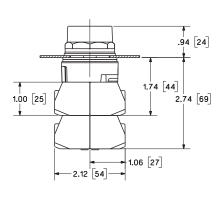
Selector Switch Illuminated



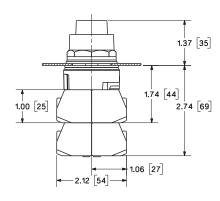
Indicator Light Plastic Lens



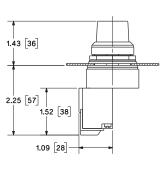
Momentary Pushbutton Non-Illuminated Flush Cap



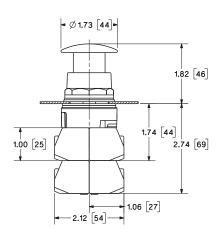
Momentary Pushbutton Non-Illuminated Raised Cap



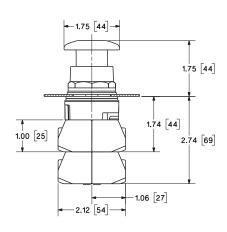
Indicator Light Glass Lens



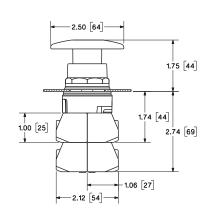
Momentary Pushbutton Metal Mushroom Head



Momentary Pushbutton Small Plastic Mushroom Head



Momentary Pushbutton Large Plastic Mushroom Head



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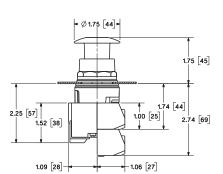
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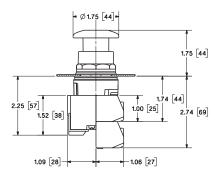
30mm Water, Oil Tight & Corrosion Resistant - Class 52

Dimensional drawings

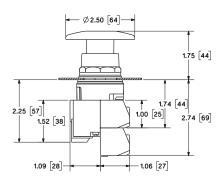
Illuminated Momentary Pushbutton Metal Mushroom Head



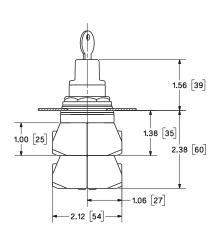
Illuminated Momentary Pushbutton Small Plastic Mushroom Head



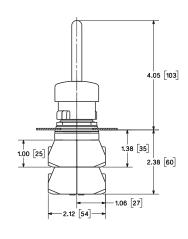
Illuminated Momentary Pushbutton Large Plastic Mushroom Head



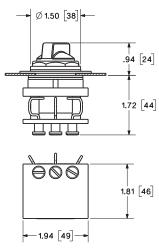
Selector Switch Keyed



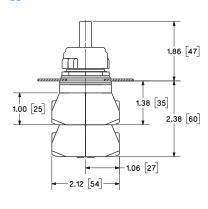
Wobble Switch



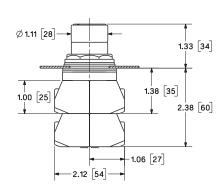
Potentiometer Switch



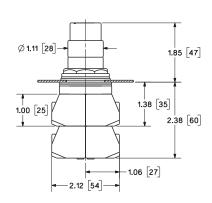
Toggle Switch



Selector Pushbutton Switch Flush Cap



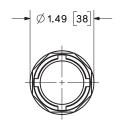
Selector Pushbutton Switch Raised Cap

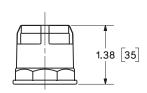


30mm Water, Oil Tight & Corrosion Resistant - Class 52

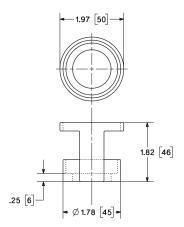
Dimensional drawings

Momentary Pushbutton Guard Illuminated Push to Test Guard

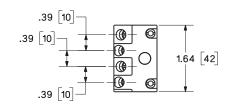


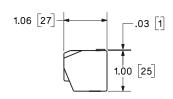


Mushroom Head Guard



Contact Block

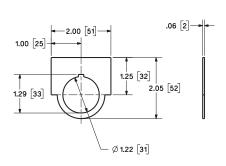


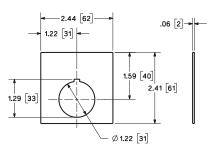


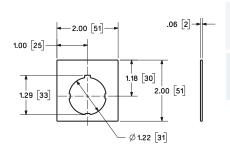
Large Metal Legend Plate

Automotive Metal Legend Plate

Large Plastic Legend Plate







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Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant - Class 52

Class 52 oiltight pushbutton stations

Selection a	nd ordering data					
	Actuator identification C = top device in station B = middle device in station A = bottom device in station	Degree of protection [®]	Contact / voltage	No. of command points	Order no.	Pack
	A = Momentary flush pushbutton black, label "START"	NEMA 12	1NO - 1NC	1	52C101A	0
1 unit control	A = Momentary raised pushbutton red, label "STOP"	NEMA 12	1NO - 1NC	1	52C103A	
station	A = Momentary mushroom head red, label "STOP"	NEMA 12	1NO - 1NC	1	52C104A	
	A = Maintained metal mushroom head red, label "EMERGENCY STOP"	NEMA 12	1NO - 1NC	1	52C117A	
0 8	A = 2 position selector switch "OFF-ON"	NEMA 12	1NO - 1NC	1	52C159A	
Stop Stop	A = 3 position selector switch "HAND-OFF-AUTO"	NEMA 12	1NO - 1NC	1	52C156A	
3	A = Indicator light, red	NEMA 12	120V Transformer type	1	52C131A	
e e e e e	A = Indicator light, green	NEMA 12	120V Transformer type	1	52C135A	
	A = Momentary flush pushbutton black, label "START"	NEMA 4X Stainless Steel	1NO - 1NC	1	52C101S	
	A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO - 1NC	1	52C103S	
	A = Momentary mushroom head red, label "STOP"	NEMA 4X Stainless Steel	1NO - 1NC	1	52C104S	
	A = Maintained metal mushroom head red, label "EMERGENCY STOP"	NEMA 4X Stainless Steel	1NO - 1NC	1	52C116S	
	A = 2 position selector switch "OFF-ON"	NEMA 4X Stainless Steel	1NO - 1NC	1	52C159S	
	A = 3 position selector switch "HAND-OFF-AUTO"	NEMA 4X Stainless Steel	1NO - 1NC	1	52C156S	
	A = Momentary flush pushbutton black, label "START"	NEMA 4X Fiberglass	1NO - 1NC	1	52C101X	
	A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO - 1NC	1	52C103X	
	A = Momentary mushroom head red, label "STOP"	NEMA 4X Fiberglass	1NO - 1NC	1	52C104X	
	A = Maintained metal mushroom head red, label "EMERGENCY STOP"	NEMA 4X Fiberglass	1NO - 1NC	1	52C116X	
	A = 2 position selector switch "OFF-ON"	NEMA 4X Fiberglass	1NO - 1NC	1	52C159X	
	A = 3 position selector switch "HAND-OFF-AUTO"	NEMA 4X Fiberglass	1NO - 1NC	1	52C156X	
2 unit control station	B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbutton red, label "STOP"	NEMA 12	1NO, 1NC 1NO, 1NC	2	52C201A	
Station	B = Momentary flush pushbutton black, label "START" A = Momentary Mushroom head pushbutton red, label "STOP"	NEMA 12	1NO, 1NC 1NO, 1NC	2	52C202A	
STANI STANIS	B = Momentary flush pushbutton, label "FORWARD" A = Momentary flush pushbutton, label "REVERSE"	NEMA 12	1NO, 1NC 1NO, 1NC	2	52C204A	
3	B = Momentary flush pushbutton, label "UP" A = Momentary flush pushbutton, label "DOWN"	NEMA 12	1NO, 1NC 1NO, 1NC	2	52C223A	
3 100	B = Indicator light, red, label "RUN" A = Maintained selector switch, label "HAND-OFF-AUTO"	NEMA 12	120V Transformer type	2	52C224A	
	B = Indicator light, red A = Indicator light, green	NEMA 12	120V Transformer type	2	52C230A	
	B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC	2	52C201S	
	B = Momentary flush pushbutton black, label "START" A = Momentary Mushroom head pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC	2	52C202S	
	B = Momentary flush pushbutton, label "UP" A = Momentary flush pushbutton, label "DOWN"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC	2	52C223S	
	B = Indicator light, red, label "RUN" A = Maintained selector switch, label "HAND-OFF-AUTO"	NEMA 4X Stainless Steel	120V Transformer type 1NO, 1NC	2	52C224S	
	B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC	2	52C201X	
	B = Momentary flush pushbutton black, label "START" A = Momentary Mushroom head pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC	2	52C202X	
	B = Momentary flush pushbutton, label "UP" A = Momentary flush pushbutton, label "DOWN"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC	2	52C223X	
	B = Indicator light, red, label "RUN" A = Maintained selector switch, label "HAND-OFF-AUTO"	NEMA 4X Fiberglass	120V Transformer type 1NO 1NC	2	52C224X	

① NEMA 4X Stainless Steel Enclosure is 304 SS.

1NO, 1NC

Pushbutton Units and Indicator Lights 30mm Water, Oil Tight & Corrosion Resistant - Class 52

Class 52 oiltight pushbutton stations

Selection and ordering data

	Actuator identification	Degree of protection ^①	Contact / voltage	No. of command points	Order no.	Pack
3 unit control station	C = Indicator light, red B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbutton red, label "STOP"	NEMA 12	120V 1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C307A	Unit
*	C = Momentary flush pushbutton black, label "FORWARD" B = Momentary flush pushbutton black, label "REVERSE" A = Momentary raised pushbutton red, label "STOP"	NEMA 12	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C301A	
	C = Momentary flush pushbutton black, label "UP" B = Momentary flush pushbutton black, label "DOWN" A = Momentary raised pushbutton red, label "STOP"	NEMA 12	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C332A	
<u>گ</u>	C = Momentary flush pushbutton black, label "OPEN" B = Momentary flush pushbutton black, label "CLOSE" A = Momentary raised pushbutton red, label "STOP"	NEMA 12	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C333A	
	C = Momentary flush pushbutton black, label "HI" B = Momentary flush pushbutton, black label "LOW" A = Momentary raised pushbutton red, label "STOP"	NEMA 12	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C334A	
	C = Indicator light, red B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	120V 1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C307S	
	C = Momentary flush pushbutton black, label "FORWARD" B = Momentary flush pushbutton black, label "REVERSE" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C301S	
	C = Momentary flush pushbutton black, label "UP" B = Momentary flush pushbutton black, label "DOWN" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C332S	
	C = Momentary flush pushbutton black, label "OPEN" B = Momentary flush pushbutton black, label "CLOSE" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C333S	
	C = Momentary flush pushbutton black, label "Hi" B = Momentary flush pushbutton, black label "LOW" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Stainless Steel	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C334S	
	C = Indicator light, red B = Momentary flush pushbutton black, label "START" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	120V 1NO, 1NC 1NO, 1NC	3	52C307X	
	C = Momentary flush pushbutton black, label "FORWARD" B = Momentary flush pushbutton black, label "REVERSE" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C301X	
	C = Momentary flush pushbutton black, label "UP" B = Momentary flush pushbutton black, label "DOWN" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C332X	
	C = Momentary flush pushbutton black, label "OPEN" B = Momentary flush pushbutton black, label "CLOSE" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C333X	
	C = Momentary flush pushbutton black, label "HI" B = Momentary flush pushbutton, black label "LOW" A = Momentary raised pushbutton red, label "STOP"	NEMA 4X Fiberglass	1NO, 1NC 1NO, 1NC 1NO, 1NC	3	52C334X	

① NEMA 4X Stainless Steel Enclosure is 304 SS.

30mm Water, Oil Tight & Corrosion Resistant - Class 52

Empty enclosures

Selection and ordering data



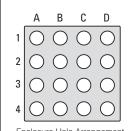
Standard enclosures come with 2 1/4" leg center for legend spacing. Automotive end plates require 2 1/2 " spacing. For more than 2 contact blocks on the right or left, use extra deep enclosure.

Mounting hole arrangement

1 thu 4 are in one row 6 holes are 3 down and 2 across 9 holes are 3 down and 3 across 12 holes are 4 down and 3 across 16 holes are 4 down and 4 across

Number of command points	Degree of protection	Order No.®	Pack
			Unit
1	NEMA Type 12/13	P30EMS01	
1	NEMA Type 12/13 extra deep	P30EMS01D	
1	NEMA Type 4/4X stainless steel	P30EMS014	
1	NEMA Type 4/4X Fiberglass	P30EMS01X	
2	NEMA Type 12/13	P30EMS02	
2	NEMA Type 12/13 extra deep	P30EMS02D	
2	NEMA Type 4/4X stainless steel	P30EMS024	
2	NEMA Type 4/4X Fiberglass	P30EMS02X	
3	NEMA Type 12/13	P30EMS03	
3	NEMA Type 12/13 extra deep	P30EMS03D	
3	NEMA Type 4/4X stainless steel	P30EMS034	
3	NEMA Type 4/4X Fiberglass	P30EMS03X	
4	NEMA Type 12/13	P30EMS04	
4	NEMA Type 12/13 extra deep	P30EMS04D	
4	NEMA Type 4/4X stainless steel	P30EMS044	
4	NEMA Type 4/4X Fiberglass	P30EMS04X	
6	NEMA Type 12/13	P30EMS06	
6	NEMA Type 12/13 extra deep	P30EMS06D	
6	NEMA Type 4/4X stainless steel	P30EMS064	
9	NEMA Type 12/13	P30EMS09	
9	NEMA Type 12/13 extra deep	P30EMS09D	
9	NEMA Type 4/4X stainless steel	P30EMS094	
12	NEMA Type 12/13	P30EMS12	
12	NEMA Type 12/13 extra deep	P30EMS12D	
12	NEMA Type 4/4X stainless steel	P30EMS124	
16	NEMA Type 12/13	P30EMS16	
16	NEMA Type 12/13 extra deep	P30EMS16D	
16	NEMA Type 4/4X stainless steel	P30EMS164	

Order Form



Ordering Information

To order non-standard control stations select catalog numbers from the previous pages, determine the required position in the enclosure and fill in the table below. If a special legend plate is required, specify description in the table. The combined list prices of the components is the list price of the station.

- Select enclosure
- Vertical or Horizontal. Outline Diagram at left starting at the top left-hand corner. Example: 3 unit vertical outline location No. 1A, 2A and 3A. 3 unit horizontal outline location No. 1A, 1B, and 1C
- List location No. and applicable catalog numbers in the table below. Use complete catalog numbers where possible

Order No./Item No.

Customer

Enclosure Catalog No.

Location	Operator PB-SELPL	Accessories Key Lock, Boot, Etc,	Legend Plate Legend or Blank	Special Marking

① NEMA 4X Stainless Steel Enclosure is 304 SS.

Design

The 30 mm legend plates are approved for the use with both Class 51 and Class 52 devices. Automotive legend plates require 2 1/2" mounting centers. Plastic legend plates will have white letters ingraved.

When ordering custom engraved legend plates, specify the required inscription text.

Selection and ordering data

Inscription	Large	Automotive ^①	Large Plastic [®]	Automotive
Hooripacii	(1 7/16" x 2")		(1 7/16" x 2")	Plastic [©] 2
	(17/10/22)	(2 7/16" x 2 7/16")		(2 7/16" x 2 7/16")
		Order No.	Order No.	
	Order No.			Order No.
Blank (brushed aluminum)"	52NL02	52NA02		
Blank (red)"	52NL02R	52NA02R	52ND02R	52NE02R
Blank (Black)"	52NL02B	52NA02B	52ND02R 52ND02B	52NE02B
			32ND02B	52NEU2B
nscribed legend plates w				
Close	52NL18	52NA18		<u> </u>
Down	52NL10	52NA10		
Emerg Stop	52NL16	52NA16	_	
Emerg Stop (red)	52NL16R	52NA16R	_	<u> </u>
ast-Slow	52NL33	52NA33	<u> </u>	<u> </u>
orward	52NL05	52NA05	_	_
or-Off-Rev	52NL38	52NA38	_	_
or-Rev	52NL31	52NA31	_	
Hand-Off-Auto	52NL37	52NA37	_	<u> </u>
High	52NL07	52NA07	_	_
High-Low	52NL30	52NA30	_	_
High-Off-Low	52NL44	52NA44		_
n	52NL21	52NA21		_
Jog	52NL13	52NA13		
Jog-Forward	52NL24	52NA24		
Jog-Reverse	52NL25	52NA25	<u>_</u>	
	52NL08			
_OW		52NA08		<u> </u>
ower	52NL20	52NA20	<u> </u>	_
Man-Auto	52NL35	52NA35		
Off	52NL12	52NA12		<u> </u>
Off-On	52NL26	52NA26	<u> </u>	<u> </u>
On	52NL11	52NA11	_	_
On-Off-Auto	52NL40	52NA40	_	_
Open	52NL17	52NA17	_	_
Open-Close	52NL34	52NA34	<u> </u>	_
Open-Off-Close	52NL41	52NA41	_	_
Out	52NL22	52NA22	_	_
Pull to Start Push to Stop	52NL47	52NA47	_	_
Raise	52NL19	52NA19		_
Raise-Lower	52NL36	52NA36		_
Reset	52NL14	52NA14		
Reverse	52NL06	52NA06	-	<u>-</u>
Run	52NL23	52NA23	<u> </u>	
	52NL29	52NA29		_
Run-Jog			_	_
Safe-Run	52NL27	52NA27	_	_
Slow-Off-Fast	52NL39	52NA39		
Start	52NL03	52NA03		
Start-Jog	52NL28	52NA28		
Start-Stop	52NL32	52NA32	-	<u> </u>
Stop	52NL04	52NA04	-	_
Stop (red)	52NL04R	52NA04R	_	-
Jp	52NL09	52NA09	_	_
Jp-Down	52NL49	52NA49	_	_
Jp-Off-Down	52NL42	52NA42	_	_
nscription plates with custo	m engraving			
·		CONTROL		
'Custom engraved	52NL02E	52NA02E	_	_
(brushed aluminum)"	FONI CODE	FONIACODE	FONDCODE	FONFOCRE
	52NL02RE 52NL02BE	52NA02RE 52NA02BE	52ND02RE 52ND02BE	52NE02RE 52NE02BE

Characters per row 14

① Automotive requires 2 1/2" mounting centers

Max. number of rows
Letter height

4

5

7

8

IU

Industrial Controls Catalog

1/4

1/4

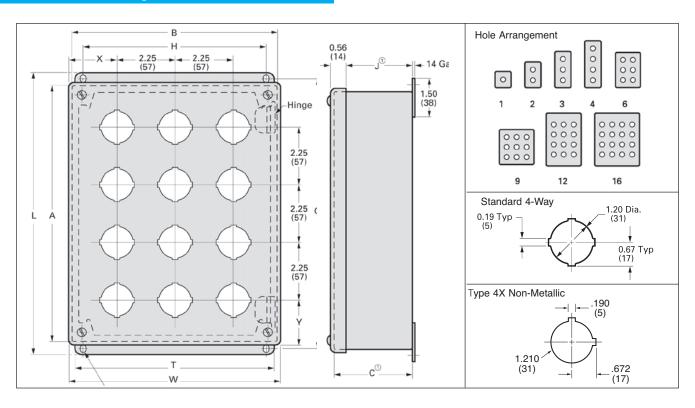
16

5/32

② White letters on plastic nameplate.

30mm Heavy Duty, Watertight/Oiltight, Class 52

Dimensional drawings



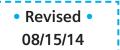
Type 12/	13 and 4X Sta	inless Steel									
	Enclosure S	Size		Mounting		Overall					
Units	A	В	С	G	Н	L	W	J	Т	Х	Υ
1	3.50 (89)	3.25 (83)	2.75 (70)	4.00 (102)	2.38 (60)	4.50 (114)	3.47 (88)	2.31 (59)	3.00 (76)	1.73 (44)	1.86 (47)
2	5.75 (146)	3.25 (83)	2.75 (70)	6.25 (159)	2.38 (60)	6.75 (171)	3.47 (88)	2.31 (59)	3.00 (76)	1.73 (44)	1.86 (47)
3	8.00 (203)	3.25 (83)	2.75 (70)	8.50 (216)	2.38 (60)	9.00 (229)	3.47 (88)	2.31 (59)	3.00 (76)	1.73 (44)	1.86 (47)
4	10.25 (260)	3.25 (83)	2.75 (70)	10.75 (273)	2.38 (60)	11.25 (286)	3.47 (88)	2.31 (59)	3.00 (76)	1.73 (44)	1.86 (47)
6	9.50 (241)	6.25 (159)	3.00 (76)	10.00 (254)	5.38 (137)	10.50 (267)	6.47 (164)	2.56 (65)	6.00 (152)	2.11 (54)	2.61 (66)
9	9.50 (241)	8.50 (216)	3.00 (76)	10.00 (254)	7.62 (194)	10.50 (267)	8.72 (221)	2.56 (65)	8.25 (210)	2.11 (54)	2.61 (66)
12	11.75 (298)	8.50 (216)	3.00 (76)	12.25 (311)	7.62 (194)	12.75 (324)	8.72 (221)	2.56 (65)	8.25 (210)	2.11 (54)	2.61 (66)
16 ²)	11.75 (298)	10.75 (273)	3.00 (76)	12.25 (311)	9.88 (251)	12.75 (324)	10.97 (279)	2.56 (65)2)	10.50 (267)	2.11 (54)	2.61 (66)

Type 12/1	Type 12/13 Extra Deep Enclosures												
	Enclosure Size Mounting						Overall						
Units	Α	В	С	G	Н	L	W	J	Т	Х	Υ		
1	4.00	4.00	4.75	4.50	3.12	5.00	4.22	4.31	3.75	2.11	2.11		
2	6.00	4.00	4.75	6.50	3.12	7.00	4.22	4.31	3.75	2.11	1.98		
3	8.00	4.00	4.75	8.50	3.12	9.00	4.22	4.31	3.75	2.11	1.86		
4	10.00	4.00	4.75	10.50	3.12	11.00	4.22	4.31	3.75	2.11	1.73		
6	9.50	6.25	4.75	10.00	5.38	10.50	6.47	4.31	6.00	2.11	2.61		
9	9.50	8.50	4.75	10.00	7.62	10.50	8.72	4.31	8.25	2.11	2.61		
12	11.75	8.50	4.75	12.25	7.62	12.75	8.72	4.31	8.25	2.11	2.61		
16 ²)	11.75	10.75	4.75	12.25	9.88	12.75	10.97	4.31	10.50	2.11	2.61		

Type 4X Non-N	/letallic						
	Enclosure	Size	Mounting		Overall		
Units	Α	В	С	G	Н	L	W
1	6.00	3.19	3.63	4.88	2.94	6.63	3.81
2	6.00	3.19	3.63	4.88	2.94	6.63	3.81
3	8.26	3.19	3.63	7.13	2.94	8.88	3.81
4	10.51	3.19	3.63	9.37	2.94	11.13	3.81

All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

- 1) Grounding stud in body of enclosure.
- 2) For stainless steel add 1.75 (45) to depth.



Pushbutton Units and Indicator Lights 30 mm Pilot Devices

Technical Specifications

Standards	UL Listed File # E22655	CSA Certified File # LR6535
Utilization	Category NEMA	A600/P600
Degree of Protection	52B, 52P-, 52S-, 52M- Operators	NEMA: 1, 3, 3R, 4, 4X, 12 and 13
•		IEC 529: IP10, IP11, IP14, IP52, IP54, IP56 and IP66

Rated Up	perational Cu	rrent				
	NEMA A600 – 10 (/oltage AC	Continuous Amps Make Amps	Break Amps	NEMA P600 – Rating Codes Circuit Application	s for DC Control	
-	20V	60	6	Thermal Continuous Test C Maximum Make or Break;		5.0
	240V	30	3	125V		.10
	180V	15	1.5	250V	·).55
	600V	12	1.2	301-600V).20
	Total VA	7200	720	Maximum Make or Break		
		7_00		Volt amperes at 300V or Le	ess 1	38
Contact Blo	ocks	52BAK, -BAJ ^① , -B	AH, -BAU, -BJK®	600VAC Maximum, Heavy Duty		
		52BAR		200VAC .25 Amp, 10 Watt Maxir	mum	
				200VDC .50 Amp, 10 Watt Maxin		
Positivo	v driven contacts.	Contact blocks are	e suitable for appli	cations down to 5V/1MA low voltage		d in
© O i Ositive	y driveri contacts.		Class 1; Division 2	·	J. 1-1.	
Pilot Light	Full Voltage	52PL4/52PL5	-B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)	240V AC/DC Max.	
J	LED Module	or	-L (24V), -M (1	120V) -N (240V)	240V AC Max.	
	Transformer T	Type 52BL4/52BL5	-G (120V), -H	(240V), -J (480V), -K (600V)	600V AC Max., 50/60) Hz
Push-to-Tes	t Full Voltage	52PT6	-B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)	240V AC/DC Max.	
	LED Module	or	-L (24V), -M (1	120V), -N (240V)	240V AC Max.	
	Transformer T	Type 52BT6	-G (120V), -H	(240V), -J (480V), -K (600V)	600VAC Max., 50/60	Hz
Illuminated	Full Voltage	52PP2(3,7)	-B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)	240V AC/DC Max.	
Push-Pull	LED Module	or	-L (24V), -M (1	120V), - N (240V)	240V AC Max.	
	Transformer	52BP2(3,7)	-G (120V), -H	(240V), -J (480V), -K (600V)	600VAC Max., 50/60	Hz
Twist-to-	Full Voltage	52BR8	-B (6-8V), -C (12V), -D (24V), -E (120V), -F (240V)	240V AC/DC Max.	
Release	LED Module	or	-L (24V), -M (1	120V), - N (240V)	240V AC Max.	
	Transformer	52PR8		(240V), -J (480V), -K (600V)	600VAC Max., 50/60	Hz
Illuminated	Full Voltage	52SA7(A,B,C		12V), -D (24V), -E (120V), -F (240V)	240V AC/DC Max.	
Selector	Transformer	or	-G (120V), -H	(240V), -J (480V), -K (600V)	600V AC Max., 50/60) Hz
Switch		52SX7(A,B,C)			

Dielectric Strength 2200V for one minute

Mechanical Design Life	e Cycles			
Vibration	Frequency 5 - 60Hz.; Disp030 inches, sweep 5 minutes for a duration of 30 minutes on each axis. Not to exceed 5.5 G's for maximum of 1 minute.			
Pushbuttons	Momentary, Non-illuminated Momentary, Illuminated	5,000,000 Operating Cycles 300,000 Operating Cycles		
Push-Pull	Maintained Momentary	300,000 Operating Cycles 2,000,000 Operating Cycles		
Twist-to-Release		300,000 Operating Cycles		
Selector Switches	Non-illuminated Illuminated, Key-operated	2,000,000 Operating Cycles 2,000,000 Operating Cycles		
Contact Operation	Standard Contact Black Logic Reed			
Wire Gauge	#18-12 AWG			
Terminal Screw Torque	2-10 lb-in / 20 lb-in max; 8 lb-in recommended			
Locknut Torque	15 ft. lbs. max			
Temperature Range	Operating Storage	31F to +158F (-35C to +70C) 40F to +185F (-40C to +85C)		

All parts are designed and manufactured of corrosion resistant material or are plated or painted as corrosion protection. All contact block contacts are gold flashed as a standard offering. Internal return spring mechanisms of operators and contact blocks of stainless steel. RoHS Compliant.

Declaration of Conformity — The products listed below, to which this declaration relates, are in conformity with the following standards, following the provisions of the Low Voltage Directive (LVD) (73/23/EEC), and the Electromagnetic Compatibility Directive (89/336/EEC.)

Products: Contact Blocks: Cat Nos. 52BAE, 52BAH, 52BAJ, 52BAK, 52BAR, 52BAU and 52BJK, with suffixes. Pilot Lights: Cat Nos 52P, with suffixes. Operators: Cat Nos 52S or 52P, with suffixes.

Applicable Standards: EN 60947-5-1 Low-Voltage Switchgear and controlgear. Enclosed devices meet the requirements of environmental ratings of IP10, IP11, IP14, IP52, IP54, and IP56. Open devices, when mounted as instructed, in environmental type IP10, IP11, IP14, IP52, IP54 or IP56 enclosures, maintain the environmental requirements for those enclosure types. Cat. No. 52BP, 52BR, 52PP, and 52PR, 2 Position, Twist-To-Release and 2 Position, Push Pull Maintained operators provided with red operating heads and 52BJK contact blocks meet the requirements of EN 60947-5-5 for Electrical Emergency Stop Device With Mechanical Latching Function (e-stop).

10

Siemens Industry, Inc. Industrial Controls Catalog

Notes

SIRIUS RELAYS

Contents

Control Circuit Components Function Relays, Interfaces and Converters

Section Overview	Monitoring Relays for Non-Electrical Quantities
Temperature Monitoring Relays	For Level Monitoring of Conductive Liquids
Overview	Selection, 3UG450111/55
Selection, 3RS10-11, 3RS20-21	Accessories
Analog with One Threshold Value	Technical Data
Analog with Two Threshold Values	For Underspeed Monitoring
Digital with Two Threshold Values	Selection, 3UG4651
Technical Data	Technical Data
Configuration	Coupling Relays and Interfaces
Functions	Coupling Relay Overview
Circuit Diagrams	Selection, 3TX70
Dimensions	Interface Relay Overview
Thermistor Motor Protection	Selection, 3TX70
	Technical Data
Overview	Circuit Diagrams
Selection, 3RN10	Dimensions
Technical Data	
Functions	Wide Input Interface Relay
Configuration	Overview
Circuit Diagrams 11/17-11/18 Dimensions 11/19	Selection, 3RS18
·	Dimensions
Solid-State Time Relays	Interface Converters
Overview	Overview
Selection	Selection, 3RS1711/77
Standard Time Relay, 3RP2011/21	Technical Data
Narrow Width Time Relays, 3RP1511/21	Configurations
Technical Data	Circuit Diagrams
Functions	Dimension Drawings
Selection	Power Relays
Timing Relay 7PV	Overview
Circuit Diagrams	Selection, 3TG10
Monitoring Relays	Technical Data
For Line, Voltage and Insulation Monitoring	Accessories
Overview	Circuit Diagrams
Selection	Dimensions
Technical Data	Plug-in Relays
For Current, Power Factor Monitoring	•
Overview	Selection, 3TX71
Selection	Technical Data
Technical Data	Overview
For Residual Current Monitoring	Circuit Diagrams
Overview	Dimensions
Selection	
Technical Data	

Pages

Contents

Pages

For Insulation Monitoring of Ungrounded AC Networks

For Insulation Monitoring of Ungrounded

DC and AC Networks

3RS10/3RS11 temperature monitoring relays



3RS10/3RS20 temperature monitoring relay for RTD or Thermocouple

Selection and ordering data

Overview 11/4
 Screw and Spring-type connection 11/5

Page

Technical data	11/7
Configuration	11/8
Functions	11/9
Circuit diagrams	11/10
Dimension drawings	11/11

3RN1 thermistor motor protection



3RN10 thermistor motor protection for PTC temperature detectors

Page

Selection and ordering data

Overview 11/12
 Screw and Spring-type connection 11/13
 Accessories 11/14

Technical data	11/14
Function diagrams	11/15
Functions	11/16
Circuit diagrams	11/17
Dimension drawings	11/19

Solid-State Time Relays



3RP20/3RP15 solid-state time relays Page

Selection and ordering data

Overview 11/20
 Screw and Spring-type connection 11/21

Technical data	11/22
Function diagrams	11/24
Circuit diagrams	11/28

Solid-State Time Relays



7PV solid-state relay Page

Selection and ordering data

Screw connection 11/27Accessories 11/27

Technical data 11/27 Dimension drawings 11/27



3RT19 time delay blocks for mounting on contactors

Selection and ordering data

• See Section 2

Page

3UG3/4 monitoring relays



For electrical quantities

• Selection Data

Page Selection and ordering data

11/31

Page

Overview 11/30 Technical data 11/32 Dimension drawings 11/33



For non-electrical quantities

Selection and ordering data

 Selection Data 11/55

Overview 11/55 Technical data 11/57 Dimension drawings 11/58



3TX70 relay and semiconductor

Coupling relays and interfaces

interfaces Page

Selection and ordering data

 Selection Data 11/64

Overview 11/63 Technical data 11/67 Terminal diagrams 11/71 Position of terminals 11/73 Dimension drawings 11/74

Coupling relays and interfaces



3RS17 interface converter

Selection and ordering data

 Screw and Spring-type 11/77 connection

11/76 Overview Technical data 11/78 11/79 Configuration Circuit diagrams 11/80 Dimension drawings 11/80



3TG10 power relay, 20A max. resistance load pole Page

Selection and ordering data

11/81

11/84

• AC and DC operation, hum-free With screw connection or tab

connector Accessories

Application	11/81
Technical data	11/82
Circuit diagrams	11/84
Position of terminals	11/84
Dimension drawings	11/84



3TX71 general purpose plug-in relays

Selection and ordering data

• AC and DC operation 11/85

Technical data	11/91
Contact arrangements	11/93
Circuit diagrams	11/94
Dimension drawings	11/97

Page

3RS10/3RS11

Overview

The 3RS1/3RS2 SIMIREL temperature monitoring relays can be used for measuring temperatures in solid, liquid and gaseous media. The temperature is acquired by the sensor in the medium, evaluated by the device and monitored for overshoot, undershoot or within a range (window function). The family consists of analog adjustable devices with one or two threshold values and digital devices that represent an excellent alternative to thermostats in the low-end performance range. The output relay picks up and releases at the threshold values in accordance with the parameter set-

Analog evaluation units

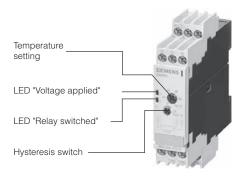
- Sensor types: PT100/Type J/ Type K
- Measuring principle for 2- and 3-wire sensors
- Electrical isolation between sensor and supply voltage (with the exception of AC/DC 24 V devices)
- Separate designs for overshoot and undershoot
- Measuring range depending on the version for -50°C to +50°C, 0°C to 100°C, 0°C to 200°C, 0°C to 600°C or 500°C to 1000°C
- Potentiometer for adjustable limit temperature and hysteresis of 2 to 20 %
- Closed-circuit principle
 Negrous 22 F representations
- Narrow 22.5 mm enclosure with 12 terminals

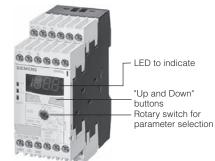
With one threshold value

- Supply voltage for AC/DC 24 V or AC 110/230 V
- Indication of supply voltage and relay status via LEDs
- One NO and one NC contact

With two threshold values

- Additional potentiometer for ψ2 (hysteresis for second limit value is 5 % of the measuring range)
- Supply voltage for AC/DC 24 V or 24 to 240 V
 I Enindication of aurable voltage
- LED indication of supply voltage and both relay states
- Open-circuit/closed-circuit principle switchover
- One NO and one CO contact





Digital evaluation units

- High-end evaluation unit for 1 or 1-3 sensor circuits
- Multifunctional digital display and three LEDs (for threshold values and Ready)
- Adjustable sensor types
- Adjustable overshoot, undershoot or window function
- Switchable open-circuit or closed-circuit principle
- Hysteresis for both threshold values (1 to 99 K)
- Memory function can be selected by means of an external control signal (Y1/Y2)
- One NO and two SPDT contacts
- Adjustable time delay from 0 to 999 s
- Wire-break and short-circuit detection with separate signalling contact (1 NO)
- Non-volatile storage of the set parameters
- 45 mm housing with 24 supply terminals
- Measuring principle for 2- and 3-wire sensors
- Electrical isolation (with the exception of AC/DC 24 V devices)
- In the 3-sensor design, the status of the individual sensors is indicated on limit value overshoot/undershoot

It clearly displays which of the connected sensors has overshot or undershot one or both threshold values.

Advantages

- All devices are with Cage Clamp terminals
- All devices with the exception of AC/DC 24 V devices are electrically isolated
- Variants for the evaluation of 1 to 3 sensors in one unit, e.g. for multiple monitoring in a plant or for motor protection
- Easy operation without complex menu systems
- Graduated product range; the right device for every application
- High-end evaluation units with digital display – can be used for a wide temperature range and for different sensor types
- Adjustable hysteresis
- Rapid fault diagnosis due to short-circuit monitoring and sensor wire-break detection
- Power packs with wide range of input voltage reduce the number of variants
- Easy configuration for either two-point or three-point closedloop control

Application

The 3RS1/3RS2 SIMIREL temperature monitoring relays can be used in almost any application in which limit temperatures must not be overshot or undershot. e.g.:

Monitoring of set limit temperatures and output of alarm messages for:

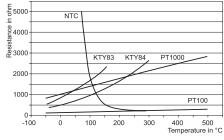
- Motor and plant protection
- Switchgear cabinet temperature monitoring
- Frost monitoring
- Temperature limits for process variables, e.g. in the packaging industry or galvanising equipment
- Control of plants and machines such as heating, airconditioning and ventilation systems, solar collectors, heat pumps or warm water supplies
- Monitoring of servo motors with KTY sensors
- Bearing and gearbox oil-level monitoring
- Monitoring of cooling liquids

Characteristics for thermocouples and resistance sensors

Thermocouples

≥ 80 Type "E"/ Type"J" .⊑ 70 Voltage Type "K" 50 Type "N" 40 30 Type "T 20 1200 1400 1600 200 400 600 800 1000 Temperature in

Resistance sensors



Temperature Monitoring Relays

SIRIUS RELAYS

3RS10/3RS11

Sensor	Function	Measuring range	Rated control supply	Order No.	List
School	runction	measuring range	voltage V _s 50–60 Hz AC	order No.	Price \$
Analog setting, 1 thresh			4.00		
analog closed-circuit pr				L	
PT100	Overrange	−50+50 °C	24 V AC/DC	3RS10 00- CD00	
(resistance sensor)			110/230 V AC	3RS10 00- CK00	
		0+100 °C	24 V AC/DC	3RS10 00- CD10	
			110/230 V AC	3RS10 00- CK10	
		0+200 °C	24 V AC/DC	3RS10 00- CD20	
			110/230 V AC	3RS10 00- CK20	
	Underrange	−50+50 °C	24 V AC/DC	3RS10 10-1CD00	
			110/230 V AC	3RS10 10-1CK00	
		0+100 °C	24 V AC/DC	3RS10 10-1CD10	
			110/230 V AC	3RS10 10-1CK10	
		0+200 °C	24 V AC/DC	3RS10 10-1CD20	
			110/230 V AC	3RS10 10-1CK20	
Тур Ј	Overrange	0+200 °C	24 V AC/DC	3RS11 00- CD20	
(thermocouple)			110/230 V AC	3RS11 00-1CK20	
		0+600 °C	24 V AC/DC	3RS11 00-1CD30	
			110/230 V AC	3RS11 00-1CK30	
Тур К	Overrange	0+200 °C	24 V AC/DC	3RS11 01- CD20	
(thermocouple)			110/230 V AC	3RS11 01-1CK20	
		0+600 °C	24 V AC/DC	3RS11 01-1CD30	
			110/230 V AC	3RS11 01-1CK30	
		+500+1000 °C	24 V AC/DC	3RS11 01-1CD40	
			110/230 V AC	3RS11 01-1CK40	
Analog setting for alarn current principle can be					
PT100	Overrange	-50+50 °C	24 V AC/DC	3RS10 20-1DD00	
(resistance sensor)	Overrange	-50+50 C	24-240 V AC/DC	3RS10 20-1DW00	
(resistance sensor)		0 .100 %			
		0+100 °C	24 V AC/DC 24–240 V AC/DC	3RS10 20-1DD10 3RS10 20-1DW10	
		0+200 °C	24-240 V AC/DC 24 V AC/DC	3RS10 20-1DW10 3RS10 20-1DD20	
		0+200 °C		_	
	Hardense va	F0 .F0 %C	24-240 V AC/DC	3RS10 20- DW20	
	Underrange	−50+50 °C	24 V AC/DC	3RS10 30-1DD00	
		0 100.00	24–240 V AC/DC	3RS10 30-1DW00	
		0+100 °C	24 V AC/DC	3RS10 30-1DD10	
			24–240 V AC/DC	3RS10 30-1DW10	
		0+ 200 °C	24 V AC/DC	3RS10 30- DD20	
			24–240 V AC/DC	3RS10 30-1DW20	
Typ J	Overrange	0+200 °C	24 V AC/DC	3RS11 20DD20	
(thermocouple)			24–240 V AC/DC	3RS11 20-1DW20	
		0+600 °C	24 V AC/DC	3RS11 20-1DD30	
			24-240 V AC/DC	3RS11 20-1DW30	
Тур К	Overrange	0+200 °C	24-240 V AC/DC	3RS11 21-1DW20	
(thermocouple)		0+600 °C	24-240 V AC/DC	3RS11 21-1DW30	
		+500+1000 °C	24 V AC/DC	3RS11 21-1DD40	
			24-240 V AC/DC	3RS11 21-1DW40	

Analog setting evaluation devices with one and two threshold values. For analog setting devices, the threshold values and the hysteresis from 2 to 20% are set using a rotary potentiometer. For devices with 2 threshold values, the selectable hysteresis only acts on threshold value 1. For the second threshold value, the hysteresis is permanently set to 5%. This series of products was developed for applications where a setting accuracy of $\pm\,5\%$ is sufficient.

Screw Terminal 1
Spring-type Terminal 2

2

3

4

6

8

10

Temperature Monitoring Relays

SIRIUS RELAYS

3RS10/3RS11

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage V _S 50–60 Hz AC	Order No.	List Price \$
"Temperature monitor" acc. to DI memory function can be enabled				ction
PT100/1000; KTY83/84; NTC (resistance sensor) 1)	−50+500 °C	24 V AC/DC 24–240 V AC/DC	3RS10 40- GD50 3RS10 40- GW50	
NTC (resistance sensor) "	−50+932 °F	24 V AC/DC 24–240 V AC/DC	3RS20 40- GD50 3RS20 40- GW50	
TYPE J, K, T, E, N (thermocouple)	−99+999 °C	24 V AC/DC 24–240 V AC/DC	3RS11 40- GD60 3RS11 40- GW60	
	−99+1830 °F	24 V AC/DC 24–240 V AC/DC	3RS21 40- GD60 3RS21 40- GW60	
"Temperature limiter" and "temp 1 CO + 1 CO + 1 NO, tripped state				de;
PT100/1000; KTY83/84; NTC (resistance sensor) ¹⁾	–50+750 °C	24 V AC/DC 24–240 V AC/DC	3RS10 42- GD70 3RS10 42- GW70	
TYPE J, K, T, E, N, R, S, B (thermocouple)	−99+1800 °C	24 V AC/DC 24–240 V AC/DC	3RS11 42- GD80 3RS11 42- GW80	

Motor monitoring relays, digital settings for up to 3 sensors, 45 mm wide; 1 CO + 1 CO + 1 NO								
Sensor	No of sensors	Measuring range	Rated control supply voltage V _S	Order No.	List Price \$			
PT100/1000; KTY83/84; NTC (resistance sensor) ¹⁾	1 to 3 sensors	−50+500 °C −50+932 °F	24–240 V AC/DC 24–240 V AC/DC	3RS10 41- GW50 3RS20 41- GW50				

¹⁾ NTC type: B57227-K333-A1 (100 °C: 1.8 K; 25 °C: 32.762 K)

Screw Terminal 1
Spring-type Terminal 2

The short-circuit and wire breakage detection, as well as the measuring range are restricted, depending on the sensor type:

Measuring ranges in °C for thermocouple								
Sensor type	Short- circuit	Wire breakage	3RS11 40 measuring range	3RS11 42 measuring range				
J	-	x	-99999	-991200				
K	-	x	-99999	-991350				
T	-	x	-99400	-99400				
E	_	x	-99999	-99999				
N	_	x	-99999	-99999				
S	_	x	_	01750				
R	-	x	-	01750				
В	_	х	_	4001800				

Measuring ranges in °C for resistance sensors								
Sensor type	Short- circuit	Wire breakage	3RS10 40 measuring range	3RS10 42 measuring range				
PT100	x	x	-50500	-50750				
PT1000	х	х	-50500	-50500				
KTY83-110	х	х	-50175	-50175				
KTY84	х	х	-40300	-40300				
NTC ¹⁾	х	-	80160	80160				

¹⁾ NTC type: B57227-K333-A1 (100 °C: 1.8 k Ω ; 25 °C: 32.762 k Ω)

Evaluation units with digital settings

Temperature monitoring relays distinguish themselves due to the fact that they are extremely easy-to-use. The actual temperature is always displayed on the three-digit LED display. A dedicated relay with one NO contact is integrated to monitor the sensor.

The relay is switched-out in the parameterizing mode.

The following parameters can be set:

- Sensor type
- \bullet 2 threshold values J_1 , J_2
- \bullet 1 hysteresis; this acts on both thresholds (0–99 K)
- 1 delay time; this acts on both thresholds (0–9999 s)
- Either the open-circuit/closed-circuit principle can be selected
- Function: Overtemperature/Undertemperature (overrange/underrange) or window monitoring within a defined range

Versions with a wide-range voltage have electrical isolation.

The temperature ranges are dependant on the sensor type (refer to the function).

SIRIUS RELAYS Temperature Monitoring Relays

3RS10/3RS11

Technical data									
General data									
Туре		3RS10 00 3RS10 10	3RS11 00	3RS11 01	3RS10 20 3RS10 30	3RS11 20 3RS11 30	3RS11 21 3RS11 31	3RS.0 40 3RS.0 41	3RS.1 40
Sensor type		PT100	TC Type J	TC Type K	PT100	TC Type J	ТС Туре К	PT100; 1000 KTY83 / 84; NTC	TC Type J K, T, E, N
Width	mm	22.5						45	
Operating range	V	0.85 to 1.1 >	. U _s						
Rated power	W/VA	< 2 / 4						< 4 / 7	
Auxiliary circuit									
Contacts		1 NO + 1 NO	C		1 SPDT + 1	NO		1 SPDT + 1 1 NO	SPDT +
Rated operational current I_{θ}									
AC15 at AC 230 V, 50 Hz	Α	3							
DC13 at 24 V	Α	1							
DC13 at 240 V	А	0.1							
Required DIAZED fuse	۸	4							
Utilisation category gL/gG	A	4							
Electrical endurance AC 15 at 3 A Mechanical endurance		100,000							
Mechanical operating cycles		30 x 10 ⁶							
Tripping unit									
Measuring accuracy at 20°C ambient temper (T20)	ature	typically < ±	5% of uppe	r limit of scale	е			< ± 2K ± 1 digit	< ± 5K ± 1 digit
Reference point accuracy		-	$< \pm 5 K$		-	$< \pm 5 \mathrm{K}$		-	$< \pm 5 \mathrm{K}$
Deviations due to ambient temperature in % of measuring range	%	<2 <3 <2 <3				0.05°C per deviation fr			
Measuring cycle	ms							500	
Hysteresis adjustments for temperature 1 for temperature 2		2 to 20 % of upper limit of scale 5 % of upper limit of scale						1 to 99 Kelvalues	vin, for both
Sensor circuit									
Typical sensor current PT100 PT1000 / KTY83 / KTY84 / NTC	mA mA	Typically 1 Typically 0.2	_ 2 _		Typically 1 Typically 0.2	- -		Typically 1 Typically 0.2	<u>-</u>
Wire-break detection		No						Yes 1)	Yes
Short-circuit detection		No						Yes	No
3-wire connection		Yes ²)	-		Yes ²)	-		Yes ²)	_
Enclosure									
Environmental effects Permissible ambient temperature Permissible storage temperature Permissible mounting position	°C	- 25° to 60° - 40° to 80° any							
Degree of protection to EN 60 529		Terminals: If	P20; cover: I	P40					
Rated insulation voltage <i>U</i> _i (pollution degree 3)	AC V	300							
Conductor cross-section									
Screw terminals - solid - finely stranded, with end sleeves - solid or stranded AWG conductors - Tightening torque Cage Clamp terminals - solid - finely stranded, with end sleeves	mm ² mm ² AWG Nm mm ² mm ²	1 x (0.5 to 2.5) / 2 x (0.5 to 1.5) 2 x (20 to 14) 0.8 to 1.2 2 x (0.25 to 1.5)							
 finely stranded, without end-sleeves solid or stranded AWG conductors corresponding opening tool 	mm ² AWG	2 x (0.25 to 1.5) 2 x (24 to 16) 8WA2 807							
Vibration performance IEC 68-2-6		5 to 26 Hz/0	./5 mm						
Shock resistance IEC 68-2-27		15 g/11 ms							

¹⁾ Not for NTC (B57227-K333-A1 (100 °C:1.8 kΩ; 25 °C:32,762 kΩ).

 ^{2) 2-}wire connection of resistance sensors with wire jumper between T2 and T3.

Temperature Monitoring Relays

3RS10/3RS11

SIRIUS RELAYS

Configuration

Specifications

The temperature monitoring relays correspond to:

- IEC 60 721-3-3 "Environmental conditions"
- IEC 947-5-1; DIN VDE 0660 "Low-voltage switchgear and controlgear"
- EN 50 081-2 "Basic technical standard for emitted interference (industry)"
- ence (industry)"
 EN 61 000-6-2 "Basic technical stand ard for interference immunity (industry)"
- DIN EN 50 042 "Terminal marking"
- UL/CSAunder application

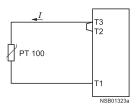
Connection of resistance thermometers

2-wire measurement

When 2-wire temperature sensors are used, the sensor resistance is added to the wire resistance. The system error that results must be taken into

account when the parameters are set for the evaluation unit. A jumper must be clamped between terminals T2 an T3.

The following table can be used to determine the temperature error when a PT100 is used.



Error due to wiring

The error that arises due to the wiring is approx. 2.5 Kelvin/ ohm. If the resistance of the wiring is not known and cannot be measured, the wiring error can be estimated by means of the following table.

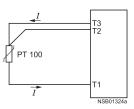
Temperature error as a function of conductor length and cross-section with PT100 sensors and 20°C ambient temperature, in K									
Cable length in m	Cross-sectio 0.5	n mm ² 0.75	1	1.5					
0	0.0	0.0	0.0	0.0					
10	1.8	1.2	0.9	0.6					
25	4.5	3.0	2.3	1.5					
50	9.0	6.0	4.5	3.0					
75	13.6	9.0	6.8	4.5					
100	18.1	12.1	9.0	6.0					
200	36.3	24.2	18.1	12.1					
500	91.6	60.8	45.5	30.2					

3-wire measurement

To minimise the effects of the wiring resistances, a 3-wire circuit is usually used.

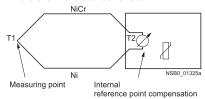
Using the additional wire, it is possible for two measuring circuits to be formed of which one is used as a reference.

The evaluation unit can then automatically calculate the wiring resistance and take it into account.



Connection of thermoelements

A differential temperature measurement is obtained from the thermo-electrical effect between the measuring point and the evaluation unit.



This principle assumes that the evaluation unit knows the temperature at the terminal (T2). The 3RS11 temperature monitoring relays have a built-in reference point correction function that determines this reference temperature and uses it to generate the measurement result.

The absolute temperature is therefore calculated from the ambient temperature of the evaluation unit and the temperature difference measured by the thermoelement

In this manner, temperature acquisition (T1) is possible without knowing the precise ambient temperature at the terminals of the evaluation unit (T2)

The connecting lead is only permitted to be extended using equalising conductors made from the same material as the thermoelement itself. If a different type of lead is used, the measurement will be inaccurate.

Temperature Monitoring Relays

3RS10/3RS11

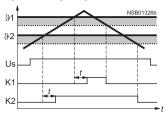
Functions

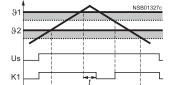
Temperature overshoot

Open-circuit principle

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Digital evaluation units:

After the temperature has reached the set threshold value $\vartheta1$, output relay K1 changes its switching state appropriately as soon as the set time t has elapsed (K2 responds to $\vartheta2$ similarly).

Analog evaluation units:

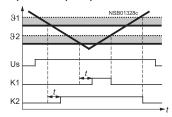
When the set threshold value is reached, output relay K1 changes its switching status. For devices with 2 threshold values, relay K2 responds to the second set threshold value.

As soon as the temperature reaches the respective set hysteresis value, the relays return immediately to the original state.

A time delay cannot be set (t = 0).

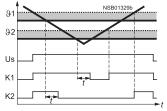
Temperature undershoot

Open-circuit principle



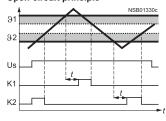


Closed-circuit principle

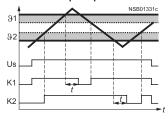


Window monitoring

Open-circuit principle



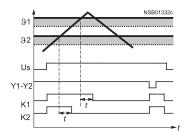
Closed-circuit principle



When the temperature has reached the upper threshold $\vartheta 1$ and the set delay time t has elapsed, the output relay K1 changes its switching state. As soon as the temperature reaches the respective set hysteresis value, the relay returns immediately to the original state.

In the same manner, K2 responds to the lower threshold value of $\vartheta 2$.

Principle of operation with memory function, based on the example of temperature overshoot using the closed-circuit principle



When the temperature has reached the set threshold $\vartheta 1$ and the set delay time t has elapsed, the output relay K1 changes its switching state (similarly, K2 responds to $\vartheta 2$.)

The relays will only return to the original state when the temperature has fallen below the respective set hysteresis value and the connection Y1-Y2 was briefly interrupted.

Absolute limit
Hysteresis range

NSS00529
Hysteresis limit

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Temperature Monitoring Relays

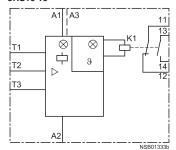
SIRIUS RELAYS

3RS10/3RS11

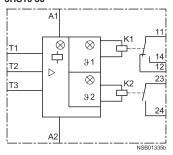
Circuit diagrams

Connection examples

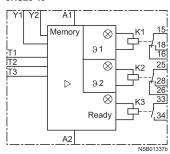
3RS10 00 3RS10 10



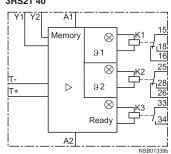
3RS10 20 3RS10 30



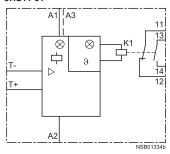
3RS10 40 3RS20 40



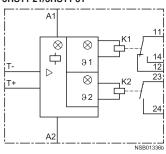
3RS11 40 3RS21 40



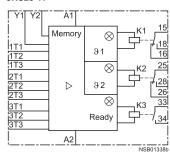
3RS11 00 3RS11 01



3RS11 20/3RS11 30 3RS11 21/3RS11 31



3RS10 41 3RS20 41



General equipment designations

A1, A2, A3 Rated control supply voltage terminals K1, K2, K3 Output relays

Equipment designations for: 3RS1000, 3RS1010, 3RS1101, 3RS1100, 3RS1110, 3RS1111, 3RS1020, 3RS1021, 3RS1030, 3RS1031

□ = ϑ1 = LED: "Voltage applied" LED: "Relay 1 switched" LED: "Relay 2 switched" $\vartheta 2 =$ T1 to T3 = Terminals for connection of resistance sensor T+/T-=Terminals for connection of thermoelements

Equipment designations for: 3RS1040, 3RS1140, 3RS2040, 3RS2140

LED: "Relay 1 switched" LED: "Relay 2 switched" ϑ2 = LED: "Device operating" Ready = T1 to T3 =

Terminals for connection of resistance sensor Terminals for connection of T+ / T- = thermoelements Y1/Y2 Terminals for memory jumper

Equipment designations for: 3RS1041, 3RS2041

LED: "Relay 1 switched" LED: "Relay 2 switched" LED: "Device operating" Ready =

1T1 to 1T3 = Terminals for connection of resistance sensor 1
Terminals for connection of 2T1 to 2T3 = resistance sensor 2 3T1 to 3T3 = Terminals for connection of resistance sensor 3 Y1/Y2 Terminals for memory jumper

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Important!

When resistance sensors are used in a 2-wire connection, a jumper must be installed between T2 and T3.

Temperature Monitoring Relays

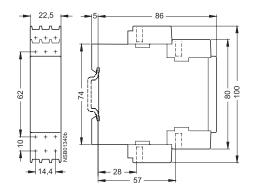
SIRIUS RELAYS

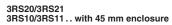
3RS10/3RS11

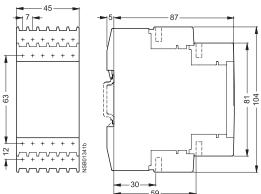
Dimension drawings

Temperature monitoring relay

3RS10/3RS11.. with 22.5 mm enclosure







2

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10

Thermistor Motor Protection

3RN1

for PTC temperature sensors

SIRIUS RELAYS

Overview

3RN10 00 compact tripping unit

The compact unit is equipped with a red LED (TRIPPED) to indicate tripping and a SPDT contact

After the device has tripped, it is reset automatically after the thermistors have cooled down. The common contact of the SPDT contact is connected to the control voltage

This device is particularly suitable in circuits in which the control circuit and signalling circuit are at the same potential, e.g. in local control boxes.

3RN10 10, 10 11, 10 12 standard tripping unit

The standard units are equipped with two LEDs (READY and TRIPPED) and with 1NO and 1NC for switch-off and signalling. They are available with automatic RESET (3RN1010), manual RESET (3RN1011) or manual/automatic and remote RESET (3RN1012). The 3RN1012 unit holds on supply failure. If the control voltage fails, a previous trip will be memorised.

A remote RESET function is implemented by connecting an external pushbutton with an NO contact to terminals Y1 and Y2. If terminals Y1 and Y2 are bridged, tripping is followed by an automatic RESET.

3RN10 13 multifunction tripping unit

In the 3RN10 13 thermistor motor protection tripping units, the sensor circuit is also monitored for a short circuit. Tripping due to a short circuit is indicated by a flickering red LED. The monostable design also indicates a wire-break in the sensor circuit by flashing of the red LED. The 3RN10 13 tripping unit is equipped with manual, remote and automatic RESET functions. The TEST/RESET button can be used to manually reset the tripping unit.

A remote RESET function is implemented by connecting an external pushbutton with an NO contact to terminals Y1 and Y2. If terminals Y1 and Y2 are bridged, tripping is followed by an automatic RESET.

Response of the tripping unit to failure of the control voltage

		Holding on supply failure				
Response	Monostable	Monostable	Bistable			
at	3RN10 00 3RN10 10 3RN10 11	3RN10 12 3RN10 130 3RN10 22 3RN10 62	3RN10 1301			
Failure of the control voltage	Device trips	Device trips	No change in switching status of			
Control voltage returns without previous tripping	Device resets	Device resets	the auxiliary contacts			
Control voltage returns after tripping	Device resets	Device remains tripped				

3RN10 22 tripping unit "Warning and switch-off"

Two sensor circuits can be connected to one 3RN10 22 tripping unit and act on one output relay with 1 NO for warning and 1 SPDT for switch-off. The functions "Warning" and "Switch-off" are implemented by means of temperature sensors with different rated response temperatures TNF. Activation of the sensor circuit for "Warning" is indicated by a yellow LED and for "Switch-off" by a red LED.

The sensor circuits have different reset responses:

- "Warning" (terminals 2T1, T2) automatic RESET only
- "Switch-off" (terminals 1T1, T2); changeover from manual RE-SET to automatic RESET by bridging terminals Y1 and Y2.
 A remote RESET function is implemented by connecting an external pushbutton with an NO contact.

3RN10 62 tripping unit "Multiple motor protection"

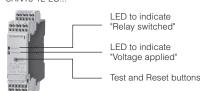
Up to six sensor circuits can be connected to one 3RN10 62 tripping unit which all act on one output relay. Simultaneous protection of several motors (up to 6) is an advantage in the case of group drives (e.g. if a motor is overloaded, all motors in the group can be switched off). Apart from the red LED "TRIPPED" that indicates the switching status of the tripping unit, a LED is assigned to each sensor circuit that is lit when the associated sensor circuit trips. Sensor circuits that are not required must be short circuited.

The reset response of the 3RN10 62 tripping units can be changed from manual RESET to automatic RESET by bridging terminals Y1 and Y2.

A remote RESET function is implemented by capaciting an average of the second statement of the second statemen

A remote RESET function is implemented by connecting an external pushbutton with an NO contact.

3RN10 12-2C...



Application

The 3RN1 thermistor motor protection tripping units are thermal protective devices that can be used in conjunction with PTC thermistors Type A for the temperature monitoring of electrical drives, transformer windings, oils, bearings, air, etc.

Principle of operation

The 3RN1 tripping units operate according to the closed-circuit principle and therefore monitor themselves for a wire-break. A temporary voltage drop of less than 200 ms (for devices with a wide input voltage range < 100 ms) will not cause a change in status of the auxiliary contacts. The 3RN10 13 multifunction tripping unit also features short-circuit detection in the sensor circuit. The unit will trip if a short circuit arises in the sensor circuit (resistance in sensor circuit $< 20 \,\Omega$). The tripping units feature electrical isolation between the

in the case of AC and UC control supply voltages (for DC control supply voltage: no electrical isolation). For units with a TEST button, the function of the device can be checked by pressing the button for longer than 2 s.

control circuit and sensor circuit

Safe electrical isolation

All electrical circuits (outputs, control circuit, sensor and Reset circuit) of the 3RN1013-1BW10 multifunction tripping unit (wide input voltage range, monostable output relay and screw terminals) are safely isolated from each other up to a rated voltage of 300 V acc. to DIN VDE 0100 Part 410/DIN VDE 0160.

Notes

⚠ For DC-activated tripping units, electrical isolation must be provided using a battery system or a safety isolating transformer to DIN VDE 0551

When tripping units with an automatic RESET function are used in EEx e zones, the control circuit must be designed to ensure that the monitored machine cannot restart autonomously.

A In the case of tripping units without short-circuit detection, the sensor circuit must be measured with a suitable measuring instrument during commissioning. For resistance < 50 Ohm, the sensor circuit must be checked for a short circuit.

⚠ When the 3RN10 00 unit (no Ready LED) and the 3RN10 13-1BW01 unit (no change in switching status for the auxiliary contacts on control voltage failure) are used to protect EEx e motors, separate monitoring of the control voltage is recommended.

SIRIUS RELAYS **Thermistor Motor Protection**

3RN1

for PTC temperature sensors

Version	Reset	Contacts	Control supply voltage	Order No	List Price S
Compact evaluation units, 22.5 mm wide,	monostable, o	losed-circuit current	principle, 1 LED		
Terminal A1 is connected to the	Auto	1 CO	24 V AC/DC	3RN1000AB00	
common of the changeover contact			110 V AC	3RN1000AG00	
			230 V AC	3RN1000AM00	
Standard evaluation units, 22.5 mm wide,	monostable,	closed-circuit current	principle, 2 LEDs		
	Auto	1 NO + 1 NC	24 V AC/DC	3RN1010- CB00	
			110 V AC	3RN1010- CG00	
			230 V AC	3RN1010- CM00	
			24-240 V AC/DC	3RN1010- CW00	
		2 CO	24 V AC/DC	3RN1010BB00	
			110 V AC	3RN1010- BG00	
			230 V AC 230 V	3RN1010- BM00	
		2 CO hard-gold-plated	24 V AC/DC	3RN1010- GB00	
	Manual/	1 NO + 1 NC	24 V AC/DC	3RN1011CB00	
	remote ³⁾		110/230 V AC	3RN1011- CK00	
Short-circuits are detected in the sensor circuit	Manual/	2 CO	24 V AC/DC	3RN1011BB00	
	remote ³⁾		110 V AC	3RN1011BG00	
			230 V AC	3RN1011BM00	
		2 CO hard-gold-plated	24 V AC/DC	3RN1011- GB00	
Holding on supply failure ²⁾	Manual/auto/	1 N + 1 NC	24 V AC/DC	3RN1012- CB00	
	remote		110/230 V AC	3RN1012CK00	
Holding on supply failure ²⁾ ,	Manual/auto/	nual/auto/ 2 CO note	24 V AC/DC	3RN1012BB00	
short-circuits are detected in the sensor circuit	remote		110 V AC	3RN1012BG00	
			230 V AC	3RN1012BM00	
		2 CO hard-gold-plated	24 V AC/DC	3RN1012GB00	
Holding on supply failure ²⁾ , short-circuits	Manual/auto/	2 CO	24 V AC/DC	3RN1013BB00	
and wire breakage in the sensor circuit are letected and displayed, wide-range voltage	remote		24–240 V AC/DC	3RN1013-1BW10	
vith screw terminals with protective				3RN1013-2BW00	
eparation ¹⁾		2 CO hard-gold-plated	24-240 V AC/DC	3RN1013-1GW10 3RN1013-2GW00	
valuation units for 2 sensor circuits, alarn	and trip 22	5 mm wide monostal	ole closed-circuit	current principle 3	I FDs
Test/reset button, holding on supply failure ²⁾ ;	Manual/auto/	-	24–240 V AC/DC	3RN1022-\(\bar{D}\) DW00	
the evaluation circuit for "alarm" uses an NO contact in the open-circuit principle	remote	T NO + T NC	24-240 V AC/DC	SKN 1022DW00	
valuation units for 6 sensor circuits, multi-r	notor protecti	on, 45 mm wide, mono	stable, closed-circ	uit current principle,	8 LED
est/reset button, holding on supply failure ²⁾	Manual/auto/ remote	1 NO + 1 NC	24–240 V AC/DC	3RN1062CW00	1
Test/reset button, holding on supply failure ²⁾ , hort-circuits and wire breakage in the ensor circuit are detected and displayed, bistable version, not tripped when the ontrol supply voltage fails	Manual/auto/ remote	2 CO	24–240 V AC/DC	3RN1013- BW01	

¹⁾ Protective separation up to 300 V according to DIN/VDE 0106

Screw Terminal

Spring-type Terminal 2

Siemens Industry, Inc.

Industrial Controls Catalog

Product Category: SMRL

11/13

²⁾ Information regarding the holding on supply failure, refer to Catalog LV 1, chapter 7

³⁾ Reset using the reset button or by interrupting the control supply voltage

Function Relays, Interfaces and ConvertersThermistor Motor Protection

for PTC temperature sensors

SIRIUS RELAYS

Accessories

	Design	for type	Order No.	Weight approx.	Packing
				kg	Packs
Push-in lugs for panel	mounting				
	2 units are necessary per thermistor motor protection. 1 pack contains 10 units for 5 devices.	3RN1	3RP 1903	0.02	1

Technical data								
General data								
		Compact devices	Standard de	evices		Multifunct. dev.	Warning + switch-off	Multiple mot. protec
Туре		3RN10 00	3RN10 10	3RN10 11	3RN10 12	3RN10 13	3RN10 22	3RN10 62
Width	mm	22.5	_	_	_	_		45
No. of connectable sensor circuits		1					2	6
Response to failure of the control voltage		1)						
Manual RESET		No		Yes				
Automatic RESET		Yes		No	Yes			
Remote RESET		No		Yes ²)	Yes			
TEST button		No		Yes				
Short-circuit detection in sensor circuit		No				Yes	No	
Indication of short-circuit and wire-break		No				Yes ³)	No	
Warning and switch-off in one unit		No					Yes	No
Weight	kg	0.120	0.133	0.145	0.145	0.145	0.145	0.260
Tripping unit								
Rated insulation voltage U_i (pollution degree 3)	V	300						
Permissible ambient temperature Permissible storage temperature	°C	-25 to +60 -40 to +80						
EMC tests		EN 50 081-2	; IEC 61000-6-	-3				
Class acc. to DIN 19 251, DIN V0801		AK 3						
Degree of protection acc. to DIN 40 050		IP 20						
Conductor cross-section								
Terminal screws Solid Finely stranded with end sleeves AWG conductor connections, solid or stranded Tightening torque		1 x (0.5 to 4)) / 2 x (0.5 to 2.5) / 2 x (0.5 to		d Pozidriv 2)			
Cage Clamp terminals Solid Finely stranded with end sleeves Finely stranded, without end sleeves AWG wires, solid or stranded Corresponding opening tool	mm ² mm ² mm ² AWG	2 × (0.25 to 1.5) 2 × (0.25 to 1)						
Sensor circuit								
Circuit burden at $R_F \le 1.5 \text{ k}\Omega$	mW	≤5						
Voltage in sensor circuit at $R_F \le 1.5 \text{ k}\Omega$	V	≤2						
Tripping temperature (specified by sensor)	°C	60 to 180						
Coupling time (due to mounting of sensor)	S	approx. 5 s						
Total cold resistance R _F (per sensor loop)	kΩ	≤1.5						
Triggering value	$k\Omega$	3.4 to 3.8						
Return value	$k\Omega$	1.5 to 1.65						
Triggering tolerance	°C	±6						

See page 11/12.
 Remote RESET due to interruption of the control voltage.
 Indication of wire-break only for monostable designs (3RN10 13-....0).

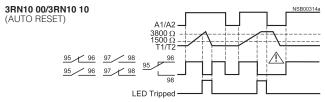
Thermistor Motor Protection

	3RN1
or PTC temp	perature sensors

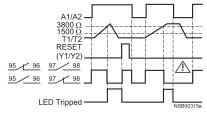
Technical data								
		Compact devices	Standard de	evices		Multi- function devices	Warning + switch-off	Multiple motor pro- tection
Туре		3RN10 00	3RN10 10	3RN10 11	3RN10 12	3RN10 13	3RN10 22	3RN10 62
Control circuit								
Rated control supply voltage $U_{\rm S}$		1)						
Operating range								
• AC		0.85 to 1.1 x	: U _s					
• AC/DC		0.85 to 1.1 x	: U _s					
• DC		0.85 to 1.2 x	: U _s					
Rated power								
• AC	W	< 2						
• AC/DC	W	< 2						
• DC	W	< 2						
Auxiliary circuit								
Conventional free-air thermal current I_{th}	Α	5						
Rated operational current I _e								
• AC-15 240 V	Α	3						
• DC-13 24 V	Α	1	2			1 ²)	1	2
Short-circuit protection acc. to Alpha/Lova	9							
Utilisation category gL/gG	Α	6						
® and ® ratings, control current circu	it							
Rated control voltage 50/60 Hz								
• AC	V	300						
• DC	V	300						
Switching capacity		R 300/B 300)					
Safe isolation up to 300 V		-					-	
						1BW10		

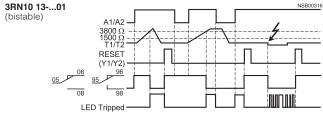
Functions

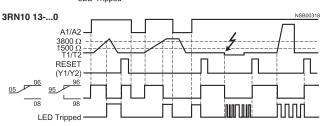
Function diagrams

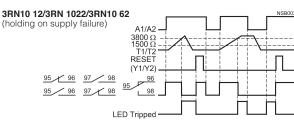




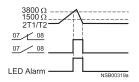








3RN10 22 only



⚠ See notes on page 11/12.

¹⁾ See selection and ordering data, page 11/13 2) For 3RN10 13-. BW01 (bistable output relay) 2 A.

Thermistor Motor Protection

3RN1

for PTC temperature sensors

SIRIUS RELAYS

Configuration

PTB test report ATEX certification

The tripping units with AC and UC operation are available in conjunction with PTC thermistors acc. to DIN VDE 0660 Parts 302 and 303 and DIN 44 081/DIN 40 082 for direct temperature monitoring of explosion-protected motors of the "Increased safety" EEx e and EEx d degree of protection and are marked with the test symbol. The regulations of DIN EN 50 019, DIN VDE 0170/0171, DIN VDE 0165, the PTB test regulations DIN V 0801 Class = AK

ulations DIN V 0801 Class = AK 3 and DIN 19251 apply. For tripping units with DC operation 1), electrical isolation must be implemented by means of a battery system or a safety isolating transformer acc. to DIN VDE 0551.

When the 3RN10 13....01 unit (no change in switching status for the auxiliary contacts on control voltage failure) is used to protect EEx e and EEx d motors, separate monitoring of the control voltage is recommended.

PTB File No. for 3RN1: PTB 01 ATEX 3218

Cable routing

The measuring circuit cables must be routed as separate control cables. It is not permitted to use cores of the motor supply cable or other main supply cables. If extreme inductive or capacitive interference is expected to be generated by heavy current cables routed in parallel, shielded control cables must be used.

Maximum cable length for sensor circuit:

Cross-sec- tion	For tripping	units
	3RN10 00 3RN10 10 3RN10 11 3RN10 12 3RN10 22 3RN10 62	3RN10 13
mm ² 2.5 1.5 0.5	m 2 x 2800 2 x 1500 2 x 500	m ²) 2 x 250 2 x 150 2 x 50

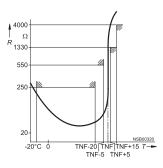
PTC temperature sensor

With the tripping units, temperature sensors with characteristics according to DIN VDE 0660 Part 303, DIN 44 081 and DIN 44 082 (e. g. EPCOS AG single and triple sensors, Type No. B 591.. or B 593..) can be used.

The number of temperature sensors that can be connected in series is dependent on the total cold resistance. The total cold resistance must not exceed 1.5 kO

Resistance/temperature characteristic of a PTC thermistor

with a characteristic (Type A) according to DIN VDE 0660 Part 303



Installation

The 3RN1 tripping units are suitable for snapping on to 35 mm standard mounting rails acc. to DIN EN 50 022 or for screw mounting using adapters. Any mounting position is possi-

Specifications

The tripping units are suitable for use in any climate and safe from touch to DIN VDE 0106 Part 100.

The 3RN1 tripping units meet the requirements of the basic technical standard EN 50 081-2; IEC 61000-6-2 "Electromagnetic compatibility of I&C equipment in industrial process engineering" and DIN VDE 0660 Parts 302 and 303, IEC 60 034-11-2 Section 1 and 2 "Built-in thermal protection of rotating electrical machines, thermal detectors and tripping units" and "PTC thermistors and tripping units".

The terminal designations of the auxiliary contacts complies with EN 50 005.

Protecting the windings of three-phase transformers

To protect the windings of three-phase dry transformers with PTC thermistors in cases where the operating voltage of the thermistor motor protection tripping unit must be tapped from the mains voltage, a 3RN10 22 thermistor protection unit for warning and tripping and, for example, a 3RP15 time relay can be used. The auxiliary contactor K4 operates on the shunt release of the high-voltage circuit-breaker.

Working principle for transformer protection

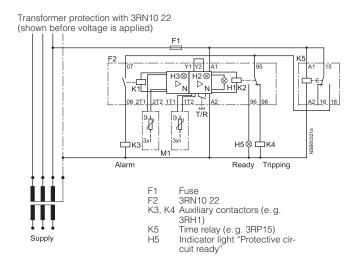
When voltage is applied to the line-side of the transformer, the voltage on the secondary side rises to the final value within 1.5 s. The 3RN1 tripping unit does not trip until $0.8 \times U_{\rm S}$, so as long as the operating voltage is applied to the closed contacts 95-98 on contactor K4, it would cause breaking of the

circuit-breaker via its shunt release.

In order to prevent this, the voltage is only applied to terminals 07 and 95 once the 3RN1 tripping units have definately picked up and the auxiliary switches have switched to the "Ready" position. The K3 and K4 contactors are not controlled until the respective rated response temperature TNF of the sensor is exceeded.

The tripping unit should be switched to "Automatic RESET" (jumper must be placed between terminals Y1 and Y2). This ensures that the 3RN1 tripping unit is reset when the transformer is reconnected following tripping.

The time-delay relay is set to a delay time of ≥ 1.5 s.



- Electrical isolation exists with devices with a wide input voltage range of 24 to 240 V UC even in the case of DC operation.
- Devices with short-circuit detection in the sensor circuit. Up to this maximum cable length, a short-circuit in the sensor circuit will be detected.
 When short-circuit detection is not required, the cable lengths shown on the left can be used.

Thermistor Motor Protection

for PTC temperature sensors

Circuit diagrams

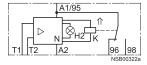
SIRIUS

RELAYS

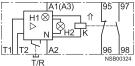
Connection diagrams

Position of the output relay "Ready, not tripped"

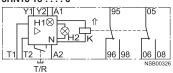
3RN10 00



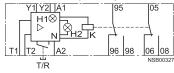
3RN10 111)



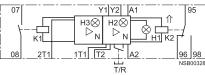
3RN10 13-....0



3RN10 13-....1 (bistable)



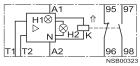
3RN10 22



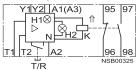
3RN10 62



3RN10 10



3RN10 121)



A1, A2 Control voltage terminals

Amplifier T/R TEST/RESET button Y1, Y2 Terminals for remote

RESET (jumpered = Auto RESET) \uparrow The double-headed

arrow indicates an operating state of the contact element that deviates from the standard presentation according to DIN 40 900, Part 7 (In this case: Position of the contact elements when the control voltage is applied to terminals A1 and A2)

Equipment des

designations for 3RN10 LED "READY" LED "TRIPPED" H1 H2

K T1, T2 Output relay Terminals of the sensor

loop

Equipment designations for 3RN10 22

LED "READY" LED "TRIPPED" LED "ALARM" K1, K2 Output relay 1T1 and T2 Terminals of the sensor

2T1 and T2 loop

Sensor circuits that are not connected must be short circuit-

ed

Equipment designations for

H1 to H6 LEDs for tripped sensor loops LED "READY" LED "TRIPPED" H7 Н8 Output relay 1T1, 1T2 Terminals for to 1st sensor loop

Terminals for 6th sen-6T1, 6T2 sor loop

⚠

Sensor circuits that are not connected must be short circuit-

11/17

ed.

¹⁾ For dual voltage devices AC 230 V/110 V (3RN10 11-. CK00 and 3RN10 12-. CK00): A1 and A2: AC 230 V, A3 and A2: AC 110 V.

Thermistor Motor Protection

for PTC temperature sensors

SIRIUS RELAYS

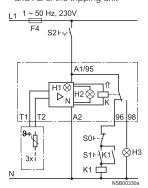
Circuit diagrams

Connection examples

3RN10 00 tripping unit

contactor, pushbutton control

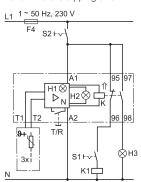
 The contact elements are shown for voltage applied to terminals A1 and A2 of the tripping unit



3RN10 11 tripping unit

contactor, maintained-contact control

 The contact elements are shown for voltage applied to terminals A1 and A2 of the tripping unit

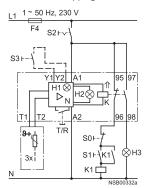


pushbutton control

3RN10 12 tripping unit

Switching off a three-phase motor via a Switching off a three-phase motor via a Switching off a three-phase motor via a A1, A2 contactor, pushbutton control

> · The contact elements are shown for voltage applied to terminals A1 and A2 of the tripping unit



General equipment designations

terminals1) Back-up fúse Amplifier OFF pushbutton Ν SO S1 ON pushbutton S2 S3 Main switch Remote RESET button T/R TEST/RESET button Terminals for remote RESET (jumpered = Auto RESET) ⇑ The double-headed arrow

Control voltage

indicates an operating state of the contact ele-ment that deviates from the standard presentation

according to
DIN 40 900, Part 7 (In this case: Position of the contact elements when the

control voltage is applied to terminals A1 and A2)

Equipment designations for 3RN10

LED "READY" LED "TRIPPED" Н1 H2 НЗ Signalling light K K1 Output relay Contactor

Terminals of the sensor

Equipment designations for

LED "READY" Н1 LED "TRIPPED" LED "ALARM" Н2 НЗ

Signalling light
Signalling light "ALARM"
Output relay Н4 H5 K1, K2

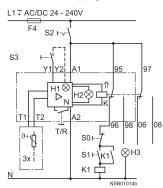
1T1 and T2 Terminals of the sensor 2T1 and T2 loop

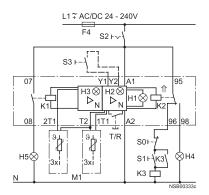
Sensor circuits that are not connected must be short circuited.

3RN10 13-....0 tripping unit

Switching off a three-phase motor via a contactor, pushbutton control

• The contact elements are shown for voltage applied to terminals A1 and A2 of the tripping unit





3RN10 22 tripping unit (warning + switch-off)

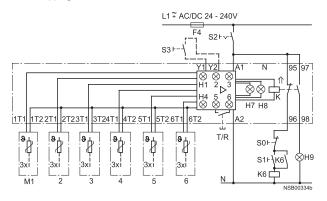
Switching off a three-phase motor via a contactor, warning via output relay,

The contact elements are shown for voltage applied to terminals A1 and A2 of the tripping unit

3RN10 62 tripping unit (multiple motor protection)

Switching off 6 three-phase motors via contactors, pushbutton control

• The contact elements are shown for voltage applied to terminals A1 and A2



Equipment designations for 3RN10 62

H1 to H6 LEDs for tripped sensor loops LED "READY" LED "TRIPPED" Н7 Н8 H9 Signalling light Output relay K6 Contactor 1T1, 1T2 Terminals for 1st sensor loop to 6T1, 6T2 Terminals for 6th sensor loop

Sensor circuits that are not connected must be short circuited.

1) For dual voltage devices AC 230 V/110 V (3RN10 11-. CK00 and 3RN10 12-. CK00): A1 and A2: AC 230 V, A3 and A2: AC 110 V

Thermistor Motor Protection

3RN1

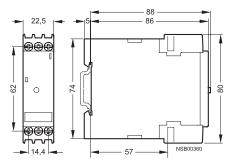
for PTC temperature sensors

Dimension drawings

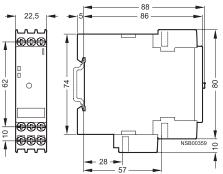
SIRIUS

RELAYS

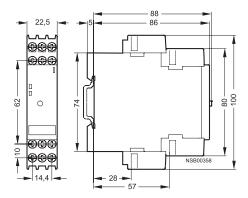




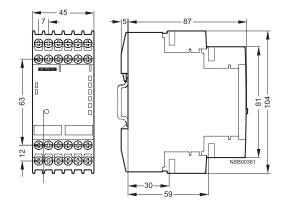
3RN10 10



3RN10 11, 3RN10 12, 3RN10 13, 3RN10 22



3RN10 62



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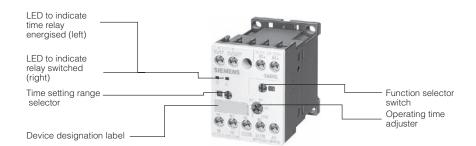
Solid-State Time Relays

3RP20 / 3RP15

SIRIUS RELAYS

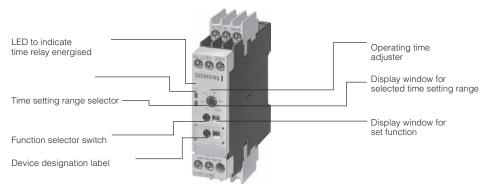
Overview

3RP20 time relay, assembly width 45 mm



Accessories Push-in lugs for screw fixing Sealable cap

3RP15 time relay, assembly width 22.5 mm





unction

Standards, specifications

The time relays comply with:
• IEC 60 721-3-3 "Environmental conditions"

- IEC 61 812-1/DIN VDE 0435 Part 2021 "Electrical relays, time relays"
- IEC 61 000-6-2/EN 50 081-1 "Electromagnetic capability"
- IEC 60 947-5-1; DIN VDE 0660 Part 200 "Low-voltage switchgear and controlgear"

Application

Time relays are used in control, starting protective and control circuits for all switching operations involving time delays.

They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Housing design

All time relays are suitable for snap-on mounting onto 35 mm standard mounting rails according to EN 50 022 or for screw fixing.

Configuration

- Changing the time setting ranges and the functions will only be effective when being carried out in de-energised state
- Start input B1 or B3 must only be triggered when the supply voltage is applied

- The same potential must be applied to A1 and B1, or A3 and B3
- With the two-voltage version, only one voltage range must be connected
- The activation of loads parallel to the start input is not permissible when using AC control voltage (see adjacent diagrams)
- Surge suppression is integrated in the time relay. This prevents supply voltage spikes occurring when the relay switches. No damping mechanisms have been integrated for the contacts
- The 3RP15 05-.R should not be used near heat sources >60°C

Parallel load on start input





Function Relays, Interfaces and Converters Solid-State Time Relays

SIRIUS RELAYS

3RP20 / 3RP15

Function	Contact elements	Time range	Control supply voltage	Order No.	List Price
8 functions	1 CO (changeover contact)	0.05 s-100 h	AC/DC 24/100-127 V AC	3RP2005AQ30	
8 functions	1 CO	0.05 s-100 h	AC/DC 24/200-240 V AC	3RP2005AP30	
On delay	1 CO	0.05 s-100 h	AC/DC 24/100-127 V AC	3RP2025AQ30	
On delay	1 CO	0.05 s-100 h	AC/DC 24/200-240 V AC	3RP2025AP30	
16 functions	2 CO	0.05 s-100 h	24-240 V AC/DC	3RP2005- BW30	

10 Iulictions	2 00	0.05 3-100 11	24-240 V AC/DC	3KP2UU3BW3U
3RP1/3RP2 Time relays – electro	nic 3RP15 Time relays in	an industrial housing, 22	.5 mm	
8 functions	1 CO (changeover contact)		12 V DC	3RP1505-□AA40
8 functions	1 CO	0.05 s – 100 h	AC/DC 24/100-127 V AC	3RP1505- AQ30
8 functions	1 CO	0.05 s-100 h	AC/DC 24/200–240 V AC	3RP1505- AP30
8 functions	1 CO	0.05 s-100 h	24–240 V AC/DC	3RP1505- AW30
8 functions	2 CO	0.05 s-100 h	24–240 V AC/DC	3RP1505- RW30 ¹⁾
16 functions	2 CO	0.05 s-100 h	AC/DC 24/100-127 V AC	3RP1505- BQ30
16 functions	2 CO	0.05 s-100 h	AC/DC 24/200-240 V AC	3RP1505- BP30
16 functions	2 CO	0.05 s-100 h	24–240 V AC/DC	3RP1505- BW30
16 functions	2 CO	0.05 s-100 h	400–440 V AC	3RP1505- 1BT20 ²⁾
On delay	1 CO	0.5–10 s	AC/DC 24/100-127 V AC	3RP1511- AQ30
On delay	1 CO	0.5–10 s	AC/DC 24/200-240 V AC	3RP1511- AP30
On delay	1 CO	1.5–30 s	AC/DC 24/100-127 V AC	3RP1512- AQ30
On delay	1 CO	1.5–30 s	AC/DC 24/200-240 V AC	3RP1512- AP30
On delay	1 CO	5–100 s	AC/DC 24/100-127 V AC	3RP1513- AQ30
On delay	1 CO	5–100 s	AC/DC 24/200-240 V AC	3RP1513- AP30
On delay	1 CO	0.05 s-100 h	AC/DC 24/100-127 V AC	3RP1525- AQ30
On delay	1 CO	0.05 s-100 h	AC/DC 24/200-240 V AC	3RP1525- AP30
On delay	2 CO	0.05 s-100 h	42-48/60 V AC/DC	3RP1525- BR30
On delay	2 CO	0.05 s-100 h	AC/DC 24/100-127 V AC	3RP1525- BQ30
On delay	2 CO	0.05 s-100 h	AC/DC 24/200-240 V AC	3RP1525- BP30
On delay	2 CO	0.05 s-100 h	24-240 V AC/DC	3RP1525- BW30
On delay, 2-wire	1 NO contact, solid-state	0.05-240 s	24-66 V AC/DC	3RP1527- EC30
On delay, 2-wire	1 NO contact, solid-state	0.05-240 s	90-240 V AC/DC	3RP1527- EM30
Off delay with auxiliary voltage	1 CO	0.5-10 s	AC/DC 24/100-127 V AC	3RP1531- AQ30
Off delay with auxiliary voltage	1 CO	0.5–10 s	AC/DC 24/200-240 V AC	3RP1531- AP30
Off delay with auxiliary voltage	1 CO	1.5–30 s	AC/DC 24/100-127 V AC	3RP1532- AQ30
Off delay with auxiliary voltage	1 CO	1.5–30 s	AC/DC 24/200-240 V AC	3RP1532- AP30
Off delay with auxiliary voltage	1 CO	5–100 s	AC/DC 24/100-127 V AC	3RP1533- AQ30
Off delay with auxiliary voltage	1 CO	5–100 s	AC/DC 24/200-240 V AC	3RP1533- AP30
Off delay without auxiliary voltage	1 CO	0.05-600 s	24 V AC/DC	3RP1540- AB31
Off delay without auxiliary voltage	1 CO	0.05-600 s	100-127 V AC/DC	3RP1540- AJ31
Off delay without auxiliary voltage	1 CO	0.05-600 s	200-240 V AC/DC	3RP1540- AN31
Off delay without auxiliary voltage	1 CO	0.05-600 s	24-240 V AC/DC	3RP1540- AW31
Off delay without auxiliary voltage	2 CO	0.05-600 s	24 V AC/DC	3RP1540-□BB31
Off delay without auxiliary voltage	2 CO	0.05-600 s	100-127 V AC/DC	3RP1540- ☐BJ31
Off delay without auxiliary voltage	2 CO	0.05-600 s	200-240 V AC/DC	3RP1540- ☐BN31
Off delay without auxiliary voltage	2 CO	0.05-600 s	24-240 V AC/DC	3RP1540-□BW31
Clock-pulse relay	1 CO	0.05 s-100 h	42-48/60 V AC/DC	3RP1555- AR30
Clock-pulse relay	1 CO	0.05 s-100 h	AC/DC 24/100-127 V AC	3RP1555- AQ30
Clock-pulse relay	1 CO	0.05 s-100 h	AC/DC 24/200-240 V AC	3RP1555- AP30
Star/delta with run-on function	3 x 1 NO contact	1–20 s, 30–600 s (run-on)	AC/DC 24/100-127 V AC	3RP1560- SQ30
Star/delta with run-on function	3 x 1 NO contact	1-20 s, 30-600 s (run-on)	AC/DC 24/200-240 V AC	3RP1560-□SP30
Star/delta	1 NO contact + 1 NO contact	1–20 s	AC/DC 24/100-127 V AC	3RP1574- NQ30
Star/delta	1 NO contact + 1 NO contact	1–20 s	AC/DC 24/200-240 V AC	3RP1574- NP30
Star/delta	1 NO contact + 1 NO contact	3–60 s	AC/DC 24/100-127 V AC	3RP1576- NQ30
Star/delta	1 NO contact + 1 NO contact	3–60 s	AC/DC 24/200-240 V AC	3RP1576- NP30
1)	•			•

¹⁾ Positively-driven and hard-gold-plated relay contacts

Industrial Controls Catalog

1 **Screw Terminal** Spring-type Terminal 2

11/21 Siemens Industry, Inc. Product Category: IEC

 $^{^{\}mbox{2)}}$ This device is only available with screw terminals

Solid-State Time Relays

SIRIUS RELAYS

3RP20/3RP15/7PV

Technical data acc. to IEC 61 812-1/DIN VDE 0435 Part 2021

Туре			3RP20 05 3RP20 25	3RP15 05 3RP15 31 3RP15 32 3RP15 33	3RP15 11 3RP15 12 3RP15 13 3RP15 25 3RP15 55	3RP15 40	3RP15 60	3RP15 74 3RP15 76	3RP15 27
Rated insulation voltage Pollution degree 3 Overvoltage category III acc. to DIN VDE 0110		AC V	300; 500 for 3RP15 05-1BT20						
Working range of excitation 1)			0.85 to 1.1 x $U_{\rm s}$ for AC; 0.8 to 1.25 x $U_{\rm s}$ for DC 0.95 to 1.05 x rated frequency						
Rated power Power consumption at 230 V AC, 50 Hz		W VA	1 4	2	2	2 2 ²)	2	2	1
Rated operational current I _e AC-15 at AC 230 V, 50 Hz AC-14; DC-13 DC-13 at 24 V DC-13 at 48 V DC-13 at 60 V DC-13 at 110 V DC-13 at 230 V		A	3 ³) - 1 0.45 0.35 0.2 0.1						- 0.01 to 0.6 - - - -
Required DIAZED fuse 4) Utilisation category gL/gG		А	4					_	
Operating frequency • when loaded with I _e AC 230 V • when loaded with 3RT10 16 contactor, AC 230 V		1/h 1/h	2500 5000						5000 5000
Recovery time		ms	150 ⁵) 300 150						50
Minimum ON period		ms	35	35 ⁶)	-	200 7)	-		
Off-state current		mA							≤5
with non-conducting output Voltage drop with conducting output Short-time loading capacity		V A	≤3.5 10 (up						≤3.5 10 (up to
Setting accuracy referred to upper limit of scale			typical ±5 %						10 ms)
Repeat accuracy			syptical ± 3 % ≤ ∨ ± 1 %						
Mechanical endurance operating cycles			30 x 10 ⁶ 100 x						100 x 10 ⁶
Permissible ambient temperature	in operation when stored	°C °C	-25 to +60 -40 to +85						
Degree of protection acc. to EN 60 529			cover IP 40 terminals IP	20					
Conductor cross-sections	Main conductors, auxiliary conductors	3							
Screw connection (to connect 1 or 2 conductors for standard screwdriver size 2 and Pozidriv 2)	solid	mm²	2 x (0.5 to 1.5) 2 x (0.75 to 4)	1 x (0.5 2 2 x (0.5 2	2.5)				
	finely stranded with end sleeve	mm ²	2 x (0.5 to 2.5)	1 x (0.5 2 2 x (0.5 1	1.5)				
	solid or stranded AWG conductors terminal screw	AWG	2 x (18 to 14) M 3	2 x (20 1 M 3.5	4)				
Cage Clamp connection (1 or 2 wire connection; for 22.5 mm time-delay relay use screwdriver with blade width 3 mm or 8WA2 803 opening tool	tightening torque solid	Nm mm²	0.8 to 1.2 2 x (0.25 to 2.5)	2 x (0.25	1.5)				
	finely strandedwith end sleevewithout end sleeve	mm²	2 x (0.25 to 1) 2 x	2 x (0.25 2 x (0.25	•				
	solid or stranded AWG conductors	AWG	(0.25to 1.5) 2 x (24 to 14)	2 x (24 1	6)				
1) If nothing also is stated 5) With 3RP15.0			25 DIMON AN	MOO! DIMO		7) [ct oneration	-1	

¹⁾ If nothing else is stated.

²⁾ Maximum inrush current 1 A/100 ms.

³⁾ For 3RP15 05-.R: NC contact $\rightarrow I_e = 1 \text{ A}$

⁴⁾ Without any welds acc. to IEC 60 947-5-1.

⁵⁾ With 3RP15 05-.BW30/ .AW30/ .RW30 and 3RP15 25-.BW30, 10 to 250 ms, voltage-dependent.

⁶⁾ Minimum ON period with 3RP15 00-. BW30, 150 ms until instantaneous contact has switched.

⁷⁾ For correct operation, observe minimum ON period.

Function Relays, Interfaces and Converters Solid-State Time Relays

SIRIUS RELAYS

3RP20/3RP15/7PV

Technical	data	acc ·	to	IFC	61	812-1/DIN	VDF	0435	Part	2021
I Commoun	uutu	uoo.	·		\circ	OIL I/DIII	100	0700	· uit	

Туре		3RP20 05 3RP20 25	3RP15 05 3RP15 31 3RP15 32 3RP15 33	3RP15 11 3RP15 12 3RP15 13 3RP15 25 3RP15 55	3RP15 40	3RP15 60	3RP15 74 3RP15 76	3RP15 27	
Permissible mounting position		any							
Shock resistance Half sine acc. to IEC 60 068-2-27	<i>g</i> /ms	15/11	15/11						
Vibration performance acc. to IEC 60 068-2-6	Hz/mm	m 10-55 / 0.35							
EMC tests acc. to basic specification		IEC 61 000-	6-2 / EN 50 08	31-1					

Туре			7PV33 48	7PV41 48	7PV43 48
Rated insulation voltage Overvoltage category C acc. to DIN V	/DE 0110	AC V	250		
Working range of excitation			+ 10 - 15 %		– 15 + 30 % – 15 + 10 %
Rated power Power consumption at AC 230 V, 50 H	Hz	W VA	1 11		
Rated operational current I _e AC-1 at AC 230 V, 50 Hz		А	8		
		1/h 1/h	600		
Recovery time		ms	50	100	
Minimum ON period		ms	50	100	
Setting accuracy with reference to upper limit of scale			± 0.03 %, ± 10 ms	± 10 %	
Repeat accuracy			± 0.03 %, ± 10 ms	±2%	
Mechanical endurance	operating cycles		5 x 10 ⁶	2 x 10 ⁷	
Permissible ambient temperature	in operation when stored	°C		-20 +60 -25 +70	
Degree of protection acc. to EN 60 529			IP 65	IP 50	
Permissible mounting position			any		

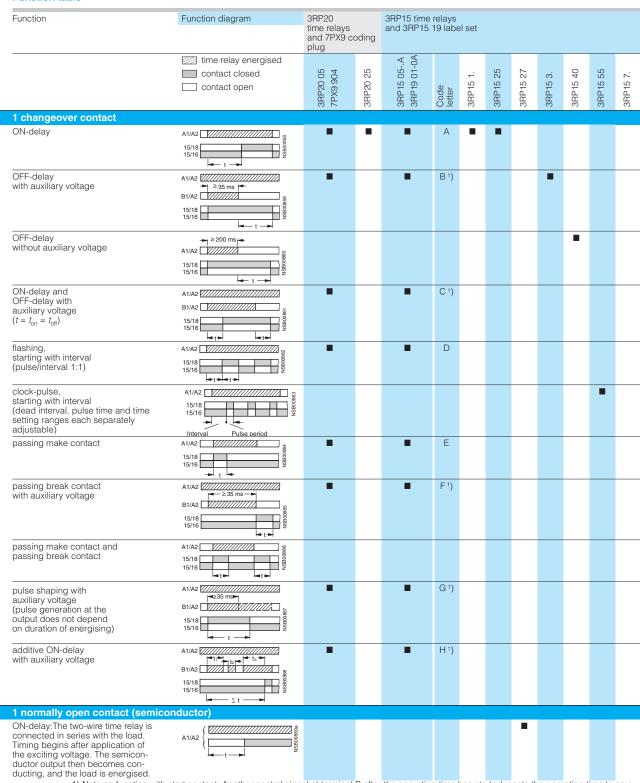
Solid-State Time Relays

SIRIUS RELAYS

3RP20/3RP15/7PV

Functions

Function table



¹⁾ Note on function with start contact: Another control signal at terminal B after the operating time has started resets the operating time to zero. This does not apply to "G", "G•" and "H", "H•", that cannot be retriggered.

Solid-State Time Relays

SIRIUS RELAYS

3RP20/3RP15/7PV

Functions Function table 3RP15 time relays and 3RP19 label set Function Function diagram 3RP20 time relays and 7PX9 coding plug 3RP15 05-.R 3RP19 01-0A time relay energised 3RP19 01-0B ш 3RP20 05-3RP15 25 3RP15 40 contact closed 3RP15 05-3RP15 27 3RP15 55 3RP15 60 3RP15 7. 7PX9 904 3RP15 3. 3RP15 1 3RP20 contact open 2 changeover contacts ON-delay ON-delay A A1/A2 V//// //// and instantaneous contact OFF-delay with A1/A2 П B 1) auxiliary voltage B1/A2 OFF-delay B• 1) A1/A2 with auxiliary voltage and instantaneous contact 15/18 15/16 OFF-delay without A1/A2 200 ms auxiliary voltage 15/18 15/16 ON-delay and OFF-delay with auxiliary C 1) voltage ($\dot{t} = t_{on} = t_{off}$) ON-delay and OFF-delay with auxiliary C• 1) A1/A2 //////// voltage and instantaneous switching flashing, П D starting with interval (pulse/interval 1:1) flashing, A1/A2 De starting with interval (pulse/interval 1:1) and instantaneous contact passing make contact Ε 15/18

П

E

П

Siemens Industry, Inc. Industrial Controls Catalog

passing make contact

and instantaneous contact

11/25

7 8 9

¹⁾ Note on function with start contact: another control signal at terminal B after the operating time has started resets the operating time to zero. This does not apply to G, G● and H, H●, that cannot be retriggered.

Solid-State Time Relays

SIRIUS RELAYS

3RP20/3RP15/7PV

Functions Function table Function Function diagram 3RP20 time 3RP15 time relays relays and 7PX9 and 3RP19 label set coding plug time relay energised 3RP19 01-0B Ш α 3RP1901-0A 15 05-. 3RP15 05-. 3RP20 05-3RP15 55 contact closed 3RP1527 7PX9 904 3RP20 25 3RP15 25 3RP15 40 3RP15 60 3RP153. contact open 2 changeover contacts passing break contact with auxiliary voltage passing break contact F• 1) with auxiliary voltage and instantaneous contact 15/16 pulse shaping G 1) A1/A2 with auxiliary voltage (pulse generation at the output does not depend on duration of energising) 25/28 pulse shaping with auxiliary voltage G• 1) **◄**≥35ms and instantaneous contact (pulse generation at the output does not depend on duration of energising) additive ON-delay H 1) A1/A2 with auxiliary voltage 25/28 additive ON-delay He 1) with auxiliary voltage and instantaneous contact 21/24 21/22 star-delta function A1/A2 ///// П ΥΔ 17/18 2 normally open contacts A1/A2 ///////// star-delta function $\mathbf{Y}\Delta$ 3 normally open contacts star delta function with overtravel function (idling) B1/A2

Solid-State Time Relays

SIRIUS RELAYS

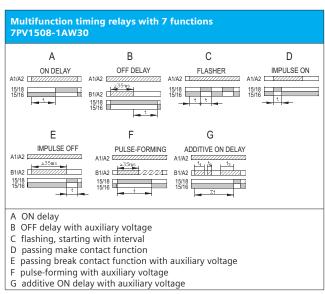
7PV timing relays

Overview

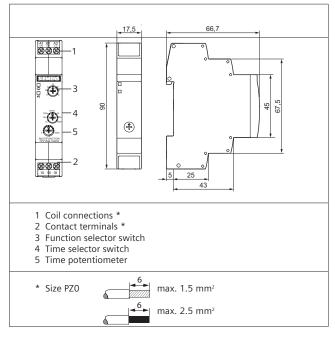
- Wide voltage range 12 ... 240 V AC/DC
- High switching capacity, e.g. AC15 at 230 V, 3 A
- Combination voltage, e.g. 24 V AC/DC and 200 ... 240 V AC
- Changes to the time setting range during operation
- Changes to the function in the de-energized state
- High level of functionality and a high repeat accuracy of timer settings
- Integrated surge suppressor
- Function charts printed on the side of the device for reliable device adjustment

7PV15 electronic	7PV15 electronic timing relays in 17.5 mm enclosure										
	Function	Time setting range	Rated control voltage U _S	Contacts *	Order No.						
	Multifunction timing relays										
B.C.C	7 functions	0.05 sec-100 h	0.05 sec-100 h 12-240 V AC/DC		7PV1508-1AW30						
	ON delay timing relays										
	ON delay	0.5 sec-10 sec	AC/DC 24 AC 100-127 V	1 CO	7PV1512-1AQ30						
SHIMENS	ON delay	0.5 sec-10 sec	AC/DC 24 AC 200-240 V	1 CO	7PV1512-1AP30						
	ON delay	5 sec-100 sec	AC/DC 24 AC 100-127 V	1 CO	7PV1513-1AQ30						
0	ON delay	5 sec-100 sec	AC/DC 24 AC 200-240 V	1 CO	7PV1513-1AP30						
(4)	ON delay	0.05 sec-100 h	12-240 V AC/DC	1 CO	7PV1518-1AW30						
	ON delay	0.05 sec-100 h	90-127V AC/DC	1 CO	7PV1518-1AJ30						
-	ON delay	0.05 sec-100 h	180-240V AC/DC	1 CO	7PV1518-1AN30						
	OFF delay timing relays										
	OFF delay with auxiliary voltage	0.05 sec-100 h	12-240 V AC/DC	1 CO	7PV1538-1AW30						
	OFF delay without auxiliary voltage	0.05 sec-100 sec	12-240 V AC/DC	1 CO	7PV1540-1AW30						
	Clock generator										
	Clock generator	0.05 sec-100 h	12-240 V AC/DC	1 CO	7PV1558-1AW30						
	Star-delta timing relays										
	Star-delta	0.05 sec-100 h	12-240 V AC/DC	2 CO	7PV1578-1BW30						

^{*} CO - changeover contact



OFF delay without auxiliary voltage	Clock generator	Star-delta
7PV1540-1AW30	7PV1558-1AW30	7PV1578-1BW30
OFF DELAY	CLOCK PULSE A1/A2 TO TO THE T	STAR/DELTA A1/A2 L///////////////////////////////////



Solid-State Time Relays

3RP20/3RP15/7PV

SIRIUS RELAYS

Circuit diagrams

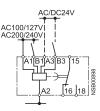
3RP20 05

Device circuit diagrams (terminal designations acc. to DIN 46 199, Part 5)

3RP20 25 3RP15 05-.A 3RP151. 3RP15 25-.A AC/DC24V AC100/127V AC200/240V

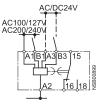
ON-delay

3RP20 05 3RP15 05-.A 3RP15 3.-.A



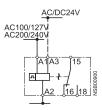
OFF-delay with auxiliary voltage

3RP20 05 3RP15 05-.A



ON-delay and OFF-delay with auxiliary voltage

3RP20 05 3RP15 05-.A

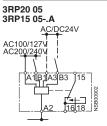


Flashing

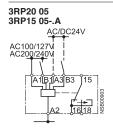




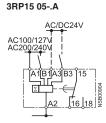
Passing make contact



Passing break contact with auxiliary voltage



Pulse shaping with auxiliary voltage



Additive ON-delay with auxiliary voltage

3RP15 27



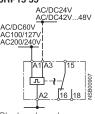
ON-delay, two-wire version

3RP15 40-.A



OFF-delay without auxiliary voltage

3RP15 55



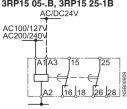
Clock-pulse relay

3RP15 05-.AW30

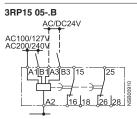


(functions as for 3RP15 05-1A)

3RP15 05-.B, 3RP15 25-1B

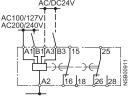


ON-delay, 3RP15 25-1B, also for 42 to 48/60 V AC/DC (see page 11/31 3RP15 25-1BR30)



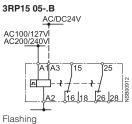
OFF-delay with auxiliary voltage

3RP15 05-.B

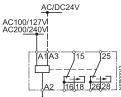


ON-delay and OFF-delay with auxiliary voltage

Multifunction relay

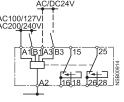


3RP15 05-.B



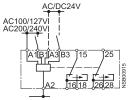
Passing make contact

3RP15 05-.B



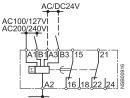
Passing break contact with auxiliary voltage

3RP15 05-.B



Pulse shaping with auxiliary voltage

3RP15 05-.B



Additive ON-delay with auxiliary voltage and instantaneous contact

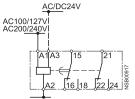
3RP15 05-.B

AC100/127V AC200/240V

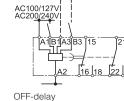
Circuit diagrams

Device circuit diagrams (terminal designations acc. to DIN 46 199, Part 5) 3RP15 05-.B

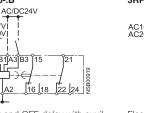
3RP15 05-.B



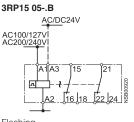
ON-delay and instantaneous contact



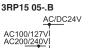
with auxiliary voltage and instantaneous contact

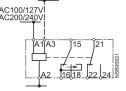


ON-delay and OFF-delay with auxiliary voltage and instantaneous contact

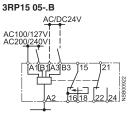


Flashing and instantaneous contact

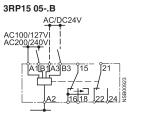




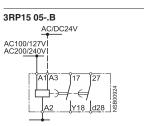
Passing make contact and instantaneous contact



Passing break contact with auxiliary voltage and instantaneous contact

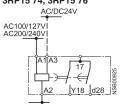


Pulse shaping with auxiliary voltage and instantaneous contact



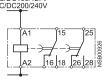
Star-delta function

3RP15 74, 3RP15 76



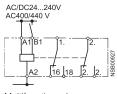
star delta time relay





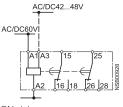
OFF-delay without auxiliary voltage

3RP15 05-.BW30 / -1BT20 /-.RW30 3R920 05-.B



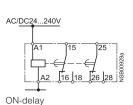
Multifunction relay (for functions see function table)

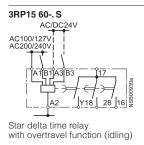
3RP15 25-. BR30



ON-delay

3RP15 25-. BW30



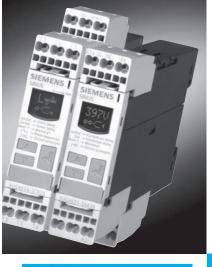


3UG Monitoring Relays

For line, single-phase voltage and insulation monitoring

SIRIUS RELAYS

The new 3UG4 line monitoring relays permit a maximum degree of protection to be achieved for machines, plants and systems. This means that line and voltage faults can be detected early on and the appropriate response is initiated before far more significant subsequent damage can occur.

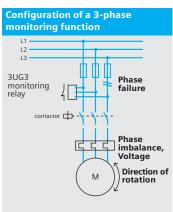


Your advantages:

- Thanks to the wide voltage range, it can be used on all line supplies around the world – from 160 V to 690 V – without an auxiliary voltage
- Can be variably set to above range, below range or window monitoring
- Freely parameterizable delay times and reset behavior
- Reduced width for all versions for line and voltage monitoring
- For the digital versions, the actual value and fault type are permanently displayed
- Automatic direction of rotation correction by differentiating between line faults and incorrect phase sequence
- All versions have removable terminals
- All versions have either screw terminals or alternatively innovative Cage Clamp terminals

Applications:

The applications are listed in the following table. These tables indicate the various plant system conditions that can be detected using the monitoring parameters.



Measured quantity	Possible plant or system fault
Phase sequence	Direction of rotation of the drive
Phase failure	A fuse has blown Control supply voltage has failed Single-phase operation of a motor with the corresponding overheating
Phase dissymmetry	Motor overheating as a result of non-symmetrical voltages or phase failure Line supplies with non-symmetrical load are detected A phase failure is detected in spite of regenerative feedback
Undervoltage	 Motor draws an increased current and in turn overheats A device is undesirably reset Line supply dips, especially when supplied from a battery Threshold value switch for analog signals 0 to 10 V
Overvoltage	 A plant is protected against destruction due to supply overvoltages A plant or system switches-in above a certain voltage Threshold value switch for analog signals 0 to 10 V
Insulation monitoring	The insulation resistance for non-grounded plants and systems is monitored

SIRIUS RELAYS

3UG Monitoring Relays

For line, single-phase voltage and insulation monitoring

3UG4 Mo	nitoring	relays for	the line sup	ply and thre	e-phase volta	ages					
Phase sequence	Phase failure	Phase imbalance	Hysteresis	Under- voltage	Over- voltage	N-conduc- tor moni toring	Delay time	Contacts	Line supply voltage	Order No.	List Price \$
22.5 mm v		518 can he	digitally set	with fault m	emory and wi	ith LCD displ					
Yes	-	-	-	-	-	-	- -	1 CO	160–260	3UG4511-∏AN20	
									320-500	3UG4511AP20	
									420-690	3UG4511AQ20	
								2 CO	160-260	3UG4511BN20	
									320-500	3UG4511BP20	
									420-690	3UG4511BQ20	
Yes	Yes	10%	_	_	_	-	_	1 CO	160-690	3UG4512AR20	
								2 CO	160-690	3UG4512BR20	
Yes	Yes	20%	5%	160–690 V	_	-	Off delay 0–20 s	2 CO	160–690	3UG4513BR20	
Selectable	Yes	0-20%	1–20 V	160–690 V	-	-	On and off delay 0–20 s	2 CO	160–690	3UG4614-□BR20	
Selectable	Yes	Using threshold values	1-20 V	160–690 V	160-690 V	-	0–20 s for V_{min} and V_{max}	1CO for V _{min} and V _{max}	160–690	3UG4615-□CR20	
Selectable	Yes	Using threshold values	1-20 V	160–690 V	160-690 V (90-400 w.r.t. N)	Yes	0–20 s for V_{min} and V_{max}	1 CO for V _{min} and V _{max}	160–690 (90–400 w.r.t. N)	3UG4616-□CR20	
Autom. correction		0–20%	1–20 V	160–690 V	160–690 V	_	Off delay 0–20 s	1 CO for line faults and 1 W for phase sequence	160–690	3UG4617-□CR20	
Autom. correction		0-20%	1–20 V	160–690 V	160–690 V (90–400 w.r.t. N)	Yes	Off delay 0–20 s	1 CO for line faults and 1 W for phase sequence	160–690 (90–400 w.r.t. N)	3UG4618-∏CR20	

Screw Terminal 1
Spring-type Terminal 2

Return voltage due to coupling between the individual phases

Loads connected to the three-phase line supply – such as motor windings, lamps, transformers – result in a coupling between the individual phases.

As a result of this coupling, there is always a return voltage at the equipment terminal of the phase that has failed.

Single-phase voltage monitoring										
Measuring range	Hysteresis	Contacts	Delay time	Auxiliary voltage	Order No.	List Price \$				
22.5 mm wide, all of the devices can be digitally set and have an LCD display, a fault memory that can be switched-in, simultaneous monitoring for overvoltage and undervoltage over the complete measuring range										
17-275 V AC DC	0.1-150 V	1 CO	0-20 s	Selfsupplied	3UG4633AL30					
0.1-60 V AC DC	0.1-30 V	1 CO	0-20 s	24 V AC DC	3UG4631- AA30					
				24-240 V AC DC	3UG4631- AW30					
10-600 V AC DC	0.1-300 V	1 CO	0-20 s	24 V AC DC	3UG4632- AA30					
				24-240 V AC DC	3UG4632- AW30					

Screw Terminal 1
Spring-type Terminal 2

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Function Relays, Interfaces and Converters 3UG Monitoring Relays

SIRIUS RELAYS

Line monitoring

Туре		3UG45 11- N20	3UG45 11- P20	3UG45 11- Q20	3UG45 12	3UG45 13	3UG46 14	3UG46 15 3UG46 17	3UG46 16 3UG46 18
General data									
Rated control supply voltage U _s ¹⁾	V	160 260	320 500	420 690	160 690				90 400
Rated frequency	Hz	50/60							
Rated power, typical									
• At AC 230 V	W/VA	2/4			2/2.5				
• At AC 400 V • At AC 460 V	W/VA W/VA		2/8	2/8	2/3.5 2/4				
Width	mm	22.5		_, -,	_, .				
RESET		Auto-RESE	Γ				Automatic/r	manual	
Principle of operation		Closed-circ	uit				Closed-circ (3UG46 17) closed-circ		cuit
Availability time after application of $U_{\rm S}$	ms	200			1.000			/	
Response time once a switching threshold is	ms	Max. 450							
reached	%				10	00	0. 5 00	01104045	01.10.40.40.
Unbalance	%				10	20	0; 5 20	3UG46 15/3 Through the values 3UG46 17/3 0; 5 20	reshold
Adjustable tripping delay time	S					0.1 20			
Adjustable ON-delay time	S						0.1 20		
Mains buffering time, minimum	ms	10			30				
Rated insulation voltage <i>U</i> _i Degree of pollution 3 Overvoltage category III acc. to EN 60664-1	V	690							
Rated impulse withstand voltage	kV	6							
Permissible ambient temperature	IV.V	U							
During operationDuring storage	°C	-25 +60 -40 +85							
EMC tests ²⁾		IEC 60947-	/IEC 61000-6	5-2/IEC 6100	0-6-4				
Degree of protection • Enclosure • Terminals		IP40 IP20							
Vibration resistance acc. to IEC 60068-2-6		1 6 Hz: 1	5 mm; 6 5	00 Hz: 2 <i>g</i>					
Shock resistance acc. to IEC 60068-2-27		12 shocks (half-sine 15	<i>g</i> /11 ms)					
Connection type		Screv	v terminals						
Terminal screw				er, size 2 an	d Pozidriv 2))			
Solid Finally stranded with and alasks	mm ² mm ²		1)/2 x (0.5						
Finely stranded with end sleeveAWG cables, solid or stranded	AWG	2 x (20 1	2.5)/2 x (0.5 . 4)	1.3)					
Tightening torque	Nm	0.8 1.2	,						
Connection type		Sprin □	g-type term	inals					
Solid Finely stranded, with end sleeves acc. to DIN 46228	mm ² mm ²	2 x (0.25 2 x (0.25							
 Finely stranded AWG cables, solid or stranded 	mm ² AWG	2 x (0.25 2 x (24 10							
Measuring circuit		_ // (= 1 II	-,						
Measuring range AC 50/60 Hz rms value	V	160 260	320 500	420 690	160 690				
Setting range	V				22 000	200690	160690		90400
Measuring accuracy	%					±5			
Repeat accuracy	%					±1			
At constant parameters									
Setting accuracy						±10 % referred to setting	±1 V		
Accuracy of digital display						Journa	±1 digit		
Deviations for temperature fluctuations	%/°C					±0.1	±1 digit		
Hysteresis for voltage	%/°C V					5 % from	1 20 V		
Hysteresis for unbalance	%					setting	(setting - 2)		
Deviation for the recent (1)	0/					4		(setting - 2))
Deviation for frequency fluctuation	%					±1			

¹⁾ Absolute limit values.

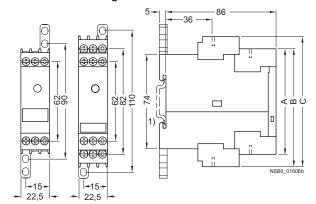
²⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

3UG Monitoring Relays

Line monitoring

		3UG45 11- N20	3UG45 11- P20	3UG45 11- Q20	3UG45 12	3UG45 13	3UG46 14	3UG46 15 3UG46 17	3UG46 16 3UG46 18
Control circuit									
Load capacity of the output relay ■ Conventional thermal current I _{th}	А	5							
Rated operational current <i>I</i> _e at • AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	A A A	3 1 0.2 0.1							
Minimum contact load at 17 V DC	mA	5							
Output relay with DIAZED fuse gL/gG operational class	А	4							
Electrical endurance AC-15	Million oper- ating cycles	0.1							
Mechanical endurance	Million oper- ating cycles	10							

Dimensional drawings



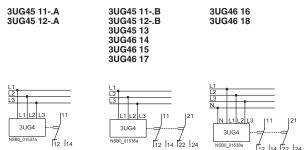
Туре	3UG45 11A 3UG45 12A	3UG45 11B 3UG45 12B 3UG45 13 3UG46 14 3UG46 15 3UG46 17	3UG46 16 3UG46 18
	Α	В	С

Removable terminal

Screw-type terminal	83	92	102
Spring-loaded terminal	84	94	103

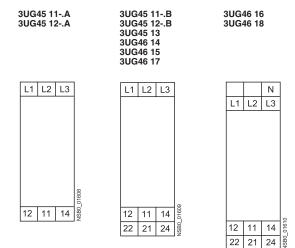
1) For standard mounting rail according to EN 60715.

Schematics



Note: It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Position of the terminals



Function Relays, Interfaces and Converters 3UG Monitoring Relays

SIRIUS RELAYS

Voltage monitoring

Technical	specifications
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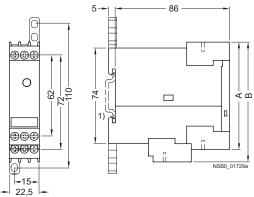
Technical specifications						
		3UG46 31- .AA	3UG46 31- .AW	3UG46 32- .AA	3UG46 32- .AW	3UG46 33
General data						
Rated control supply voltage $U_{\rm s}$	V	24 AC/DC	24240 AC/DC	24 AC/DC	24240 AC/DC	17 275 ¹⁾ AC/DC
Rated frequency for AC	Hz	50/60				40 500
Operating range	V	20.4 27.6	20.4 264	20.4 27.6	20.4 264	17275
Rated power in W/VA	VA	2/4				
Width	mm	22.5				
RESET		Automatic/ma	anual			
Availability time after application of U_s	ms	1000				
Response time once a switching threshold is reached	ms	Max. 450				
Adjustable tripping delay time	S	0.1 20				
Adjustable ON-delay time	S					0.1 20
Mains buffering time, minimum	ms	10				0.1 20
<u> </u>	V	690				
Rated insulation voltage <i>U</i> _i Degree of pollution 3 Overvoltage category III acc. to EN 60664-1	V	690				
Rated impulse withstand voltage U_{imp}	kV	6				
Protective separation acc. to EN 60947-1, Annex N	V	300				
Permissible ambient temperature						
During operation	°C	-25 +60				
During storage	°C	-40 +85				
EMC tests ²⁾		IEC 60947-1/	IEC 61000-6-2	/IEC 61000-6-4		
Degree of protection		ID 40				
Enclosure Terminals		IP40 IP20				
			mm, 6 F00 I	Uz. 0. a		
Vibration resistance acc. to IEC 60068-2-6			mm; 6 500 l			
Shock resistance acc. to IEC 60068-2-27		_ `	alf-sine 15 g/1	i ms)		
Connection type		₩	terminals			
Terminal screw	2			size 2 and Pozi	driv 2)	
SolidFinely stranded with end sleeve	mm ² mm ²		/2 x (0.5 2.5) 5)/2 x (0.5 1.			
AWG cables, solid or stranded	AWG	2 x (20 14)		.5)		
Tightening torque	Nm	0.8 1.2				
Connection type		Spring	-type terminal	s		
• Solid	mm ²	2 x (0.25 1	.5)			
 Finely stranded, with end sleeves acc. to DIN 46228 	mm ²	2 x (0.25 1	.5)			
• Finely stranded	mm ²	2 x (0.25 1				
AWG cables, solid or stranded	AWG	2 x (24 16))			
Measuring circuit						
Permissible measuring range single-phase AC/DC voltage	V	0.1 68		10 650		17 275
Setting range single-phase voltage	V	0.1 60		10 600		17 275
Measuring frequency	Hz	40 500				40 500
Measuring accuracy	%	5				
Repeat accuracy at constant parameters	%	1				
Accuracy of digital display		±1 digit				
Deviations for temperature fluctuations	%/°C	±0.1				
Hysteresis for single-phase voltage	V	0.1 30		0.1 300		0.1 150
Control circuit	v	5.1 50		0.1 000		0.1 100
Load capacity of the output relay ■ Conventional thermal current I _{th}	А	5				
Rated operational current I _e at						
• AC-15/24 400 V	A	3				
• DC-13/24 V • DC-13/125 V	A A	1 0.2				
• DC-13/123 V • DC-13/250 V	Ä	0.2				
Minimum contact load at 17 V DC	mA	5				
Output relay with DIAZED fuse gL/gG operational class	A	4				
Electrical endurance AC15	Million	0.1				
Electrical endurance ACTS	operating cycles					
Endurance with contactor relay	Million	10				
•	operating					
	cycles					
N .	0)					

¹⁾ Absolute limit values.

²⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

Voltage monitoring

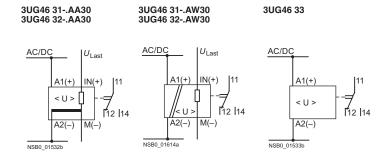
Dimensional drawings



- 7 22,5		
Туре	3UG46 31 3UG46 32 3UG46 33	В
Removable terminal	<u> </u>	
Screw-type terminal	83	92
Spring-loaded terminal	84	94

1) For standard mounting rail according to EN 60715.

Schematics



Note: It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Position of the terminals

3UG46 31 3UG46 32	3UG46 33
A1 IN M	A1
A2 0,040	A2 li
A2 00 00 00 00 00 00 00 00 00 00 00 00 00	12 11 14 g

<u>ე</u>

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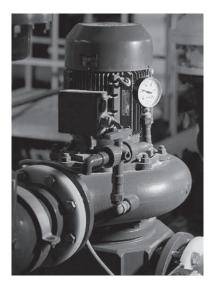
For single-phase current and cos φ monitoring

Monitoring the load of motors and the functionality of electronic loads – a clear case for our 3UG relays that monitor current and $\cos\phi$. These devices detect the effect of wear and faults early on. This means that the appropriate actions can be taken before far more significant damage can occur.



Your advantages:

- 22.5 mm wide
- Can be digitally set and with LCD display
- Fault memory that can be switched-in
- Simultaneous monitoring for current overrange/underrange over the complete measuring range



Current monitoring:

- Wide-voltage versions reduce stock inventory costs
- Only two versions from 2 mA to 10 A
- Can be variably set to overrange, underrange or window monitoring
- Freely parameterizable delay times and reset switch
- Actual value and fault type are permanently displayed
- All of the versions have removable terminals
- All of the versions have screw terminals or, alternatively, innovative Cage Clamp terminals

$\cos \phi$ monitoring:

- $\cos\phi$ is monitored for overrange and underrange
- Fault memory that can be switched-in
- Selectable starting bypass and delay time for threshold value out of range

Applications:

The applications can be seen in the adjacent table. These tables show the various plant/system states can be detected using the monitoring parameters.

Function Relays, Interfaces and Converters

3UG Monitoring Relays

For single-phase current and $\cos \phi$ monitoring

3UG4 Monitoring relays – single-phase current monitoring							
Measuring range	Hysteresis	Contacts	Starting- bypass time	Off delay	Auxiliary voltage	Order No.	List Price \$
22.5 mm wide, all of the devices can be digitally set and have an LCD display, a fault memory that can be switched-in, simultaneous monitoring for overcurrent and undercurrent over the complete measuring range							
2.0 mA AC/DC	0.1 mA-250 mA	1 CO	0-20 s	0-20 s	24 V AC/DC	3UG4621AA30	
up to 500 mA AC/DC					24-240 V AC/DC	3UG4621AW30	
0.05 A AC/DC	0.01 A-5 A	1 CO	0-20 s	0-20 s	24 V AC/DC	3UG4622AA30	
up to 10 A AC/DC					24-240 V AC/DC	3UG4622AW30	

Screw Terminal 1
Spring-type Terminal 2

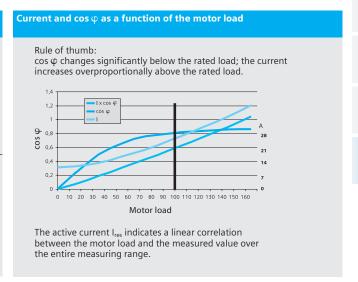
Power factor and active current monitoring								
	Measuring range for active current I _{res}	Power factor hysteresis	Active current hysteresis	On delay	Tripping delay	Rated control supply voltage V _s ¹⁾		List Price \$
22.5 mm wide, all of the devices can be digitally set and have an LCD display, a fault memory that can be switched-in, simultaneous power factor and active current monitoring over the entire measuring range								
0.1–0.99 (cosφ)	0.2-10.0 A	0.1(cos φ)	0.1-2.0 A	0-99 s	0.1–20.0 s	90–690 V AC	3UG4641CS20	

¹⁾ Absolute limits.

Screw Terminal 1

Spring-type Terminal 2

Monitoring parameter	Plant system states
Current monitoring	Overload monitoring Underload monitoring close to the rated torque Monitoring the functionality of electric loads Wire breakage monitoring Energy management (phase current monitoring) Threshold value switch for analog signals up to 20 mA
Power factor and active current monitoring	No-load monitoring Underload monitoring in the lower power range Extremely simple power factor monitoring of line supplies to control compensation equipment Energy management Interrupted cable between the cabinet and the motor



Siemens Industry, Inc. Industrial Controls Catalog

Function Relays, Interfaces and Converters 3UG Monitoring Relays

SIRIUS RELAYS

Current monitoring

Technical	specifications
iccillical	3pccilication3

Technical specifications					
		3UG46 21AA	3UG46 21AW	3UG46 22AA	3UG46 22AW
General data					
Rated control supply voltage $U_{\rm s}$	V	24	24 240	24	24 240
Rated frequency	Hz	50/60			
Operating range	V	20.4 26.4	20.4 264	20.4 26.4	20.4 264
Rated power	W/VA	2/4		_	_
Width	mm	22.5			
RESET		Automatic/manua	al		
Availability time after application of U_s	ms	1000			
Response time once a switching threshold is reached	ms	Max. 450			
Adjustable tripping delay time/ON-delay time	S	0.1 20			
Mains buffering time, minimum	ms	10			
Rated insulation voltage <i>U</i> _i	V	690			
Degree of pollution 3; overvoltage category III acc. to EN 60664-1	•	000			
Rated impulse withstand voltage $U_{\rm imp}$	kV	6			
Protective separation acc. to EN 60947-1, Annex N	V	300			
Permissible ambient temperature					
During operation	°C	-25 +60			
During storage	°C	-40 +85			
EMC tests ¹⁾		IEC 60947-1/IEC	61000-6-2/IEC 61	000-6-4	
Degree of protection		10.40			
EnclosureTerminals		IP40 IP20			
Vibration resistance acc. to IEC 60068-2-6			n; 6 500 Hz: 2 g		
Shock resistance acc. to IEC 60068-2-27		12 shocks (half-s	·		
Connection type		Screw terr	IIIIais		
Terminal screw		M 3 (standard so	rewdriver, size 2 a	nd Pozidriv 2)	
• Solid	mm_2^2	1 x (0.5 4)/2 x			
Finely stranded with end sleeveAWG cables, solid or stranded	mm ² AWG	1 x (0.5 2.5)/2 2 x (20 14)	X (0.5 1.5)		
Tightening torque	Nm	0.8 1.2			
Connection type		Spring-type Sprin	e terminals		
Solid Finally stranded with and alaques and to DIN 40000.	mm ²	2 x (0.25 1.5)			
 Finely stranded, with end sleeves acc. to DIN 46228 Finely stranded 	mm² mm²	2 x (0.25 1.5) 2 x (0.25 1.5)			
AWG cables, solid or stranded	AWG	2 x (24 16)			
Measuring circuit					
Measuring range for single-phase AC/DC current	А	0.003 0.6		0.05 15	
Setting range for single-phase current	А	0.003 0.5		0.05 10	
Load supply voltage	V	24	Max. 300 ²⁾	24	Max. 300 ²⁾
			Max. 500 ³⁾		Max. 500 ³⁾
Measuring accuracy	%	5			
Repeat accuracy at constant parameters	%	1			
Accuracy of digital display		±1 digit			
Deviations for temperature fluctuations	%/°C	±0.1			
Hysteresis for single-phase current		0.1 250 mA		0.01 5 A	
Permissible overcurrent, continuous	А	0.6		15	
Permissible overcurrent, < 1 s	А	5		50	
Protection against destruction, DIAZED gL/gG	A	2		16	
Measuring circuit internal resistance, shunt	mΩ	500		5	
Control circuit					
Load capacity of the output relay					
Conventional thermal current I _{th}	Α	5			

Rated operational current I _e at	Λ.	3			
• AC-15/24 400 V	A				
• AC-15/24 400 V • DC-13/24 V	Α	1			
• AC-15/24 400 V		1 0.2 0.1			
• AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/125 V	A A A	0.2 0.1			
• AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V Minimum contact load at 17 V DC	A A A mA	0.2 0.1 5			
• AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/125 U Minimum contact load at 17 V DC Output relay with DIAZED fuse gL/gG	A A A	0.2 0.1 5			
• AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V Minimum contact load at 17 V DC	A A A mA	0.2 0.1 5			

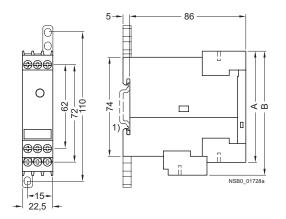
¹⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

²⁾ With protective separation.

³⁾ With simple separation.

Current monitoring

Dimensional drawings



Туре	3UG46 21 3UG46 22	
	Α	В
Removable terminal		
Screw-type terminal	83	92
Spring-loaded terminal	84	94

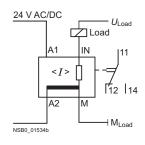
1) For standard mounting rail according to EN 60715.

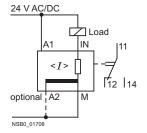
Schematics

3UG46 21-.AA30 3UG46 22-.AA30

Operation with separate control circuit and load circuit

Operation with joint control circuit and load circuit

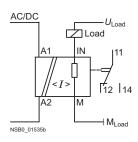


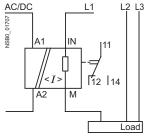


3UG46 21-.AW30

Single-phase operation







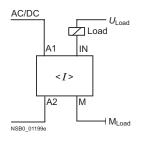
Position of the terminals

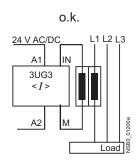
3UG46 21 3UG46 22

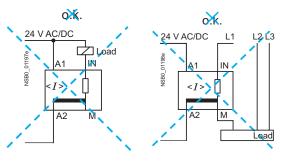


Wiring diagram for 24 V AC/DC (only 3UG46 2.-.AA30)

From the following circuit diagrams it is clear that loads in measuring circuits have to be in the current flow upstream from the monitoring relay. Otherwise, the monitoring relay could be destroyed and the short-circuit current could cause damage to the plant.







Configuring note:

A2 and M are electrically connected internally!

For applications in which the load to be monitored and the monitoring relay are supplied from the same power supply, there is no need for connection A2!

The load current must always flow through M or the monitoring relay may be destroyed!

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Function Relays, Interfaces and Converters 3UG Monitoring Relays

SIRIUS RELAYS

Power factor and active current monitoring

Technical specifications		
Туре		3UG46 41
General data		
Rated control supply voltage U _s	V	90 690
Rated frequency	Hz	50/60
Rated power, typical		
• At 200 V AC	VA	2.0
• At 400 V AC • At 460 V AC	VA VA	2.7 3.1
Width	mm	22.5
RESET		Automatic/manual
Principle of operation		Closed-circuit principle, open-circuit principle
Availability time after application of $U_{\rm S}$	ms	1000
Response time once a switching threshold is reached	ms	Max. 450
Adjustable tripping delay time	S	0.1 20
Adjustable ON-delay time	S	099
Mains buffering time, minimum	ms	10
Rated insulation voltage <i>U</i> _i Degree of pollution 3 Overvoltage category III acc. to EN 60664-1	V	690
Rated impulse withstand voltage	kV	6
Permissible ambient temperature • During operation	°C °C	-25 +60
During storage EMC tests ¹⁾	-0	-40 +85 IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4
Degree of protection		1EO 00347-1/1EO 01000-0-2/1EO 01000-0-4
• Enclosure • Terminals		IP40 IP20
Vibration resistance acc. to IEC 60068-2-6		1 6 Hz: 15 mm; 6 500 Hz: 2 <i>g</i>
Shock resistance acc. to IEC 60068-2-27		12 shocks (half-sine 15 g/11 ms)
Connection type		Screw terminals
Terminal screw Solid Finely stranded with end sleeve AWG cables, solid or stranded Tightening torque	mm ² mm ² AWG Nm	M 3 (standard screwdriver, size 2 and Pozidriv 2) 1 x (0.5 4)/2 x (0.5 2.5) 1 x (0.5 2.5)/2 x (0.5 1.5) 2 x (20 14) 0.8 1.2
Connection type		Spring-type terminals
Solid Finely stranded, with end sleeves acc. to DIN 46228 Finely stranded AWG cables, solid or stranded	mm ² mm ² mm ² AWG	2 x (0.25 1.5) 2 x (0.25 1.5) 2 x (0.25 1.5) 2 x (24 16)
Measuring circuit		
Measurable active current I_{res}	А	0.2 10
Max. permissible load current	А	10
Peak current < 1 s	А	50
Adjustable response value Phase displacement angle		0.1 0.99
DIAZED protection, gL/gG operational class	А	16
Measuring accuracy	%	10
Repeat accuracy at constant parameters	%	1
Accuracy of digital display	21.00	± 1 digit
Deviations for temperature fluctuations	%/°C	±0.1
Hysteresis Phase angle		0.10
Hysteresis Active current monitoring	А	0.1 2.0

¹⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

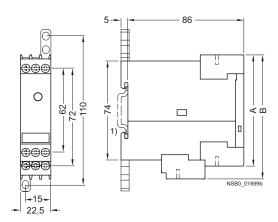
3UG Monitoring Relays

SIRIUS RELAYS

Power factor and active current monitoring

Туре		3UG46 41
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay • Conventional thermal current I _{th}	А	5
Rated operational current <i>I</i> _e at • AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5
Output relay with DIAZED fuse gL/gG operational class	А	4
Electrical endurance AC-15	Million operat- ing cycles	0.1
Mechanical endurance	Million operat- ing cycles	10

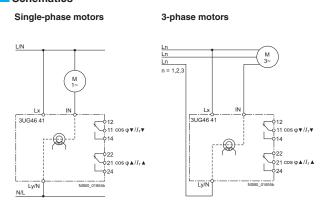
Dimensional drawings



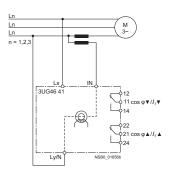
Туре	3UG46 41				
	Α	В			
Removable terminal	1				
Screw-type terminal	83	92			
Spring-loaded terminal	84	94			

1) For standard mounting rail according to EN 60715.

Schematics



3-phase motors with transformers for currents > 10 A



Legend

cos φ: p. f.

Position of the terminals

3UG46 41



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3UG Monitoring Relays

Residual current monitoring: Residual-current monitoring relays **SIRIUS**

Overview



The 3UG46 24 residual current monitoring relay is used together with the 3UL22 summation current transformer for plant monitoring.

Application

· Plant monitoring

Selection and ordering data

- Relay for monitoring residual currents $I_{\Delta n}$ 0.3 ... 40 A For 3UL22 summation current transformers with feed-through opening 40 ... 120 mm
- Digital adjustable, with illuminated LCD
- Separately adjustable limit value and warning threshold
- · Permanent display of actual value and tripping state
- 1 CO contact each for limit violation and warning threshold
- All terminals are removable
- Width 22.5 mm

	. ,,			iiig iiiles							
Display range	Setting range	Hysteresis		ON/trip- Rated control ping supply		Screw terminals			PU (UNIT,	PS*	Weight per PU
		Limit value	Warning value	delay time	voltage $U_s^{(2)}$		Order No.	List Price \$ per PU	SET, M)		approx.
Α	Α	Α	А	S	V						kg
10 120 % of <i>I</i> _{Δn}	10 100 % of $I_{\Delta \text{n}}$	LSB ¹⁾ up to 50 % of $I_{\Delta n}$	5 % of <i>I</i> _{Δn}	0.1 20	90 690		3UG46 24-1CS20		1	1 unit	0.147
Display range	Setting range	Hysteresis		ON/trip- ping	Rated control supply	Spring-type terminals		$\stackrel{\circ}{\mathbb{H}}$	PU (UNIT,		Weight per PU
		Limit value	Warning value	delay time	voltage U_s^{-r}	voltage $U_{\rm s}^{(2)}$	Order No.	List Price \$ per PU	SET, M)		approx.
Α	Α	Α	Α	S	V						kg
10 120 %	10 100 % of $I_{\Lambda n}$	LSB ¹⁾ up to 50 % of <i>I</i> _{An}	5 % of <i>I</i> _{An}	0.1 20	90 690		3UG46 24-2CS20		1	1 unit	0.130
of $I_{\Delta n}$	- ΔΠ	Δ11	∠ ∆ 1 1								

Selection and ordering data

	Feed-through opening	Rated insula- tion voltage <i>U</i> _i	Rated fault current $I_{\Delta n}$	Screw terminals	+	PU (UNIT,	PS*	Weight per PU
	diameter			Order No.	List Price \$ per PU	ŠET, M)		approx.
	mm	V	Α					kg
Summation current (essential accessor		or SIMOCODE	3UF)					
	40	690	0.3 0.5 1	3UL22 01-1A 3UL22 01-2A 3UL22 01-3A		1 1 1	1 unit 1 unit 1 unit	0.571 0.408 0.324
	65	690	0.3 0.5 1 6 10 16 25 40	3UL22 02-1A 3UL22 02-2A 3UL22 02-3A 3UL22 02-1B 3UL22 02-2B 3UL22 02-3B 3UL22 02-4B 3UL22 02-5B		1 1 1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit	0.900 0.713 0.568 0.561 0.563 0.573 0.575 0.564
30111	120	1000	0.3 0.5 1 6 10 16 25 40	3UL22 03-1A 3UL22 03-2A 3UL22 03-3A 3UL22 03-1B 3UL22 03-2B 3UL22 03-3B 3UL22 03-4B 3UL22 03-5B		1 1 1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit	3.435 2.810 1.965 1.955 1.990 1.917 1.851 1.905

SIRIUS RELAYS

3UG Monitoring Relays

Residual current monitoring:
Residual-current monitoring relays

Technical specifications

Technical specifications		
Туре		3UG46 24
General data		
Rated control supply voltage U _s	V	90 690 ¹⁾
Rated frequency	Hz	50/60
Rated power, typical		
At 90 V ACAt 230 V AC	VA VA	2.8 2.4
• At 400 V AC	VA VA	3.1
• At 460 V AC	VA	3.2
• At 690 V AC	VA	4.7
Width	mm	22.5
RESET		Automatic/manual
Principle of operation		Closed-circuit principle, open-circuit principle
Availability time after application of U_s	ms	1000
Response time once a switching threshold is reached	ms	Max. 300
Adjustable delay time	S	0.1 20
Mains buffering time, minimum	ms	10
Rated insulation voltage U _i	V	690
Degree of pollution 3 Overvoltage category III acc. to EN 60664-1		
Rated impulse withstand voltage	kV	6
Permissible ambient temperature	IV.V	
During operation	°C	-25 +60
During storage	°C	-40 +85
EMC tests ²⁾		IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4
Degree of protection		
Enclosure Terminals		IP40 IP20
Vibration resistance acc. to IEC 60068-2-6		1 6 Hz: 15 mm; 6 500 Hz: 2 g
Shock resistance acc. to IEC 60068-2-27		12 shocks (half-sine 15 <i>g</i> /11 ms)
Connection type		Screw terminals
Terminal screw		M3 (for standard screw driver size 2 and Pozidriv 2)
• Solid	mm_2^2	1 x (0.5 4)/2 x (0.5 2.5)
Finely stranded with end sleeveAWG cables, solid or stranded	mm ² AWG	1 x (0.5 2.5)/2 x (0.5 1.5) 2 x (20 14)
Tightening torque	NM	0.8 1.2
Connection type		
Solid Finally attended with and alequate and to DIN 46000.	mm ²	2 x (0.25 1.5)
 Finely stranded, with end sleeves acc. to DIN 46228 Finely stranded 	mm ² mm ²	2 x (0.25 1.5) 2 x (0.25 1.5)
AWG cables, solid or stranded	AWG	2 x (24 16)
Measuring circuit		
Measurable residual current I _{res}	А	10 120 % $I_{\Delta n}$ ($I_{\Delta n}$: rated residual current of the transformer)
Adjustable response value		
Residual current		10 100 % I _{AD}
Warning		10 100 % I _{Δn}
Measuring accuracy	%	±5
Repeat accuracy at constant parameters	%	±1
Accuracy of digital display		± 1 digit
Deviations for temperature changes	%/°C	±0.1
Hysteresis for residual current		LSB ³⁾ up to 50 % $I_{\Delta n}$
Hysteresis for warning threshold	Α	5 % I _{Δn}

¹⁾ Absolute limit values.

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²⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must take suitable precautions.

³⁾ LSB: Smallest adjustable value, transformer-dependent, \leq 1 % of $I_{\Delta \Pi}.$

3UG Monitoring Relays Residual current monitoring:

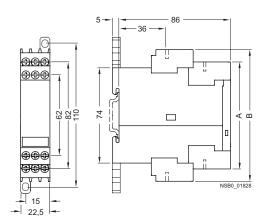
Residual current monitoring: Residual-current monitoring relays

SIRIUS RELAYS

Туре		3UG46 24
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay		
Conventional thermal current I_{th}	Α	5
Rated operational current <i>I</i> _e at • AC-15/24 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5
Output relay with DIAZED fuse gL/gG operational class	Α	4
Electrical endurance AC-15	Million operat- ing cycles	0.1
Mechanical endurance	Million operat- ing cycles	10

Dimensional drawings

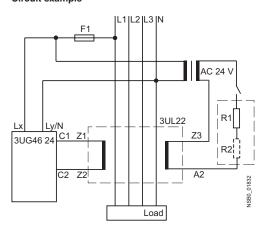
3UG46 24



Туре	3UG46 24					
	Α	В				
Removable terminal						
Screw-type terminal	83	102				
Spring-loaded terminal	84	103				

¹⁾ For standard mounting rail according to EN 60715.

Circuit example



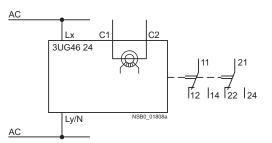
Туре	$I_{\Delta n}$	R1	R2
3UL22 01A	0,3 A	220Ω≥3 W	
3UL22 02A	0,5 A		
3UL22 03A	1 A		
3UL22 01B	6 A	22 Ω≥6 W	22Ω≥6 W
3UL22 02B	10 A		
3UL22 03B	16 A		
3UL22 04B	25 A		
3UL22 05B	40 A		

Position of the terminals



Schematics

3UG46 24



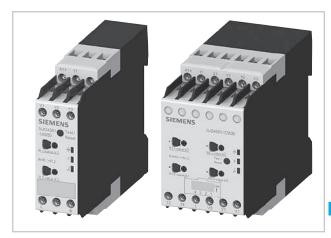
Note: It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Function Relays, Interfaces and Converters

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring

Overview



SIRIUS 3UG45 8. insulation monitor

Isolation monitoring relays are used for monitoring the insulation resistance between ungrounded single or three-phase AC supplies and a protective conductor.

Ungrounded, i. e. isolated networks (IT networks) are always used where high demands are placed on the reliability of the power supply, e. g. emergency lighting systems. IT systems are supplied via an isolating transformer or by power supplies such as batteries or a generator. While an initial insulation fault between a phase conductor and the ground effectively grounds the conductor, as a result no circuit has been closed, so it is possible to continue work in safety (single-fault safety). However, the fault must be rectified as quickly as possible before a second insulation fault occurs (e. g. according to DIN VDE 0100-410). For this purpose insulation monitoring relays are used, which constantly measure the resistance to ground of the phase conductor and the neutral conductor, reporting a fault immediately if insulation resistance falls below the set value so that either a controlled shutdown can be performed or the fault can be rectified without interrupting the power supply.

Two series

- 3UG45 81 insulation monitoring relays for ungrounded AC networks
- 3UG45 82, 3UG45 83 insulation monitoring relays for ungrounded DC and AC networks

Benefits

- · Devices for AC and DC systems
- All devices have a wide control supply voltage range
- Direct connection to networks with mains voltages of up to 690 V AC and 1000 V DC by means of a voltage reducer module
- For AC mains: Frequency range 15 ... 400 Hz
- · Monitoring of broken conductors
- · Monitoring of setting errors
- Safety in use thanks to integrated system test after startup
- Option of resetting and testing (by means of pushbutton on front or using control contact)
- New predictive measurement principle allows very fast response times

Application

IT networks are used for example:

- In emergency power supplies
- In safety lighting systems
- In industrial production facilities with high availability requirements (chemical industry, automobile manufacturing, printing plants)
- In shipping and railways
- For mobile generators (aircraft)
- For renewable energies, such as wind energy and photovoltaic power plants
- In the mining industry

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Function Relays, Interfaces and Converters SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

SIRIUS RELAYS

Insulation monitoring

General data				
Туре		3UG45 81-1AW30	3UG45 82-1AW30	3UG45 83-1AW30
Setting range for the setpoint respon • 1 100 k Ω • 2 200 k Ω	se values	✓ 	✓ 	<i>/</i>
Rated voltage of the network being m • 0 250 V AC • 0 440 V AC • 0 690 V AC • 0 300 V DC • 0 1000 V DC	onitored	 	/ 	
Max. leakage capacitance of the system of 10μ F of 20μ F	em	/ 	√ 	
Output contacts 1 CO 2 CO or 1 CO + 1 CO, adjustable		✓ 	✓ 	 /
Number of limit values 1 or 2, adjustable		✓ 	✓ 	 /
Principle of operation		Closed-circuit principle	Closed-circuit principle	Open-circuit/closed-circu principle, adjustable
Rated control supply voltage • 24 240 V AC/DC		✓	✓	✓
Rated frequency 13.5 440 Hz How to the state of the			/	✓
Auto or manual RESET		✓ Adjustable	✓ Adjustable	✓ Adjustable
Remote-RESET		✓ Via control input	✓ Via control input	✓ Via control input
Non-volatile error memory				✓ Adjustable
Broken wire detection				✓ Adjustable
Replacement for				.,
Rated control supply voltage <i>U</i> _s	Voltage range of the network being monitored			
3UG30 81-1AK20 110 130/220 240 V AC/DC	3 x 230/400 V AC	✓		
3UG30 81-1AW30 24 240 V AC/DC	3 x 230/400 V AC	✓		
3UG30 82-1AW30 24 240 V AC/DC	24 240 V DC		1	
. A. 3.11				

[✓] Available

⁻⁻ Not available

¹⁾ With voltage reducer module.

Function Relays, Interfaces and Converters

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded AC networks

Overview



The 3UG45 81 insulation monitoring relays are used to monitor insulation resistance in accordance with IEC 61557-8 in ungrounded AC networks with rated voltages of up to 400 V.

These devices can monitor control circuits (single-phase) and main circuits (three phase).

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status.

In the case of 3UG45 81 a higher-level DC measuring signal is used. The higher-level DC measuring signal and the resulting current are used to determine the value of the insulation resistance of the network which is to be measured.

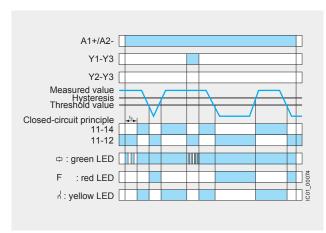
SIRIUS 3UG45 81 insulation monitor

Technical specifications

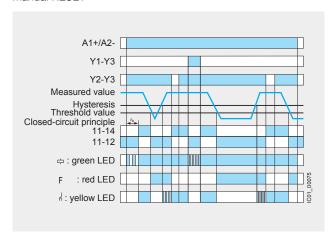
3UG45 81 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with auto RESET



Insulation resistance monitoring with fault storage and manual RESET



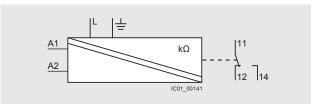
Function Relays, Interfaces and Converters SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded AC networks

SIRIUS RELAYS

Туре		3UG45 81
Dimensions (W x H x D)	mm	22.5 x 100 x 100
Connection type		Screw terminals
SolidFinely stranded with end sleeveAWG cables, solid or stranded	mm ² mm ² AWG	2 x (0.5 4) 2 x (0.75 2.5) 2 x (20 14)
General data		
Rated insulation voltage <i>U</i> _i Pollution degree 3 Overvoltage category III acc. to IEC 60664	V	400 supply circuit/measuring circuit 300 supply circuit/output circuit
Rated impulse withstand voltage	kV	6
Rated control supply voltage	V	24 240 AC/DC
Rated frequency	Hz	15 400
Measuring circuit		
Rated system voltage of the network being monitored	V	0 400
Rated frequency of the network being monitored	Hz	50 60
Setting range for insulation resistance	kΩ	1 100
Control circuit		
Load capacity of the output relay • Conventional thermal current I _{th}	А	4
Rated operational current I _e at • AC-15/24 400 V • DC-13/24 V	A A	3 2
Minimum contact load at 24 V DC	mA	10

Circuit diagram



3UG45 81

Note:

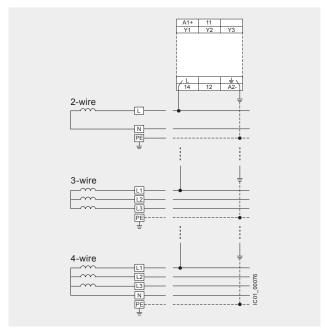
It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Function Relays, Interfaces and Converters

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded AC networks

Connection diagrams for networks up to 400 V AC



Selection and ordering data

- · Auto or manual RESET
- Closed-circuit principle
- 1 CO contact

3UG45 81-1AW30

- Fault memory adjustable using control input (S2-S3)
 Reset by means of pushbutton on front or using control input
- Test by means of pushbutton on front or using control input (S1-S3)

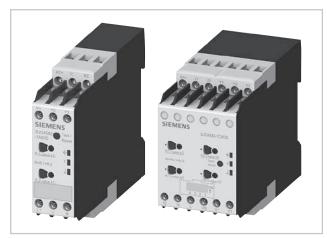
(51-53)										
	Rated system voltage U_n	Measuring range $U_{\rm e}$	Rated control supply voltage U _S	System leakage capaci- tance	DT	Screw terminals	4	PU (UNIT, SET, M)	PS*	PG
	V AC	kΩ	V	μF		Order No.	Price per PU			
Insulation monitors for un	grounded	AC networ	ks							
States Control of the	0 400	1 110	24 240 AC/DC	max. 10	В	3UG45 81-1AW30		1	1 unit	41H

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

SIRIUS RELAYS

Overview



SIRIUS 3UG45 82 and 3UG45 83 insulation monitors

The 3UG45 82 and 3UG45 83 insulation monitoring relays are used to monitor insulation resistance in ungrounded IT AC or DC networks in accordance with IEC 61557-8.

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status. With these devices, which are suitable for both AC and DC networks, a pulsed test signal is fed into the network to be monitored and the isolation resistance is determined.

The pulsed test signal changes its form according to insulation resistance and network loss capacitance. The changed form is used to predict the changed insulation resistance.

If the predicted insulation resistance matches the insulation resistance calculated in the next measurement cycle, and is lower than the threshold value, the output relays are activated or deactivated, depending on the device configuration. This measurement principle is also suitable for identifying symmetrical insulation faults.

3UG49 83 voltage reducer modules

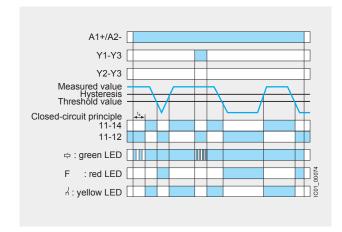
The 3UG49 83 passive voltage reducer module can be used to allow the 3UG45 83 insulation monitoring relay to be used for insulation monitoring of IT networks with rated voltages of up to 690 V AC and 1000 V DC.

Technical specifications

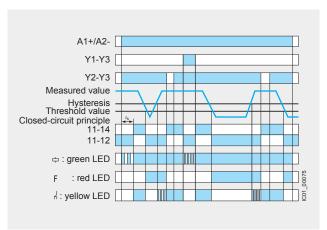
3UG45 82 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with auto RESET



Insulation resistance monitoring with fault storage and manual RESET



Function Relays, Interfaces and Converters

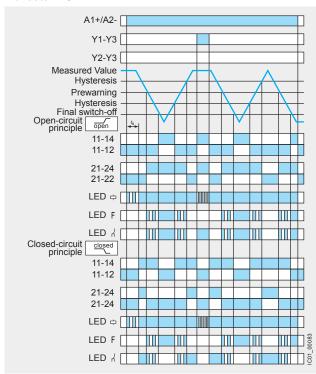
SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

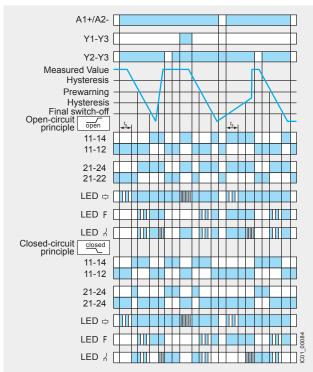
3UG45 83 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with auto RESET



Insulation resistance monitoring with fault storage and manual RESET



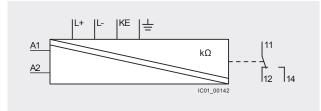
Туре		3UG45 82	3UG45 83
Dimensions (W x H x D)	mm	22.5 x 100 x 100	45 x 100 x 100
Connection type		Screw terminals	
Solid Finely stranded with end sleeve AWG cables, solid or stranded	mm ² mm ² AWG	2 x (0.5 4) 2 x (0.75 2.5) 2 x (20 14)	
General data			
Rated insulation voltage <i>U</i> _i Pollution degree 3 Overvoltage category III acc. to IEC 60664	V	400 supply circuit/measuring circuit 300 supply circuit/output circuit	400 supply circuit/measuring circuit 300 supply circuit/output circuit, 300 output circuit 1/output circuit 2
Rated impulse withstand voltage	kV	6	
Rated control supply voltage	V	24 240 AC/DC	
Rated frequency	Hz	15 400	
Measuring circuit			
Rated system voltage of the network being monitored	V	0 250 AC, 0 300 DC	0 300 AC, 0 690 AC with 3UG49 83 0 600 DC, 0 1000 DC with 3UG49 83
Rated frequency of the network being monitored	Hz	DC or 15 400	
Setting range for insulation resistance	kΩ	1 100	1 100 2 200 for 2nd limit value (disconnectable)
Control circuit			
Number of CO contacts for auxiliary contacts		1	2 or 1 + 1, adjustable
Load capacity of the output relay • Conventional thermal current I_{th}	А	4	
Rated operational current <i>I</i> _e at • AC-15/24 400 V • DC-13/24 V	A A	3 2	
Minimum contact load at 24 V DC	mA	10	

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

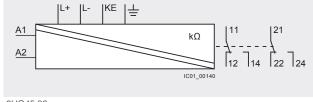
Insulation monitoring for ungrounded DC and AC networks

SIRIUS RELAYS

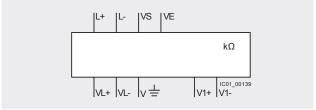
Circuit diagrams



3UG45 82



3UG45 83



3UG49 83

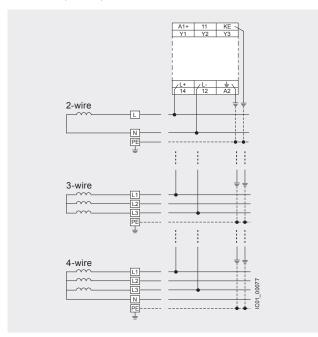
Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

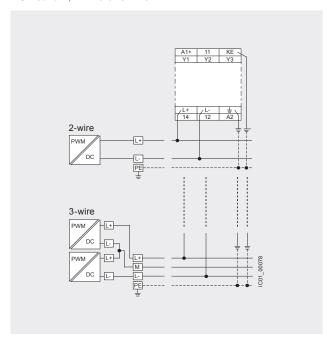
Connection diagrams

3UG45 82

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire



Note:

L+ and L- can be connected to any wire, but each to a different wire. $U_{\rm n} \le$ 250 V AC or 300 V DC.

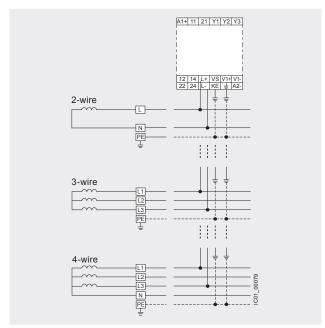
SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

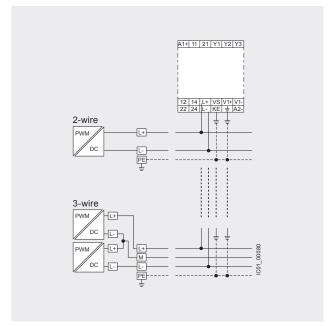
SIRIUS RELAYS

3UG45 83

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire

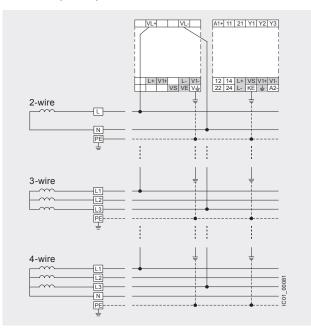


Note:

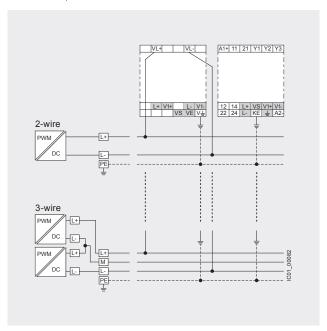
L+ and L- can be connected to any wire, but each to a different wire. $U_{\rm n} \le$ 400 V AC or 600 V DC.

Use a voltage reducer module to monitor systems with higher voltages.

3UG49 83 voltage reducer modules
AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire



Note:

L+ and L- can be connected to any wire, but each to a different wire. $\rm U_n \le 400~V$ AC or 600 V DC.

Use a voltage reducer module to monitor systems with higher voltages.

2

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+

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SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

SIRIUS RELAYS

Selection and ordering data

- · Auto or manual RESET
- 3UG45 82: Open-circuit principle 3UG45 83: Open-circuit or closed-circuit principle, adjustable
- 1 or 2 CO contacts
- Fault memory adjustable using control input (S2-S3)
- Reset by means of pushbutton on front or using control input (S2-S3)
- Test by means of pushbutton on front or using control input (S1-S3)
- 3UG45 83: Non-volatile fault storage can be configured
- 3UG45 83: 2 separate limit values (e.g. for warning and disconnection) or 2 CO contacts for one limit value (e.g. for a local alarm and signaling to the PLC via separate circuits) can be configured

Note:

With the 3UG49 83-1A coupling unit, connection to networks with a voltage of up to 690 V AC and 1000 V DC is possible, see below.

be configured											
	Rated system voltage $U_{\rm n}$	System leakage capaci- tance	Output relay	Measuring range $U_{\rm e}$	Broken wire detection in the measuring range	DT	Screw terminals	(1)	PU (UNIT, SET, M)	PS*	PG
	V	μF		kΩ			Order No.	Price per PU			
SIRIUS 3UG45 82 insu	ulation monito	rs									
3UG45 82-1AW30	0 250 AC	max. 10	100	1 110	✓	В	3UG45 82-1AW30		1	1 unit	41H
SIRIUS 3UG45 83 insu											
3UG45 83-1AW30	0 400 AC, 0 600 DC 1)	max. 20	2 CO or 1 CO + 1 CO, adjust- able	1 110, 2 200 for 2nd limit value, adjustable	✓ adjustable	В	3UG45 83-1CW30		1	1 unit	41H
	3UG45 83 volta	ge reduce	r modules								
3UG49 83-1A ✓ Available	For extending the max. 690 V AC	ne mains vo	oltage range / DC	to		В	3UG49 83-1A		1	1 unit	41H

With 3UG49 83-1A voltage reducer module suitable also for the insulation monitoring of IT networks up to 690 V AC and 1000 V DC.

SIRIUS RELAYS 3UG Monitoring Relays

Level monitoring: Level monitoring relays

Overview



The 3UG45 01 level monitoring relay is used together with 2- or 3-pole sensors to monitor the levels of conductive liquids.

Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry run protection
- · Leak monitoring

Selection and ordering data

- Level monitoring relay for conductive liquids
- Control principle: inlet or outlet control per rotary switch
- Single-point and two-point control possible
- Analog adjustable sensitivity (specific resistance of the liquid)
- Analog adjustable tripping delay time
- 1 yellow LED for indicating the relay state
- 1 green LED for indicating the applied control supply voltage
 1 CO contact
- All terminals are removable
- Width 22.5 mm

Sensitivity	Tripping delay time	Rated control supply voltage $U_{\rm S}$	Screw terminals	+	PU (UNIT, SET, M)	PS*	Weight per PU approx.
kΩ	S	V AC/DC	Order No.	List Price \$ per PU			kg
2 200	0.5 10	24 ¹⁾ 24 240	3UG45 01-1AA30 3UG45 01-1AW30		1	1 unit 1 unit	0.110 0.120

Sensitivity	Tripping delay time	Rated control supply voltage $U_{\rm S}$	Spring-type terminals		PU (UNIT, SET, M)	PS*	Weight per PU approx.
kΩ	S	V AC/DC	Order No.	List Price \$ per PU			kg
2 200	0.5 10	24 ¹⁾ 24 240	3UG45 01-2AA30 3UG45 01-2AW30		1	1 unit 1 unit	0.110 0.120

For level monitoring sensors see page 11/56

¹⁾ The rated control supply voltage and the measuring circuit are <u>not</u> electrically isolated.

Function Relays, Interfaces and Converters 3UG Monitoring Relays Level monitoring:

Level monitoring sensors

SIRIUS RELAYS

Selection and ord	ering data								
	Version	Assign Cable		Application	Order No.	List Price \$ per PU	PU (UNIT, SET, M)	PS*	Weight per PU approx. kg
Level monitoring s	sensors (essential	access	ory)						Ng Ng
3UG32 07-3A	Three-pole wire electrodes 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm², 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	White	Center elec- trode Not assign- able	The electrodes can be cut or bent to the required length before or after installation. The Teflon insulation must be removed over a length of approx. 5 mm. Applications: For 2-point liquid level control in an insulating tank. One electrode each for the min. and max. value and a common reference electrode.	3UG32 07-3A		1	1 unit	0.254
3UG32 07-2A	Two-pole wire electrodes 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm², 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown White	Not assign- able	For installation see 3UG32 07-3A Application: For alarm indication in the event of overflow or low level and for 2-point liquid level control, when the conductive tank is used as the reference electrode.	3UG32 07-2A		1	1 unit	0.230
3UG32 07-2B	Two-pole bow electrodes with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm², 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	White	Gland Not assign- able	Thanks to the small space requirements due to lateral fitting, ideal for use in small containers and pipes, as a leak monitor and level monitor or for warning of water entering an enclosure.	3UG32 07-2B		1	1 unit	0.128
3UG32 07-1B	Single-pole bow electrodes for lateral fitting with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm², 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown White	Gland Elec- trode	As a max. value electrode for lateral fitting or for alarm indication in conductive tanks or pipes.	3UG32 07-1B		1	1 unit	0.122
3UG32 07-1C	Single-pole rod electrodes for lateral fitting with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm², 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	White	Gland Elec- trode	For high flow velocities or for intensively spar- kling fluids.	3UG32 07-1C		1	1 unit	0.144

Function Relays, Interfaces and Converters 3UG Monitoring Relays

SIRIUS RELAYS

Level monitoring: Level monitoring sensors

Туре		3UG45 01-1AA30,	3UG45 01-1AW30,	
General data		3UG45 01-2AA30	3UG45 01-2AW30	
Rated control supply voltage U _s	V AC/DC	24	24 240	
Rated frequency	Hz	50/60	24 240	
Operating range	V	20.4 26.4	20.4 264	
	V	20.4 20.4	20.4 204	
Rated power, max. • At 24 V AC	VA	2	2	
• At 240 V AC	VA		2 4	
Width	mm	22.5		
Availability time after application of $U_{\rm S}$	ms	500		
Response time once a switching threshold is reached	ms	Max. 300		
Adjustable delay time	S	0.5 10		
Inlet or outlet monitoring function		UNDER/OVER selector switch	h at the front	
Mains buffering time, minimum	ms	200		
Rated insulation voltage <i>U</i> _i	V	300		
Degree of pollution 3,				
Overvoltage category III acc. to EN 60664-1				
Rated impulse withstand voltage	kV	4		
Permissible ambient temperature	°C	0F + 60		
During operationDuring storage	°C	-25 +60 -40 +80		
EMC tests ¹⁾		IEC 60947-1/IEC 61000-6-2/I	FC 61000-6-4	
Degree of protection		120 00347 1/120 01000 0 2/1	20 01000 0 4	
• Enclosure (acc. to EN 60529)		IP40		
Terminals `		IP20		
Vibration resistance acc. to IEC 60068-2-6		1 6 Hz: 15 mm; 6 500 H	z: 2 <i>g</i>	
Shock resistance acc. to IEC 60068-2-27		12 shocks (half-sine 15 g/11 ms)		
Connection type		Screw terminals		
Terminal screw		M3 (for standard screwdriver	size 2 and Pozidriy 2)	
• Solid	mm ²	1 x (0.5 4)/2 x (0.5 2.5)	, SIZO Z ANG I OZIGITV Z)	
Finely stranded with end sleeve	mm ²	1 x (0.5 2.5)/2 x (0.5 1.5)	
 AWG cables, solid or stranded Tightening torque 	AWG Nm	2 x (20 14) 0.8 1.2		
Connection type	14111	○ Spring-type terminals		
		□ •p····• 3 •,p• ············		
• Solid	mm ²	2 x (0.25 1.5)		
 Finely stranded, with end sleeves acc. to DIN 46228 Finely stranded 	mm ² mm ²	2 x (0.25 1.5) 2 x (0.25 1.5)		
AWG cables, solid or stranded	AWG	2 x (0.25 1.5) 2 x (24 16)		
Measuring circuit				
Electrode current, max. (typ. 70 Hz)	mA	1		
Electrode voltage, max. (typ. 70 Hz)	V	15		
Sensor feeder cable	m	Max. 100		
Conductor capacity of sensor cable ²⁾	nF	Max. 10		
Adjustable sensitivity	•••			
• Resistance	kΩ	2 200		
Measuring accuracy	%	±20		
Repeat accuracy at constant parameters	%	±1		
Deviations for temperature fluctuations	%/°C	±1		
Control circuit	.5, 0			
Number of CO contacts for auxiliary contacts		1		
Load capacity of the output relay				
Conventional thermal current I_{th}	Α	5		
Rated operational current I _e at				
• AC-15/24 400 V	A	3		
• DC-13/24 V • DC-13/125 V	A A	1 0.2		
• DC-13/125 V • DC-13/250 V	A	0.2		
Minimum contact load at 17 V DC	mA	5		
Output relay with DIAZED fuse	A	4		
gL/gG operational class				
Electrical endurance AC-15	Million oper-	0.1		
	ating cycles			
Mechanical endurance	Million oner-			

Million operating cycles

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Mechanical endurance

¹⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

²⁾ The sensor cable does not necessarily have to be shielded, but we do not recommend installing this cable parallel to the power supply lines. It is also possible to use a shielded cable, whereby the shield has to be connected to the M terminal.

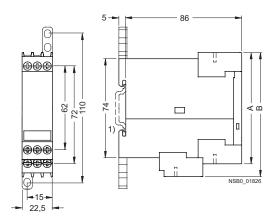
3UG Monitoring Relays Level monitoring:

Level monitoring sensors

SIRIUS RELAYS

Dimensional drawings

3UG45 01

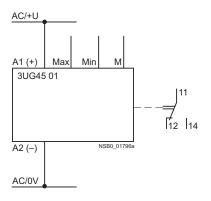


Туре	3UG45 01			
	Α	В		
Removable terminals				
Screw terminals	83	92		
Spring-loaded terminals	84	94		

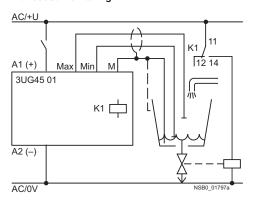
¹⁾ For standard mounting rail according to EN 60715.

Schematics

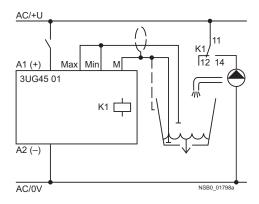
3UG45 01



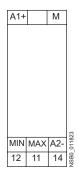
Two-point control with outlet monitoring



Single-point control with inlet monitoring



Position of the terminals



3UG Monitoring Relays

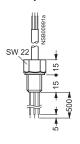
Level monitoring: Level monitoring sensors

Technical specifications

Туре			3UG32 07-3A three-pole	3UG32 07-2A two-pole	3UG32 07-2B two-pole	3UG32 07-1B single-pole	3UG32 07-1C single-pole
Length	mr	m	500	500			
Insulation	Teflon insulation (PTFE)		Yes	Yes	Yes		Yes
Installation			Vertical	Vertical	Lateral	Lateral	Lateral
Screw-in gland width A/F			22				
Thread	inc	ch	R 3/8				
Connecting cable	mr	m ²	3 x 0.5, 2 m long	g			
Operating temperature	°C	;	90				
Operating pressure	ba	ar	10				
Assignment							
Cable/Electrode	Cable brown		Center electrode	Not assignable	Gland	Gland	Gland
	Cable white		Not assignable	Not assignable	Not assignable	Electrode	Electrode
	Cable green		Not assignable		Not assignable		

Dimensional drawings

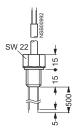
3UG32 07-3A three-pole wire electrode



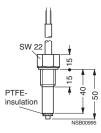
3UG32 07-1B single-pole bow electrode



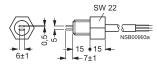
3UG32 07-2A two-pole wire electrode



3UG32 07-1C single-pole electrode, rugged version



3UG32 07-2B two-pole bow electrode



Speed monitoring

Overview



The 3UG46 51 monitoring relay is used together with a sensor to monitor drives for overspeed and/or underspeed.

Furthermore, this relay is ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

Application

- Slip or tear of a belt drive
- · Overload monitoring
- · Transport monitoring for completeness

Selection and ordering data

- Relay for speed monitoring in min ⁻¹ (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
 Integrated sensor supply 24 V DC/50 mA
- Input frequency 0.1 ... 2200 pulses min (0.0017 ... 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Digital adjustable, with illuminated LCDOvershoot, undershoot or range monitoring
- Number of pulses per revolution can be adjusted
- Upper and lower threshold value can be adjusted separately
 Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact
- All terminals are removable
- Width 22.5 mm

Measuring range	Hysteresis	ON-delay time	Tripping delay time	Pulses per revo- lution	Rated control supply voltage $U_{\rm S}$ AC/DC	Screw terminals	+	PU (UNIT, SET, M)	PS*	Weight per PU approx.
rpm	rpm	S	S		V	Order No.	List Price \$ per PU			kg
0.1 2200	OFF, 0.1 99.9	0 900	0.1 99.9	1 10	24 ¹⁾ 24 240	3UG46 51-1AA30 3UG46 51-1AW30		1	1 unit 1 unit	0.120 0.130
Measuring	Hysteresis	ON-delay	Tripping	Pulses	Rated control	Spring-type	00	PU	PS*	Weight

Measuring range	Hysteresis	ON-delay time		Pulses per revo- lution	Rated control supply voltage U_s AC/DC	Spring-type terminals		PU (UNIT, SET, M)	PS*	Weight per PU approx.
rpm	rpm	S	S		V	Order No.	Lisat Price \$ per PU			kg
0.1 2200	OFF, 0.1 99.9	0 900	0.1 99.9	1 10	24 ¹⁾ 24 240	3UG46 51-2AA30 3UG46 51-2AW30		1	1 unit 1 unit	0.120 0.130

¹⁾ The rated control supply voltage and the measuring circuit are not electrically isolated.

Speed monitoring

Туре		3UG46 51-1AA30, 3UG46 51-2AA30	3UG46 51-1AW30, 3UG46 51-2AW30
General data		30G40 31-2AA30	30G40 31-2AW30
Rated control supply voltage U _s	V AC/DC	24	24 240
Rated frequency	Hz	50/60	
Operating range	V	20.4 26.4	20.4 264
Rated power, max.			
• At 24 V AC	VA	2.5	4
• At 240 V AC	VA		9
Width	mm	22.5	
RESET		Automatic/manual	
Availability time after application of $U_{\rm S}$	ms	500	
Response time once a switching threshold is reached	ms	Max. 300	
Adjustable tripping delay time	S	0.1 99.9	
Adjustable ON-delay time	S	1 900	
Principle of operation		Closed-circuit principle, oper	n-circuit principle
NC/NO contact behavior		Adjustable	
Mains buffering time, minimum	ms	10	
Rated insulation voltage <i>U</i> _i	V	300	
Degree of pollution 3,			
Overvoltage category III acc. to EN 60664-1	IA/	4	
Rated impulse withstand voltage	kV	4	
Permissible ambient temperature • During operation	°C	-25 +60 ¹⁾	
During storage	°Č	-40 +80	
EMC tests ²⁾		IEC 60947-1, IEC 61000-6-2,	IEC 61000-6-4
Degree of protection			
• Enclosure (acc. to EN 60529)		IP40	
• Terminals		IP20	
Vibration resistance acc. to IEC 60068-2-6		1 6 Hz: 15 mm; 6 500 Hz	
Shock resistance acc. to IEC 60068-2-27		12 shocks (half-sine 15 g/11	ms)
Connection type		Screw terminals	
Terminal screw	2	M3 (for standard screwdriver,	, size 2 and Pozidriv 2)
Solid Finely stranded with end sleeve	mm ² mm ²	1 x (0.5 4)/2 x (0.5 2.5) 1 x (0.5 2.5)/2 x (0.5 1.5)	
AWG cables, solid or stranded	AWG	2 x (20 14)	
Tightening torque	Nm	0.8 1.2	
Connection type	·	Spring-type terminals	
• Solid	mm ²	2 x (0.25 1.5)	
• Finely stranded, with end sleeves acc. to DIN 46228	mm ²	2 x (0.25 1.5)	
• Finely stranded	mm ²	2 x (0.25 1.5)	
AWG cables, solid or stranded	AWG	2 x (24 16)	
Measuring circuit			
Sensor supply • For three-wire sensor (24 V/0 V)	mA	Max. 50	
For 2-wire NAMUR sensor (8V2)	mA	Max. 8.2	
Signal input			
• IN1	kΩ	16, three-wire sensor, pnp op	
N2	kΩ	1, floating contact, 2-wire NA	IVIUN SETISUI
Voltage level ● For level 1 at IN1	V	4.5 30	
For level 0 at IN1	V	0 1	
Current level			
For level 1 at IN2	mA	> 2.1	
For level 0 at IN2	mA	< 1.2	
Ainimum pulse duration of signal	ms	5	
Minimum interval between 2 pulses	ms	5	
Adjustable response value rpm	rpm	0.1 2200	
lysteresis	rpm	OFF and 0.1 99.9	
Scale		1 10	
Measuring accuracy	%	±10	
Repeat accuracy at constant parameters	%	±1	

 $^{^{1)}}$ At a distance of > 1 cm to adjacent devices; if butt-mounted: +50 $^{\circ}\mathrm{C}.$

²⁾ Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

3UG Monitoring Relays

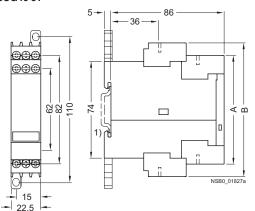
SIRIUS RELAYS

Speed monitoring

Туре		3UG46 51-1AA30, 3UG46 51-2AA30	3UG46 51-1AW30, 3UG46 51-2AW30
Control circuit			
Number of CO contacts for auxiliary contacts		1	
Load capacity of the output relay Conventional thermal current I_{th}	А	5	
Rated operational current <i>I</i> _e at • AC-15/24 400 V AC/DC • DC-13/24 V • DC-13/125 V • DC-13/250 V	A A A A	3 1 0.2 0.1	
Minimum contact load at 17 V DC	mA	5	
Output relay with DIAZED fuse gL/gG operational class	А	4	
Electrical endurance AC-15	Million operating cycles	0.1	
Mechanical endurance	Million operating cycles	10	

Dimensional drawings

3UG46 51

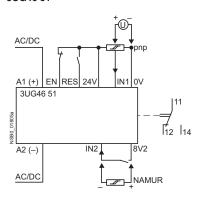


Туре	3UG46 51				
	Α	В			
Removable terminal					
Screw-type terminal	83	102			
Spring-loaded terminal	84	103			

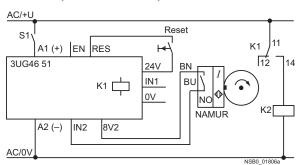
¹⁾ For standard mounting rail according to EN 60715.

Schematics

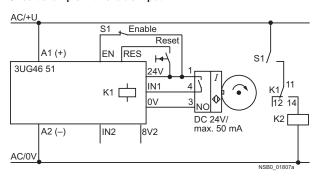
3UG46 51



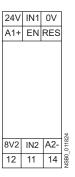
Circuit example without enable input



Circuit example with enable input

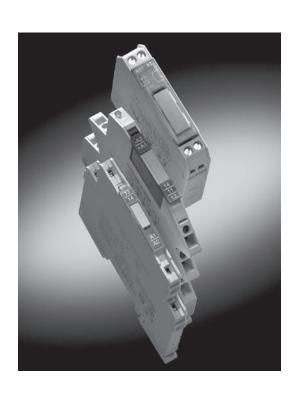


Position of the terminals



3TX70 interface relays

3TX0 interface relays are available in two basic versions. The 3TX7004/05 is just 6.2 mm wide: This series means that the interface relays take up a lot less space in the electrical cabinet. Then there is our 3TX7002/03 series: These devices are suitable for mounting in small electrical cabinets with a low depth and short distances between the mounting rails. Both series are available with an extensive range of input and output interfaces.



Your advantages: 3TX7002/03 and 3TX7004/05

- Operating range from 0.7 to 1.25 V_{s} at 24 V DC up to 60 $^{\circ}\text{C}$
- · Protective circuit is integrated in the input
- Connection comb and cable to connect voltages at the same potential
- Manual-0-automatic switch for easier commissioning

Your advantages: 3TX7014 and 3TX7015

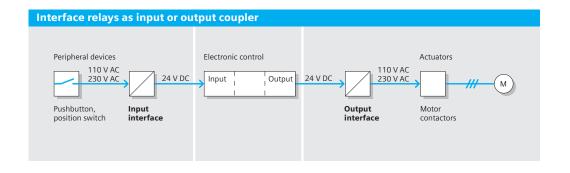
- Plug-in relays that can be quickly replaced with preassembled wiring
- Conductors are introduced and clamped from the front
 therefore shorter wiring times
- Tested, complete devices reduce installation times
- Individual relays are available as spare parts
- Relay version with hard-gold-plated contacts therefore achieving a high contact reliability

Applications:

- Electrically isolation
- $\bullet\,$ Voltage conversion e.g. from 24 V DC to 230 V AC
- Signal amplification
- · Contact multiplication
- General relay controls
- Overvoltage and EMC protection of controls

Engineering information:

When selecting the interface for rated control supply voltages of 110 V AC and 230 V AC, the maximum permissible cable length must be carefully observed. The special 3TX700- 05 relay can be used for longer cables.



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Function Relays, Interfaces and Converters Interface Relays – Narrow Design

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3TX70 interface relays

3TX701 Interface relay, plug-in										
Plug-in socket interface, complete with relay										
Contact	Rated control supply voltage V _s	Width	Hard-gold-plated	M-0-A switch	Order No.	List Price\$				
1 NO	24 V DC	6.2 mm	-	_	3TX701 -1AM00					
1 CO	24 V DC	6.2 mm	-	_	3TX701 -1BM00					
	24 V AC/DC	6.2 mm	-	_	3TX701 -1BB00					
	115 V AC/DC	6.2 mm	-	_	3TX701□-1BE00					
	230 V AC/DC	6.2 mm	-	_	3TX701 -1BF00					
Plug-in socket	interface relay, complete	with relay and l	hard-gold-plated cor	itacts						
1 CO	24 V DC	6.2 mm	yes	_	3TX701 -1BM02					
	24 V AC/DC	6.2 mm	yes	_	3TX701 -1BB02					
	115 V AC/DC	6.2 mm	yes	_	3TX701 -1BE02					
	230 V AC/DC	6.2 mm	yes	_	3TX701 -1BF02					
Accessories										
Connecting com	b, 16 pin				3TX7014-7AA00					
Potential isolation	n plate				3TX7014-7CE00					

Screw Terminal 4 Spring-type Terminal 5

3TX700 relay in	terfaces, cannot be plugge	d-in									
3TX7004 05 – output interface with relay output											
Contact	Rated control supply voltage	Width	Hard-gold-plated	M-0-A switch	Order No.	List Price \$					
1 CO	24 V AC/DC	6.2 mm	-	-	3TX700 -1LB00						
			yes	_	3TX700 -1LB02						
		12.5 mm	-	yes	3TX7004-1BB10						
	230 V AC/DC	6.2 mm	-	-	3TX700 -1LF00						
		12.5 mm	-	_	3TX7004-1BF05 ¹⁾						
1 NO	24 V AC/DC	6.2 mm	-	_	3TX700 -1MB00						
	230 V AC/DC	6.2 mm	-	-	3TX700 -1MF00						
3TX7004 05 - ir	ιρut interface with relay οι	ıtput									
1 NO	230 V AC/DC	6.2 mm	yes	-	3TX700 -2MF02						
	110 V AC/DC	6.2 mm	yes	-	3TX7004-2ME02						
	24 V AC/DC	6.2 mm	yes	-	3TX7002MB02						

Screw Terminal Spring-type Terminal 5

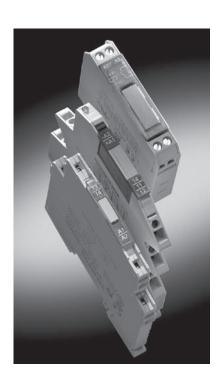
3TX7002 03 - fo	or low heights between tie	rs – output in	terface with relay out	put		
Output	Voltage	Width	Hard-gold-plated		Order No.	List Price \$
1 NO	24 V AC/DC	11.5 mm	-		3TX700 -1AB00	
		11.5 mm	yes		3TX700 -1AB02	
1 CO	24 V AC/DC	17.5 mm	_		3TX700 -1BB00	
	230 V AC/DC	17.5 mm	_		3TX7002-1BF00	
2 NO	24 V AC/DC	22.5 mm	_		3TX700 -1CB00	
2 CO	24 V AC/DC	22.5 mm	yes		3TX700 -1FB02	
3TX7002 03 - ir	put interface with relay o	utput				
1 NO	230 V AC/DC	11.5 mm	-		3TX700 -2AF00	
	230 V AC/DC	11.5 mm	_		3TX7002-2AF05	
	110 V AC/DC	11.5 mm	_		3TX7002-2AE00	
	24 V AC/DC	11.5 mm	_		3TX7002-2AB00	
1 CO	230 V AC/DC	17.5 mm	yes		3TX7002-2BF02	
Accessories						
Connecting cable	with 24 connecting points for	3TX70			3TX7004-8BA00	
Connecting comb	with 24 connecting points for	3TX7004, 6.2	mm wide		3TX7004-8AA00	

¹⁾ For longer cables up to 350 m

Screw Terminal 2 Spring-type Terminal 3

Interface Relays - Narrow Design

3TX70 semiconductor interfaces



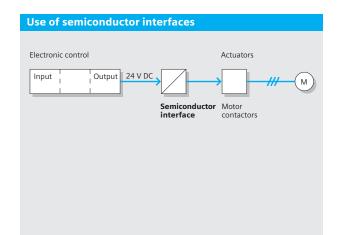
Interface modules are available either with relays or semiconductors. Semiconductor interfaces offer some significant advantages: The electronic components are extremely reliable and have an extremely long service life (refer to the diagram below). The input interface combines the best of both worlds – improved technical features and a lower price. When considering output interfaces, the question of "relay or semiconductor" needs to be taken into account as well as the making/breaking capacity and the number of operating cycles. If a relay has to be replaced just once during the complete lifetime of a machine, then a semiconductor interface will already have paid for itself.

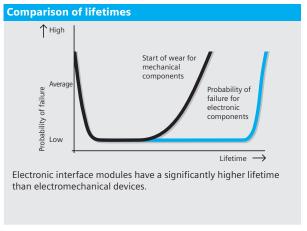
Your advantages:

- Favorably priced and reliable: Input interfaces with semiconductor output
- Graduated series of output interfaces with semiconductors
- · Extremely long electrical life
- · Extremely high contact reliability
- · High DC making/breaking capacity
- Short switching times

Applications:

- Providing electrical isolation, converting voltages
- · Switching DC loads
- Switching capacitive loads
- High number of switching cycles
- Overvoltage and EMC protection of controls





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Interface Relays - Narrow Design

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3TX70 semiconductor interfaces

3TX70 semicono	luctor interf	aces									
3TX7004/05 – the narrow space saver – output interfaces with semiconductor output, 1 NO contact											
Control supply voltage	Width	Max. switch- ing current	Switching voltage	Min. load current	Short-time load capacity	M-0-A switch	Order No.	List Price \$			
24 V DC	6.2 mm	0.5 A	≤ 48 V DC	-	1.5 A/20 ms	-	3TX700 -3AB04				
	6.2 mm	1.5 A	≤ 30 V DC	-	Short-circuit proof	-	3TX700 -3PB54				
	12.5 mm	5 A	≤ 30 V DC	0.5 A	Short-circuit proof	_	3TX700 -3AC04				
	12.5 mm	5 A	≤ 30 V DC	0.5 A	Short-circuit proof	yes	3TX700 -3AC14				
	12.5 mm	2 A	24-250 V AC	0.05 A	100 A/20 ms	_	3TX700 -3AC03				
110-230 V AC	6.2 mm	3 A	≤ 30 V DC	-	Short-circuit proof	_	3TX700 -3PG74				
Input interfaces	with semico	nductor output	, 1 NO contact								
110-230 V AC	6.2 mm	0.1 A	≤ DC 30 V	_	0.2 A/3 ms	ı	3TX700 -4PG24				

Screw Terminal 4
Spring-type Terminal 5

Control supply voltage	Width	Max. switch- ing current	Switching voltage	Min. load current	Short-time load capacity	Order No.	List Price \$			
24 V DC	12.5 mm	1.8 A	48-264 V AC	0.06 A	20 A/20 ms	3TX7002-3AB00				
24 V DC	11.5 mm	1.5 A	≤ 60 V DC	_	4 A/0.2 ms	3TX7002-3AB01				
Input interfaces	Input interfaces with semiconductor output, 1 NO contact									
110-230 V AC	12.5 mm	0.1 A	≤ 60 V DC	_	1 A/20 ms	3TX7002-4AG00				
24 V AC/DC	12.5 mm	0.1 A	≤ 30 V DC	_	1 A/20 ms	3TX7002-4AB00				
Accessories										
Connecting cable	Connecting cable with 24 connecting points for 3TX70									
Connecting comb	3TX7004-8AA00									





Using the accessories it is easy to insert a jumper between the same voltage levels.

SIRIUS RELAYS

Coupling Relays and Interfaces

3TX7 004/005 relay and semiconductor interfaces

General data						
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	300			
Safe isolation acc. to DIN VDE 0106 Part 101 be	etween coil and contacts	AC V	up to 300			
Degree of protection	Connections Enclosure		IP 20 IP 30			
Short-circuit protection (weld-free protection at $I_k \ge 1$ kA) Fuse links, utilisation category gL_I	/gG	А	4			
Permissible ambient temperatur	re in operation when stored	°C °C	-25 +60 -40 +80			
Conductor cross-sections Screw terminals (for 3TX7 004): solid	d ale succ	mm²	1 × (0.25 4)			
finely stranded with or without end Terminal screws Cage Clamp connections (for 3TX solid/finely stranded		mm²	1 x (0.5 2.5) M 3 1 x (0.08 2.5)			
finely stranded with end sleeve		mm ²	1 x (0.25 1.5)			
Control circuit						
Working range	at DC 17 to 40 V at $U_{\rm s}$ = AC/DC 24 V at $U_{\rm s}$ = AC/DC 110 and	d 230 V	- 0.7 to 1.25 x <i>U</i> _s 0.8 to 1.1 x <i>U</i> _s			
Power consumption U _s			approx. 0.5 W/channe	el; 3TX7 0005: 1	W for DC/6 VA for A	C
Permissible residual current of the electronics (with 0 signal)	Overall width 6.2 mm Overall w. from 12.5 mr exception: 3TX7 001LH00 3TX7 001BF05	mA mA m mA mA	$U_{\rm s} = 24 \text{ V; 2}$ $U_{\rm s} > 24 \text{ V; 0.5}$ 2.5 1.5 5 ($U_{\rm s} = \text{AC } 230 \text{ V}$) $0.5 (U_{\rm s} = \text{DC } 230 \text{ V})$			
Operating times at <i>U</i> _s ON-delay OFF-delay		ms ms	< 8 < 15			
Status indication			Yellow LED			
Max. permissible cable lengths (min. cross-section: 0.75 mm²)			3TX7 001 . F00 -2ME02 -2MF02	3TX7 001 . B -2MB02	3TX7 001 . H0.	3TX7 001BF
	AC DC	m m	40 2000	400 2000	on request	350 2000
Load side						
Rated operational current 1) Conventional thermal current $I_{\rm th}$		А	3TX7 001A/-1B/-10	C/-1H/-1G	3TX7 00 L/M	
Rated operational current I_e acc. to utilisation category			AC-15	DC-13	AC-15	DC-13
(DIN VDE 0660)	at 24 V 110 V 230 V	A A A	3 3 3	1.0 0.2 0.1	2 2 2	1.0 0.2 0.1
Switching current with resistive load			AC-12	DC-12	AC-12	DC-12
acc. to DIN VDE 0435 (relay standard) and DIN VDE 0660	at 24 V 110 V 230 V	A A A	6 6 6	6 0.3 0.2	6 6 6	6 0.3 0.2
Min. contact loading for 3TX7 00	01 0/5		AC/DC 17 V, 5 mA		AC/DC 17 V, 5 mA	
Min. contact loading for 3TX7 00)02 (hard gold-plated)		AC/DC 1 V, 0.1 mA		AC/DC 1 V, 0.1 mA	4
Output limit for hard gold-platin	g		30 V/20 mA		30 V/20 mA	
Switching voltage			AC/DC 17 to 250 V		AC/DC 17 to 250 \	/
Mechanical endurance			20 x 10 ⁶ operating cy	rcles	20 x 10 ⁶ operating	cycles
Electrical endurance at $I_{\rm e}$			1 x 10 ⁵ operating cyc	eles	0.5 × 10 ⁵ operating	g cycles
Operating frequency		1/h	5000 operating cycle	es .	5000 operating cy	cles

Note: The service life of the coupling relays can be increased by connecting inductive loads.

Capacitive loads can result in micro-welding at the contacts.

Function Relays, Interfaces and Converters Coupling Relays and Interfaces 3TX7 004/005 relay and

semiconductor interfaces

SIRIUS RELAYS

Technical data

General data			
Rated insulation voltage <i>U</i> _i (pollution degree 3)		V	300
Safe isolation acc. to DIN VDE 0884		V	up 300
Permissible ambient temperature		°C °C	-20 +60 -40 +80
Conductor cross-sections			
Screw terminals (for 3TX7 004): solid finely stranded with or without end Terminal screws		mm² mm²	1 × (0.25 4) 1 × (0.5 2.5) M 3
Cage Clamp connections (for 3TX solid/finely stranded finely stranded with end sleeve	,	mm² mm²	1 × (0.08 2.5) 1 × (0.25 2.5)

Туре	3TX7 004-/ 3TX7 005-		3AB04/ 4AB04	3AC.4	3AC03	3PB54	4PG24
Control circuit							
Working range		V	11 30 DC	11 30 DC	11 30 DC	11 30 DC	110 230 AC/DC
Power consumption	at 24 V DC AC 230 V	W W	≤ 0.5 -	≤ 0.5 -	≤ 0.25 -	≤ 0.2 -	- ≤ 1.5
Release voltage		V	6	5	6	9	20
Permissible residual current of (with 0 signal)	the electronics	mA	2.3	2.6	1.5	1.5	0.4
Operating times ON-delay OFF-delay		ms ms	2.5 8	0.3 4	10 10	0.3 0.3	1 6
Status indication	·		Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
Max. permissible cable lengths (min. cross-section: 0.75 mm²)		m	1700	2000	2000	2000	40

Type 3TX7 004-/ 3TX7 005-		3P.74	3PB41	3RB43	
Working range	V	110 230 AC/DC	11 30 DC	18 30 DC	
Power consumption at 24 V Do AC 230		- ≤ 1.5	≤ 0.5 -	≤ 0.3 -	
Release voltage	V	25	5	12	
Permissible residual current of the electronic (with 0 signal)	cs mA	1	1.5	4	
Operating times ON-delay OFF-delay	ms ms	1.5 75	4	0.2 10	
Status indication		Yellow LED	Yellow LED	Yellow LED	
Max. permissible cable lengths (min. cross-section: 0.75 mm²)	m	40	2000	2000	

SIRIUS RELAYS

Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

3TX7 004/005 relay and semiconductor interfaces

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Туре	3TX7 004-/ 3TX7 005-	3AB04/ 4AB04	3AC.4	3AC03	3PB54
Load side					
Switching voltage Switching current	V A	≤ DC 48 0.5	≤ DC 30 5	AC 24 250 2	≤ DC 30 1.5
Short-time load rating	A ms	1.5 20	Short-circuit proof 1)	100 20	Short-circuit proof 2)
Contacts		1 NO transistor	1 NO transistor	1 NO Triac	1 NO transistor
Minimum load current	mA	-	500³)	50	-
Conductive voltage drop	V	≤ 1	≤ 0.5	≤ 1.6	≤ 0.5
Residual current of the electronics (with 0 signal)	mA	< 0.1	< 0.1	< 6	< 0.1
Operating frequency with resistive load	Hz	50	50	1	500
Туре	3TX7 004-/ 3TX7 005-	3P.74	3PB41	3RB43	4P.24
Switching voltage Switching current	V A	≤ DC 30 3	≤ DC 200 0.75	AC 24 250 0.5	≤ DC 30 0.1
Short-time load rating	A ms	Short-circuit proof ²)	3 2	0.8	0.2
Contacts		1 NO transistor	1 NO transistor	1 NO Triac	1 NO transistor
Mininum load current	mA	_	-	10	-
Conductive voltage drop	V	≤ 0.5	≤ 2	≤ 1.5	≤ 1.5
Residual current of the electronics (with 0 signal)	mA	≤ 0.1	≤ 0.1	≤ 1	≤ 0.1
Operating frequency with resistive load	Hz	10	50	50	500

The semiconductor output switches off in the case of a short-circuit or overload. Before the device can be operated again, it must be disconnected briefly from the supply voltage.

The current is limited by the semiconductor output in the case of a short-circuit or overload.

Below the minimum load current, the built-in semiconductor detects a wire-break in the load circuit. To reset this, the control circuit must be briefly deactivated.

Coupling Relays and Interfaces

3TX7 004/005 relay and semiconductor interfaces

SIRIUS RELAYS

Application

DC operation

DIN VDE 0110 Part 1, DIN VDE 0435, DIN VDE 0660 and EN 50 005 Optocoupler: DIN VDE 0884 DIN VDE 0411 Part 500, IEC 61 131-2 (programmable logic controllers)

In the case of coupling elements in double-tier design, the terminals are arranged in two tiers and the devices are extremely narrow. Connection technique: Screw terminal or Cage Clamp. Versions with Manual-0-Automatic switches are available for test purposes.

The input and output coupling devices differ with regard to the location of the connections and LEDs. For equipment identification purposes, each coupling device has a blank legend plate.

Similar to the technical data of the solid-state systems, the devices have a low power consumption.

The 6.2 mm wide optocouplers

of contacts is not possible.

have an opening on the righthand side of the enclosure. They can be - like the relay couplers - mounted in a row without gaps.

Optocouplers switch by means

of semiconductors. These are not subject to wear, so welding

Functions

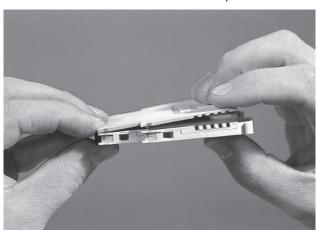
Surge suppression

The coupling devices are tested with 1 x 105 operating cycles in AC-15 operation with the values specified in the technical data. The service life of the relay connector can be increased by connecting inductive loads.

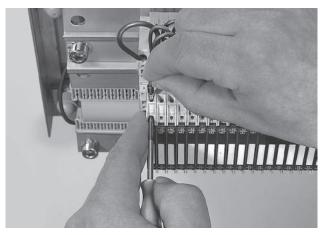
Note

When capacitive loads are switched in the absence of components (series resistors) that limit the brief peak currents, this can cause micro welding of the relay contacts.

To guarantee shock hazard protection in modules of the 6.2 mm series with enclosure opening (e. g. 3TX7 004-3AB04), the individual module or the final module in a row must be fitted with an end plate.



Connecting a cable to the Cage Clamp



Construction

Mounting instructions

Snap-on mounting onto horizontal and vertical standard rails is possible. For a vertical rail and closely mounted devices, the permissible ambient temperature is

 $T_{\mu} = 40^{\circ}$ C. Any service position is possible.

When the permissible upper limit of rated control supply voltage is fully exploited as well as the highest permissible ambient temperature, and the device operates with a continuous 24-hour (100%) ON period, it is recommended that no devices of a similar type or other devices with a high external temperature are mounted adjacently without appropriate gaps; otherwise the service life of the coupler can be reduced.

A gap of > 10 mm on the lefthand and right-hand sides of the device reduces the risk of premature failure under these conditions of application.

Coupling Relays and Interfaces

3TX70 relay and semiconductor interfaces

SIRIUS RELAYS

Circuit diagrams

Terminal diagrams Relay interfaces

Terminal designations according to EN 50 005

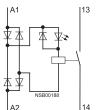


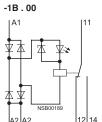


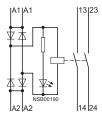


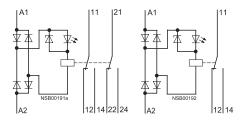
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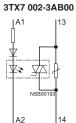


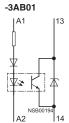


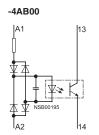


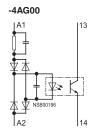
Semiconductor interfaces

Terminal designations according to EN 50 005





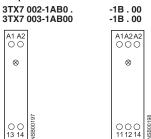


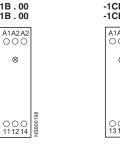


Position of terminals

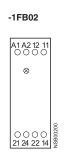
Relay interfaces

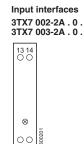
Output interfaces













Semiconductor interfaces

Output interfaces Input interfaces 3TX7 002-3AB0. 3TX7 002-4A . 0 .





Siemens Industry, Inc. Industrial Controls Catalog

Coupling Relays and Interfaces

3TX70 relay and semiconductor interfaces

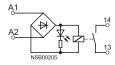
SIRIUS RELAYS

Circuit diagrams

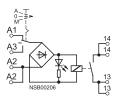
Terminal diagrams Relay interfaces

Output interfaces

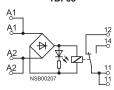
3TX7 00 .-1M . 00



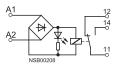
3TX7 00 .-1AB10



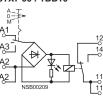
3TX7 00 .-1BB00 -1BF05



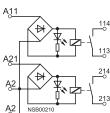
3TX7 00 .-1L . 0.



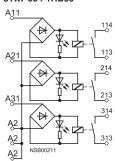
3TX7 00 .-1BB10



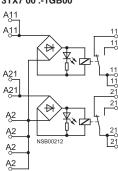
3TX7 00 .-1CB00



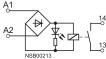
3TX7 00 .-1HB00



3TX7 00 .-1GB00

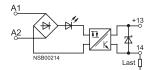


Input interfaces 3TX7 00 .-2M . 02

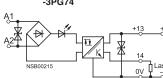


Output interfaces

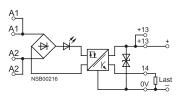
3TX7 00 .-3AB04



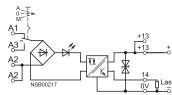
3TX7 00 .-3PB54



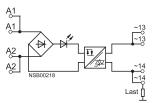
3TX7 00 .-3AC04



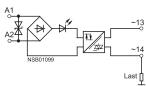
3TX7 00 .-3AC14



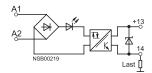
3TX7 00 .-3AC03



3TX7 00 .-3RB43



· Input interfaces 3TX7 00 .-4AB04



A = Automatic 0 = Neutral M = Manual

SIRIUS **RELAYS**

Function Relays, Interfaces and Converters Coupling Relays and Interfaces

semiconductor interfaces

3TX70 relay and

Circuit diag	rams							
Position of	terminals							
Relay interi								a lament intenferen
• Output inte 3TX7 004 -1M . 00	-1L.0.	-1AB10	-1B . 0 .	-1BB10	-1CB00	-1HB00	-1GB00	• Input interfaces 3TX7 004-2M
© 0 - A2 + A1 - 13 0 0 0	000 421 11111111000	O O O A2 A2 A1 A3	0 0 0 A2 A2 A1 A1	0 0 0 A2 A2 A1 A3 12 14 12 14 17 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 A2 A2 A2 A11 A21	O O O O O O O O O O O O O O O O O O O	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	O 123 14
3TX7 005 -1M . 00	-1L . 0 .	-1AB10	-1BB00	-1BB10	-1CB00	-1HB00	-1GB00	3TX7 005-2M
9ZZ009SN	220088W	2 A2 A1 A3 82Z2008SN	12 14 11 11 11 11 11 11 11 11 11 11 11 11	A2 A2 A11 A21 114 214 200 200 200 200 200 200 200 200 200 20	A2 A2 A11 A21 113 213 2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A2 A2 A2 A2 A11A11A21A21 112 114 212 214 111 111 1211 210 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	112 114 212 214 11 11 11 21 12 10 80 80 80 80 80 80 80 80 80 80 80 80 80	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Semicondu	ctor interfaces	•						
Output inte								Input interfaces
3TX7 004 -3AB04, -3PB41	-3PB54, -3PG74		-3AC04	-3AC14		-3AC03	-3RB43	3TX7 004-4AB04 -4P . 24
O O A 2 A 1	98200088N		O O O A2 A2 A1 A1	O O O O A2 A2 A1 A3 A1 A3 B8220009SN		0 0 0 A2 A2 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3	00 Q & 2	O O O O O O O O O O O O O O O O O O O
O ¥	O S		0 0 2	00%		008	0 %	⊙ <u>%</u>
3TX7 005 -3AB04, -3PB41	-3PB54, -3PG74		-3AC04	-3AC14		-3AC03	-3RB43	3TX7 005-4AB04 -4P . 24
A2 A1 143 D	□		14 0V 2720089N	A2 A2 A1 A3 P720088		977008SN	01108SN	14 A1 A2 C C C C C C C C C C C C C C C C C C
⊟ ss	NS.						i ss	E S

Coupling Relays and Interfaces

3TX70 relay and semiconductor interfaces

SIRIUS RELAYS

Dimension drawings

3TX7 002, 3TX7 003 interfaces in modular terminal block design



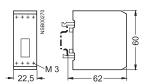








3TX7 00 .-1CB00, 3TX7 002-1BF02



3TX7 004, 3TX7 005 interfaces in double-tier design

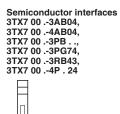
Relay coupling devices
3TX7 001MB00,
3TX7 001MF00,
3TX7 001L . 0 .,
3TX7 002M

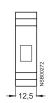


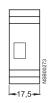
Semiconductor interfaces 3TX7 00 .-3AC04, 3TX7 00 .-3AC14, 3TX7 00 .-3AC03

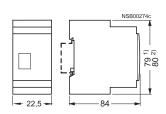


Relay interfaces 3TX7 00 .-1GB00









- 1) Dimension for 3TX7 004 interfaces (screw connections).
- 2) Dimension for 3TX7 005 interfaces (Cage Clamp connections).

Function Relays, Interfaces and Converters Interface Relays in a Rugged Industrial Enlosure

3RS18 relay interfaces

The new 3RS18 interface relays set new standards: They have a wide-range voltage extending from 24 V AC DC to 240 V. This makes them absolutely unique in the interface market. All of these devices are accommodated in a well-proven, rugged 22.5 mm wide enclosure. Relays with 1, 2 and 3 changeover contacts are available in both screw and Cage Clamp terminal versions. Not only this, also in combination and wide-range voltage with hard-gold-plated contacts for an especially high contact reliability - even at low current levels. Thanks to the well-proven, rugged enclosure, you can enjoy the benefits of user-friendly connection systems, including Cage Clamp terminals - just the same as delete our time relays. 2 conductors can be connected at each terminal point.



Your advantages:

- New, worldwide: One device for all voltages
- Lower costs due to fewer versions
- · User-friendly wiring
- Especially high contact reliability even at low currents

Applications:

- Everywhere that contacts which are electronicscompatible are required and where devices with widerange voltage are used
- Thanks to the hard-gold-plated contacts, predestined for PLC I/O

3RS18 interface relays in a rugged, i	ndustrial enclosure 22.5 mm wide		
Rated control supply voltage V _s	Contact versions	Order No.	List Price \$
50 60 Hz			
Wide-range voltage	2 CO	3RS18 00- BW00	
24-240 V AC/DC	3 CO	3RS18 00- HW00	
	3 CO hard-gold-plated	3RS18 00- HW01	
Combination voltage	1 CO	3RS18 00-□AQ00	
24 V AC/DC and	2 CO	3RS18 00-□BQ00	
110–120 V AC	3 CO	3RS18 00-□HQ00	
	3 CO hard-gold-plated	3RS18 00- HQ01	
24 V AC/DC and	1 CO	3RS18 00- AP00	
220–240 V AC	2 CO	3RS18 00- BP00	
	3 CO	3RS18 00- HP00	
	3 CO hard-gold-plated	3RS18 00- HP01	

Screw Terminal 1

Spring-type Terminal 2

2

3

4

5

0

/

10

11

Interface Converters

SIRIUS RELAYS

3RS17

Overview

In automation and closed-loop control, working with analog signals is unavoidable. Interfaces of 0 to 10 V and 0/4 to 20 mA have become established in this field. Interface converters load the coupling function for analog signals on the input side as well as on the output side. They are indispensible

where analog values are processed with electronic controls. In the harsh industrial environment, signals often have to be transferred over large distances. Electrical isolation is necessary due to the various different power supplies. Potential differences and losses due to cable resistance must be

prevented. Electromagnetic disturbances and overvoltages can affect the signals especially at the input end and even destroy the analog modules. With regard to the output, shortcircuit protection is of particular importance.

The devices are EMC-tested acc. to EN 50081 (emission)

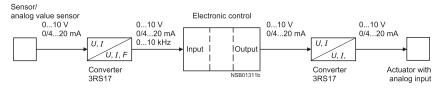
and EN 61000-6-2 (immunity). The analog signals correspond to IEC 60 381-1/2.

Application

Converters are used in analog signal processing for:

- Electrical isolation
- · Conversion of normalised and non-normalised signals
- Amplification, impedance adjustment
- Conversion to frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs

Example for application: Interface converter in analog signal evaluation



Function Relays, Interfaces and Converters Interface Converters

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3RS17

Selection and ordering data

Screw and Spring-type Terminal Connection

All converters with the exception of the passive individual interface converters are equipped with a yellow LED for indication of "Voltage applied".

			.9 -						
	Input	Output	Width	Supply volt-	Electrical isolation	Screw terminals	Spring-type terminals	List	Weight
				age	ISUIALIUIT	Order No.	Order No.	Price \$	approx.
Individual interfa	ce converte	rs active	mm	V					kg
	0 10 V	0 10 V	6.2	AC/DC 24	2 way 3 way	3RS17 00-1AD00 3RS17 00-1AE00	3RS17 00-2AD00 3RS17 00-2AE00		0.03
	0 10 V	0 20 mA	6.2	AC/DC 24	2 way 3 way	3RS17 00-1CD00 3RS17 00-1CE00	3RS17 00-2CD00 3RS17 00-2CE00		0.03
To Both	0 10 V	4 20 mA	6.2	AC/DC 24	2 way 3 way	3RS17 00-1DD00 3RS17 00-1DE00	3RS17 00-2DD00 3RS17 00-2DE00		0.03
MAL	0 20 mA	0 10 V	6.2	AC/DC 24	2 way 3 way	3RS17 02-1AD00 3RS17 02-1AE00	3RS17 02-2AD00 3RS17 02-2AE00		0.03
	0 20 mA	0 20 mA	6.2	AC/DC 24	2 way 3 way	3RS17 02-1CD00 3RS17 02-1CE00	3RS17 02-2CD00 3RS17 02-2CE00		0.03
		4 20 mA	6.2	AC/DC 24	2 way 3 way	3RS17 02-1DD00 3RS17 02-1DE00	3RS17 02-2DD00 3RS17 02-2DE00		0.03
	4 20 mA		6.2	AC/DC 24	2 way 3 way	3RS17 03-1AD00 3RS17 03-1AE00	3RS17 03-2AD00 3RS17 03-2AE00		0.03
		0 20 mA		AC/DC 24	2 way 3 way	3RS17 03-1CD00 3RS17 03-1CE00	3RS17 03-2CD00 3RS17 03-2CE00		0.03
	4 20 mA	4 20 mA	6.2	AC/DC 24	2 way 3 way	3RS17 03-1DD00 3RS17 03-1DE00	3RS17 03-2DD00 3RS17 03-2DE00		0.03
Multi-range conv				10/20 01					
	0 10 V 0 20 mA	0 10 V 0 20 mA	6.2 17.5	AC/DC 24 AC/DC 24	2 way 3 way	3RS17 05-1FD00 3RS17 05-1FW00	3RS17 05-2FD00 3RS17 05-2FW00		0.03
1	selectable	4 20 mA selectable		to 240					
A Wa	0 10 V 0 20 mA	0 50 Hz 0 100 Hz	6.2	AC/DC 24	2 way	3RS17 05-1KD00	3RS17 05-2KD00		0.1
44	4 20 mA	0 1 kHz 0 10 kHz selectable	17.5	AC/DC 24 to 240	3 way	3RS17 05-1KW00	3RS17 05-2KW00		0.1
Universal conver	ters, selecta								
10	0 60 mV		17.5	AC/DC 24	2 way	3RS17 06-1FD00	3RS17 06-2FD00		0.1
		0 20 mA 4 20 mA			3 way	3RS17 06-1FE00	3RS17 06-2FE00		0.1
	0 1 V 0 2 V 0 5 V 0 10 V 0 20 V 2 10 V 0 5 mA	0 10 mA 0 20 mA 4 20 mA ± 5 mA ± 20 mA selectable		AC/DC 24 to 240	3 way	3RS17 06-1FW00	3RS17 06-2FW00		0.1
Multi-range conve ting potentiomete					switch and se	et-			
10	0 10 V	0 10 V	17.5	AC/DC 24	2 way	3RS17 25-1FD00	3RS17 25-2FD00		0.1
	4 20 mA	0 20 mA 4 20 mA selectable		AC/DC 24 to 240	3 way	3RS17 25-1FW00	3RS17 25-2FW00		0.1
	Input	Output	Width	Number of channels	Electrical isolation	Screw terminals Order No.	Spring-type terminals Order No.	List Price \$	Weight approx.
			mm						kg
Individual interfa									
60	0/4 20 mA	0/4 20 mA	6.2	1-channel	2 way	3RS17 20-1ET00	3RS17 20-2ET00		0.05
pp pp	0/4 20 mA	0/4 20 mA	12.5	1-channel	2 way	3RS17 21-1ET00	3RS17 21-2ET00		0.05
	0/4 20 mA	0/4 20 mA	12.5	2-channel	2 way	3RS17 22-1ET00	3RS17 22-2ET00		0.05
P 1									

Function Relays, Interfaces and Converters Interface Converters

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3RS17

Technical data							
eneral data							
Туре			AC/DC 24 V		AC/DC 24 to 240 V		
Supply voltage range			DC: 0.7 to 1.25 U _n		DC: 0.7 to 1.1 <i>U</i> _n		
Rated power (own requirements)	<u> </u>	W	AC: 0.8 to 1.2 U _n		AC: 0.8 to 1.1 Un		
Electrical isolation input/output)	VV	Typically 0.3 Active disconnector:		Typically 0.75		
·			1500 V, 50 Hz, 1 min Passive disconnector: 500 V, 50 Hz, 1 min		4000 V, 50 Hz, 1 min		
Rated insulation voltage Pollution degree 2, overvoltage category III acc. to DIN VDE 0110 V			50		300		
Ambient temperature	for operation for storage	°C	- 20 + 60 - 40 + 85				
Conductor cross-sections Screw connections solid finely stranded with or without end	sleeves	mm² mm²	1 x (0.25 4) 1 x (0.5 2.5)				
Terminal screws Cage Clamp terminals scilid/finely stranded		mm ²	M 3 1 × (0.08 2.5)				
finely stranded with end sleeve	IEC EOO	mm ²	1 x (0.25 1.5)				
Enclosure degree of protection	IEC 529		IP 30				
Terminal degree of protection Permissible mounting position	IEC 529		IP 20 any				
Mounting onto standard rails	EN 50 022	mm	35				
Vibration performance	IEC 68-2-6		10-55 Hz/0.35 mm				
Shock resistance	IEC 68-2-27		15 g/11 ms				
out	120 00 2 2.		10 g, 11 me				
			Voltage inputs	Current inputs active	Current inputs passive		
nput impedance			330 kΩ	100 Ω	-		
Max. input voltage	AC/DC	V	30	30	-		
Response current		μΑ	-	-	100/250 (6.2 mm overall width		
/oltage drop			-	-	2.7 V at 20 mA		
tput			0 to 10 V	0/4 to 20 mA active	0 to 20 mA passive	Frequency	
Output impedance		Ω	55	active _	passive _	_	
Max. output load		Ω	-	400	1000 at 20 mA 400 at 20 mA (6.2 mm overall width)	2400	
Max. output current		mA	21	-	-	10	
Short-circuit current		mA	40	-	Corresponds to the input current	15	
Protection of the outputs			Short-circuit proof	Short-circuit proof	Short-circuit proof	Short-circuit proo	
Max. overvoltage at output	AC/DC	V	30	30	-	30	
curacy							
			Active disconnector (U, I)	Active disconnector (frequency)	Passive disconnector		
Total error at 23 °C		%	0.1	0.1	-		
Linearity error		%	0.02	0.02	-		
Deviation due to ambient temper	rature		0 to 10 V: 1.5 mV/K 0/4 to 20 mA: 3 μ A/K	0 to 50 Hz; 7.5 mHz/K 0 to 100 Hz; 15 mHz/K 0 to 1 KHz; 0.15 Hz/K 0 to 10 KHz; 1.5 Hz/K	Load < 600Ω : < 50 ppm/K from measured value Load < = 600Ω : < 175 ppm/K from measured value		
Transmission error		%	-	-	0.1		
Load error from measured value			-	-	0.06 %/100 Ω		
Limit frequency 3 dB		Hz	30	30	50		

10 + 1 periods

30 + 1 periods

< 8

Unless stated otherwise, the accuracy is specified with reference to the upper range limit

10

30

 $mV_{rms} < 5$

ms

ms

Rise time (10 to 90%)

Settling time to 1%

accuracy, typically Residual ripple

SIRIUS RELAYS

3RS17

Configuration

Active interface converters

Active interface converters offer the widest application flexibility due to the use of an external supply voltage. Project engineering with active interface converters is easy, because input and output resistances and voltage drops are balanced by the auxiliary power. They provide pure electrical isolation as well as conversion between the different signal types or amplification. The loading on the encoder is negligible.

Passive interface converters

Passive interface converters do not require an external supply voltage. This advantage can only be utilised in the case of current signals that are transferred 1:1. Amplification or conversion is not possible. The converters are used for clear electrical isolation of signals and for protecting the inputs and outputs. Passive disconnectors do not operate reac-

tion free, i.e.any load on the output affects the input signal to the same degree. When the passive converter is used, an analysis of the output power of the encoder and the input

resistance of the analog input must be performed. For pure currentis being used more and more.

Calculation aid for passive converters

⚠ Important:

When passive disconnectors are used, it is important to note that:

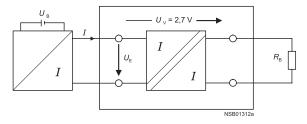
The current-driving voltage of the measuring transmitter U_E must be sufficient to drive the maximum current of 20 mA

through the passive disconnector with a voltage drop of $U_V = 2.7 \ V$ and the resistive load R_B .

This means that:

 $U_B \ge U_E = 2.7 \text{ V} + 20 \text{ mA x R}_B$

Voltage splitting with passive disconnectors



The following diagram shows the input voltage $U_{\rm E}$ as a function of the resistive load $R_{\rm B}$ taking into account the voltage drop $U_{\rm V}$. If the resistive load is known, the minimum voltage that the current source has to produce in order to drive the maximum current of 20 mA via the passive disconnector and resistive load can be read off the Y-axis.

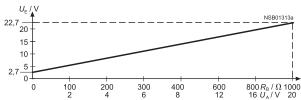
Current-carrying capacity of the outputs

A maximum output load is specified in the case of current signals. This resistance value specifies the maximum input resistance for the subsequent device for which the output of the converter is adequate.

For voltage signals, the maximum current that can be drawn from the output is the decisive factor.

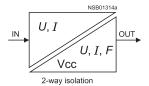
Input voltage

as a function of resistive load at I_A = 20 mA



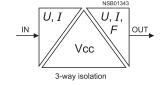
2-way isolation

In the case of 2-way isolation, the input is electrically isolated from the output. The "zero potential" for the supply voltage is the same as that on which the analog output signal is referenced.



3-way isolation

In the case of 3-way isolation, each circuit is electrically isolated from the others, i.e. the input, output and supply voltage have no common potential.



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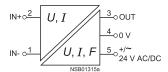
Interface Converters

SIRIUS RELAYS

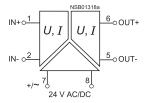
3RS17

Circuit diagrams

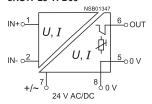
3RS17 00-..D.. 3RS17 02-..D.. 3RS17 03-..D.. 3RS17 05-..D..



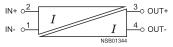
3RS17 06-. FE00



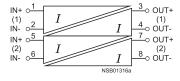
3RS17 25-. FD00



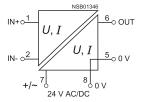
3RS17 20-. ET00



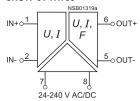
3RS17 22-. ET00



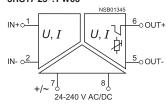
3RS17 06-. FD00



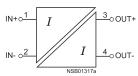
3RS17 0.-..W00



3RS17 25-. FW00



3RS17 21-. ET00



Dimension drawings

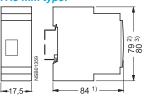
6.2 mm type:



12.5 mm type:



17.5 mm type:



- Overall depth for 3RS17 25 is approx. 90 mm.
 Dimension for screw connection.
 Dimension for Cage Clamp connection.

SIRIUS RELAYS

Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

3TG10 power relays

Overview

Version

The 3TG10 contactors with 4 main contacts are available with screw-type terminals or with 6.3 mm to 0.8 mm tab connectors. The designs with screw-type terminals are suitable for use in any climate and safe from touch to DIN VDE 0106 Part 100.

The 3TG10 contactors have a compact design. Their overall width is 36 mm.

Application

They are suitable for use in household appliances as well as for distribution boards in offices and residential buildings, owing to their hum-free construction. They can further be used in all areas where there is only a limited amount of space available, e.g. in air conditioners, heating systems, pumps and fans - basically in all simple electrical con-

AC and DC operation

EN 60 947-4-1 (VDE 0660 Part 102).

Surge suppression The 3TG10 contactors are fitted with an integrated protective circuit for damping opening surges.

Overload and short-circuit protection

The 3UA7 overload relay can be used for overload protection (see NS E catalogue, available in German). This applies both for contactor mounting and for mounting as a single unit.

The data for short-circuit protection of the contactors without using an overload relay are provided in the technical data.

Selection and ordering data

Ratings Utilization category		Main contacts	Rated control supply voltage $U_{\rm s}$	Order No.	List Price \$	Weight approx.	Pack
AC-1 Horsepower maximum ratings of resistive three-phase load to but the but t	AC-3 maximum inductive current	Design					
A kW	Α	NO NC				kg	Units

With screw connections, 4-pin for screwing and snapping onto 35 mm standard mounting rail · hum-free

AC operation

3TG100
11 31 11 11 11 11 11 11 11 11 11 11 11 1
Senates 9 Se

- 70 0	peration							
20	5	8.4	4	-	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 10-0AL2 3TG10 10-0AG2 3TG10 10-0AC2	0.15	10
			3	1	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 01-0AL2 3TG10 01-0AG2 3TG10 01-0AC2	0.15	10
• DC o	peration							
20	5	8.4	4 3	_ 1	DC 24 V DC 24 V	3TG10 10-0BB4 3TG10 01-0BB4	0.15	10

With tab connectors 6.3 x 0.8 mm, 4-pin for screwing and snapping onto 35 mm standard mounting rail · hum-free

AC operation

3TG101

Siemens Industry, Inc. Industrial Controls Catalog

	16	5	8.4	4	-	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 10-1AL2 3TG10 10-1AG2 3TG10 10-1AC2	0.14	10
				3	1	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 01-1AL2 3TG10 01-1AG2 3TG10 01-1AC2	0.14	10
1	• DC ope	eration							
	16	5	8.4	4 3	- 1	DC 24 V DC 24 V	3TG10 10-1BB4 3TG10 01-1BB4	0.14	10

1) The links for paralleling can be reduced by one pole. The rated operational currents are valid for each pole. The links for paralleling are insulated

Product Category: SMRL

11/81

Function Relays, Interfaces and Converters Coupling Relays and Interfaces

SIRIUS

3TG10 power relays

Technical data						
General data						
Mechanical endurance		operating cycles			3 mill.	
Electrical endurance at $I_{\rm e}$		operating cycles	AC-1 AC-3		0.1 million 0.4 million	
Rated insulation voltage U _i (p	ollution degree 3)			V	400	
Rated impulse withstand volta	age <i>U</i> _{imp}			kV	4	
Safe isolation acc. to DIN VDE between coil and contacts	0106 Part 101 and A1	(draft 2/89)		V	up to 300	
Permissible ambient tempera	ture	in oper when	ation ¹) stored	°C	-25 +55 -50 +80	
Degree of protection acc. to IE	EC 60 947-1 and IEC 60	529 (VDE 0470 Pa	art 1)		IP 00, coil syster	m IP 20
Power consumption of the co	AC operation 45 – p.f. DC operation			VA W	4.4 0.9 (hum-free) 4	
Coil voltage tolerance					0.85 to 1.1 x <i>U</i> _s	
Operating times (break-time =	opening time + arcing	time)			AC operation	DC operation
	Closing	closing time opening time	NO NC	ms ms	10 50 5 45	11 50 5 45
	Opening	opening time closing time	NO NC	ms ms	20 30 20 30	19 35 21 39
	Arcing time			ms	10 to 15	
Shock resistance rectangular pulse sine pulse		AC and DC ope AC and DC ope		g/ms g/ms	5.1/5 and 3.5/10 7.9/5 and 5.2/10	
Operating frequency z in oper Rated operation	ating cycles per hour	fo	luency r AC-1 r AC-2 r AC-3	1/h 1/h 1/h 1/h	10 000 1 000 500 1 000	
Short-circuit protection						
Fuse links Utilisation category gL/gG	NH DIAZED NEOZED	Type 3NA Type 5SB Type 5SE				
acc. to IEC 60 947-4-1 (DIN VDE 0660 Part 102)		ordination "1" ordination "2"		A A	25 10	
Miniature circuit-breaker	C-characte	eristic		А	10	
Load ratings with AC						
AC-1 utilisation category, swi	tching resistive load					
Rated operational current $I_{\rm e}$ a with screw connection with tab connector	at 55 °C to 400 V 1)			A A	20 16	
Ratings $U_{\rm e}$ of three-phase load with screw connection with tab connector	ds p.f. = 1			V kW kW	400 13 10	230/220 7.5 6.0
Minimum conductor cross-secti	ion with $I_{ m eload}$			mm²	2.5	

¹⁾ If the three main conducting paths are loaded with 20 A and I > 10 A for the fourth conducting

SIRIUS RELAYS

Function Relays, Interfaces and Converters Coupling Relays and Interfaces

3TG10 power relays

hnical	

1 - 1 - 2 2 2 2											
Load ratings with AC											
AC-2 and AC-3 utilisation categories	,		0.								
Rated operational currents I_e up to 400 \		Α	8.4								
Ratings of motors with slipring or squirre 50 Hz and 60 Hz and at 400 V	l-cage rotor at	kW	4								
AC-5a utilisation category (permissible	supply impedance: \geq 0.5 Ω)										
Switching gas discharge lamps per main conducting path at 50 Hz 230	V		Uncor	rected			Lead-la	ag			
Rating per lamp		W	18	36	58		18	36		58	
Rated operational current per lamp		Α	0.37	0.43	0.67		2 x 0.1	1 2 x	0.21	2 x 0.32	
Number of lamps		unit	43	37	24		2 x 81	2 x	42	2 x 28	
Switching gas discharge lamps with c per main conducting path at 50 Hz 230			Paralle	el correc	tion	Electr.	ballast,	1 lamp	Electr	ballast,	2 lamps
Rating per lamp		W	18	36	58	18	36	58	18	36	58
Capacitor		μF	4.5	4.5	7	6.8	6.8	10	10	10	22
Rated operational current per lamp		A	0.11	0.21	0.32	0.10	0.18	0.27	0.18	0.35	0.52
Number of lamps		unit	15	15	10	39	39	26	2 x26		
AC-5b utilisation category, switching in per main conducting path at 50 Hz 230 V		kW	1.6	,,,	,,0	00	00		L NEO	2.7.20	2.7.1
Load ratings with DC											
DC-1 utilisation category, switching re	esistive load ($\frac{L}{R} \le 1 \text{ ms}$)										
Rated operational current I_e	onducting paths connected in series		1			2		3		4	
	up to 24 V	A	16			16		18		20	
	60 V 110 V	A A	6 2			16 6		18 16		20 20	
	220 V/240 V	A	0.8			1.6		6		20	
DC-3 and DC-5 utilisation categories, shunt and series motors	$(\frac{L}{R} \le 15 \text{ ms})$										
Rated operational current I _e	onducting paths connected in series		1			2		3		4	
	up to 24 V	Α	10			16		16		18	
	60 V	A	0.5			5		16		16	
	110 V 220 V/240 V	A A	0.15			0.35		10 1.75		10	
	220 V/240 V	A	_			_		1.75		۷	
Conductor cross-sections for des	signs										
with screw connections											
Screw connection Finally stranded with and sleeve (DIN 46)	228 etyle A/D/C\	mm ²	M3	75 to 2.5	()						
Finely stranded with end sleeve (DIN 46 Solid	ZZO, SIYIE A/D/O)	mm² mm²	2 x (11	75 to 2.5 to 2.5)	')						
with tab connectors		mm ²	1 x 4								
Finely stranded	6.3 to 1	mm ²	0.5 to								
When using push-on contact acc. to DIN	N 46 245/46 247 6.3 to 2.5	mm²	1 to 2.	5							
® and ® ratings (screw connection	on)										
Rated insulation voltage	AC	V	600								
Conventional thermal current	Free air and enclosed	А	20								
Maximum horsepower ratings (@ and @-approved values)			1-phas	se		3-phas	se				
Ratings of three-phase motors											
at 60 Hz	at 115 V 200 V	hp hp	1/ ₂			_ 3					
	230 V	hp	11/2			3					
	460 V/575 V 600 V	hp hp	_			5 5					
	300 V	/									

Coupling Relays and Interfaces

SIRIUS RELAYS

3TG10 power relays

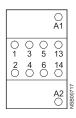
Accessories

	For contactor	Design		Order No.	List Price \$	Weight approx.	Pack
		Max. rated operational currents $I_e/AC-1$ (at 55 °C) of contactors	Max. conductor cross-sections				
	Туре	Α	mm²	PG 101		kg	Units
nks for paralle	eling (star jumpers)						
	• 3-pole without terminal 1)2)						
	3TG10	16 Star jumpers can be reduced by one pole	-	3RT1 916-4BA31		0.004	1
	• 3-pole with terminal 1)3)						
	3TG10	40	25	3RT1 916-4BB31		0.013	1
	4-pole with terminal 1)4)			_			
	3TG10	50	25	3RT1 916-4BB41		0.02	1

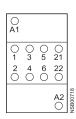
Circuit diagrams

Position of terminals

3TG10 10



3TG10 01



Internal circuit diagram

3TG10 10 Ident. 10E

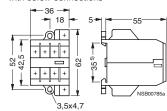
3TG10 01

Dimension drawings

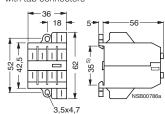
AC and DC operation

3TG10 ..-0..

with screw connections

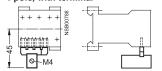


3TG10 ..-1.. with tab connectors



Accessories for 3TG10

3RT19 16-4BB41 links for paralleling, 4-pole, with terminal



The links for paralleling can be reduced by one pole.

- 2) Replacement type for 3TX44 90-2C.
- 3) Replacement type for 3TX44 90-2A.
- 4) Replacement type for 3TX44 90-2B.
- 5) Can be snapped onto 35 mm standard mount-

¹⁾ The links for paralleling can be reduced by one pole. The rated operational currents are valid for each pole. The links for paralleling are insulated.

SIRIUS RELAYS

Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

3TX71 plug-in relays

Selection and ordering data

Siemens offers a wide range of plug-in relays to meet your industrial needs. Basic style relays are the most economical and are equipped with a mechanical flag indicator only . Premium style relays are full featured with LED and mechanical flag indication, push to test button and typically a latching hold down door which provides a method of activating the contacts without applying power to the coil. This feature is very handy during comissioning and troubleshooting. Premium Bifurcated style relays are ideal for low minimum holding current requirements on the contacts. Typical minimum holding current for bifurcated contacts is 3mA instead of 100mA.

Revised

12/10/14

Relays are divided up by the following functions for selection:

- Base style
- Contact Arrangement
- Contact Rating
- Coil Voltage
- Optional Features (Basic, Premium and Premium Bifurcated)



Square Base (Narrow)

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Access	Panel Mount Adaptor 3TX7144-	DIN Rail Mount Adaptor 3TX7144-
		12VDC	3TX7110-5BB03C	3TX7110-5JB03	4E7	1L7	В	3L5	3L4
		24 VDC	3TX7110-5BC03C	3TX7110-5JC03	4E7	1L7	В	3L5	3L4
SPDT	15	24 VAC	3TX7110-5BC13C	3TX7110-5JC13	4E7	1L7	В	3L5	3L4
		120 VAC	3TX7110-5BF13C	3TX7110-5JF13	4E7	1L7	В	3L5	3L4
		240 VAC	_	3TX7110-5JG13	4E7	1L7	В	3L5	3L4



Square Base (Standard)

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set	Panel Mount Adaptor 3TX7144-	DIN Rail Mount Adaptor 3TX7144-
		24 VDC	3TX7111-3DC03C	3TX7111-3LC03	4E5	1L6	В	3L7	3L6
DPDT	12	24 VAC	3TX7111-3DC13C	3TX7111-3LC13	4E5	1L6	В	3L7	3L6
		120 VAC	3TX7111-3DF13C	3TX7111-3LF13	4E5	1L6	В	3L7	3L6
		12 VDC	3TX7114-5DB03C	3TX7114-5LB03	4E6	1L6	В	3L7	3L6
		24VDC	3TX7114-5DC03C	3TX7114-5LC03	4E6	1L6	В	3L7	3L6
DPDT	15	24VAC	3TX7114-5DC13C	3TX7114-5LC13	4E6	1L6	В	3L7	3L6
		120 VAC	3TX7114-5DF13C	3TX7114-5LF13	4E6	1L6	В	3L7	3L6
		240 VAC	3TX7114-5DH13C	3TX7114-5LH13	4E6	1L6	В	3L7	3L6
		12 VDC	3TX7115-5DB03C	_	4E4	1L12	А	_	_
DDDT		24VDC	3TX7115-5DC03C	3TX7115-5LC03	4E4	1L12	А	_	_
DPDT	10	24VAC	3TX7115-5DC13C	3TX7115-5LC13	4E4	1L12	А	_	_
		120 VAC	3TX7115-5DF13C	3TX7115-5LF13	4E4	1L12	А	_	_
DPDT		12 VDC	_	3TX7119-5LB03	4E4	1L12	А	_	_
Note: No Lock Down		24VDC	_	3TX7119-5LC03	4E4	1L12	А	_	_
Door on Premium	20	120 VAC	_	3TX7119-5LF13	4E4	1L12	А	_	_
Style		240 VAC	_	3TX7119-5LH13	4E4	1L12	А	_	_

Option	Basic	Premium
Mechanical Flag	√	✓
Push To Test		✓
Lock Down Door		√
LED		√

3TX71 plug-in relays

• Revised • 12/10/14

SIRIUS RELAYS

Selection and ordering data



Square Base (Standard)

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Premium Bifurcated	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set	Panel Mount Adaptor 3TX7144-	DIN Rail Mount Adaptor 3TX7144-
		24VDC	3TX7116-5FC03C	3TX7116-5NC03	_	4E8	1L9	А	1M3	1M4
3PDT	15	24VAC	3TX7116-5FC13C	3TX7116-5NC13	_	4E8	1L9	А	1M3	1M4
		120 VAC	3TX7116-5FF13C	3TX7116-5NF13	_	4E8	1L9	А	1M3	1M4
3PDT	10	24VDC	_	3TX7115-5NC03	_	4E4	1L12	А	_	_
		120 VAC	3TX7115-5FF13C	3TX7115-5NF13	_	4E4	1L12	А	_	_
	6A for	24VDC	3TX7111-3HC03C	3TX7111-3PC03	3TX7111-5PC03B	4E5	1L6	В	3L7	3L6
4DDT	Basic and	24VAC	3TX7111-3HC13C	3TX7111-3PC13	_	4E5	1L6	В	3L7	3L6
4PDT	Premium and 3A for	120 VAC	3TX7111-3HF13C	3TX7111-3PF13	3TX7111-5PF13B	4E5	1L6	В	3L7	3L6
	Bifurcated	240 VAC	_	3TX7111-3PG13	_	4E5	1L6	В	3L7	3L6
		24VDC	3TX7117-5HC03C	3TX7117-5PC03	_	4E9	1L10	А	1M5	1M6
4PDT	15	24VAC	3TX7117-5HC13C	3TX7117-5PC13	_	4E9	1L10	А	1M5	1M6
		120 VAC	3TX7117-5HF13C	3TX7117-5PF13	_	4E9	1L10	А	1M5	1M6



Specialty Relay

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Premium		Uses Clip		Mount Adaptor	DIN Rail Mount Adaptor 3TX7144-
DPDT	10	24 VDC	3TX7137-5DC03	_	_	1E4	1L12	_	_	_
Latching	16	120 VAC	3TX7137-5DF13	_	_	1E4	1L12	_	_	_

Option	Basic	Premium	Premium Bifurcated
Mechanical Flag	✓	✓	\checkmark
Push To Test		✓	✓
Lock Down Door		√	✓
LED		✓	✓

SIRIUS RELAYS

• Revised • 12/10/14

3TX71 plug-in relays

Selection and ordering data



Standard Octal Base

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
		12 VDC	3TX7112-1DB03C	3TX7112-1LB03	4E2	1L14	А
		24VDC	3TX7112-1DC03C	3TX7112-1LC03	4E2	1L14	А
DPDT	10	24VAC	3TX7112-1DC13C	3TX7112-1LC13	4E2	1L14	А
		120 VAC	3TX7112-1DF13C	3TX7112-1LF13	4E2	1L14	А
		240 VAC	3TX7112-1DG13C	3TX7112-1LG13	4E2	1L14	А
		12 VDC	3TX7112-1FB03C	_	4E3	1L14	А
		24VDC	3TX7112-1FC03C	3TX7112-1NC03	4E3	1L14	А
3PDT	10	24VAC	3TX7112-1FC13C	3TX7112-1NC13	4E3	1L14	А
		120 VAC	3TX7112-1FF13C	3TX7112-1NF13	4E3	1L14	А
		240 VAC	_	3TX7112-1NG13	4E3	1L14	Α





Hermetically Sealed

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
		12 VDC	3TX7127-5HB00	3TX7144-4E2	1L12	А
DPDT	12	24 VDC	3TX7127-5HC00	3TX7144-4E2	1L12	А
		120 VAC	3TX7127-5HF10	3TX7144-4E2	1L12	А
		24VDC	3TX7127-3HC00	3TX7144-4E5	1L11	В
4PDT	3	24VAC	3TX7127-3HC10	3TX7144-4E5	1L11	В
		120 VAC	3TX7127-3HF10	3TX7144-4E5	1L11	В
		12 VDC	3TX7127-3HB03	3TX7144-4E5	1L11	В
4PDT	5	24VDC	3TX7127-3HC03	3TX7144-4E5	1L11	В
		120 VAC	3TX7127-3HF13	3TX7144-4E5	1L11	В

3TX71 plug-in relays

Revised09/30/14

SIRIUS RELAYS

Selection and ordering data

Open Power Relays

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Metal Cover 7144-
SPST NO-DM		24VAC	3TX7130-0AC13	1M0
SPST NO-DM	40	120 VAC	3TX7130-0AF13	1M0
SPST NO-DM		240 VAC	3TX7130-0AH13	1M0
SPST NC-DM		120 VAC	3TX7130-0QF13	1M0
SPDT		24 VAC	3TX7130-0BC13	1M0
SPDT	40	120 VAC	3TX7130-0BF13	1M0
SPDT		240 VAC	3TX7130-0BH13	1M0
SPDT		277 VAC	3TX7130-0BS13	1M0
		24 VAC	3TX7130-0DC13	1M0
		120 VAC	3TX7130-0DF13	1M0
		240 VAC	3TX7130-0DH13	1M0
DDDT	40	277 VAC	3TX7130-0DS13	1M0
DPDT	40	12 VDC	3TX7130-0DB03	1M0
		24 VDC	3TX7130-0DC03	1M0
		48 VDC	3TX7130-0DD03	1M0
		110 VDC	3TX7130-0DF03	1M0
		24 VAC	3TX7130-0CC13	1M0
		120 VAC	3TX7130-0CF13	1M0
DPST NO	40	240 VAC	3TX7130-0CH13	1M0
DPST NO	40	12 VDC	3TX7130-0CB03	1M0
		24 VDC	3TX7130-0CC03	1M0
		48 VDC	3TX7130-0CD03	1M0
		120 VAC	3TX7130-0RF13	1M0
DDDT		12 VDC	3TX7130-0RB03	1M0
DPDT (Mag Playrout)	40	24 VDC	3TX7130-0RC03	1M0
(Mag Blowout)		48 VDC	3TX7130-0RD03	1M0
		110 VDC	3TX7130-0RF03	1M0



Enclosed Power Relays

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay
		24VAC	3TX7131-4CC13
DPST-NO	30	120 VAC	3TX7131-4CF13
		230 VAC	3TX7131-4CH13
		12 VDC	3TX7131-4DB03
	00 110/	24 VDC	3TX7131-4DC03
DPDT	30 NO/ 3 NC	24VAC	3TX7131-4DC13
	3 INC	120 VAC	3TX7131-4DF13
		230 VAC	3TX7131-4DH13





SIRIUS RELAYS

3TX71 plug-in relays

Selection and ordering data

Octal Based Timers

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Time Range	Function	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set	Panel Mount Adaptor 3TX7144-	DIN Rail Mount Adaptor 3TX7144-
		24 V AC/DC	OND-DF0B-24	0.1S - 10h	A, C	3TX7144-4E2	1L8	А	_	_
DPDT	12	120 V AC/DC	OND-DF0B-120	0.1S - 10h	A, C	3TX7144-4E2	1L8	А	_	_
		240 VAC	OND-DF0B-240	0.1S - 10h	A, C	3TX7144-4E2	1L8	А	_	_
		24V AC/DC	OFD-DF0B-24	0.1S - 10h	D, E	3TX7144-4E3	1L8	А	_	_
DPDT	12	120 V AC/DC	OFD-DF0B-120	0.1S - 10h	D, E	3TX7144-4E3	1L8	А	_	_
		240 VAC	OFD-DF0B-240	0.1S - 10h	D. E	3TX7144-4E3	1L8	А	_	_



Square Based Timers

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Time Range	Function	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set	Panel Mount Adaptor 3TX7144-	DIN Rail Mount Adaptor 3TX7144-
		24V AC/DC	OND-DFSB-24	0.1S - 10h	A, C	3TX7144-1E4	1L8	_	_	_
DPDT	12	120 V AC/DC	OND-DFSB-120	0.1S - 10h	A, C	3TX7144-1E4	1L8	_	_	_
		240 VAC	OND-DFSB-240	0.1S - 10h	A, C	3TX7144-1E4	1L8	_	_	_
		24V AC/DC	OFD-DFSB-24	0.1S - 10h	D, E	3TX7144-1E4	1L8	_	_	_
DPDT	12	120 V AC/DC	OFD-DFSB-120	0.1S - 10h	D, E	3TX7144-1E4	1L8	_	_	_
		240 VAC	OFD-DFSB-240	0.1S - 10h	D, E	3TX7144-1E4	1L8	_	_	_

Selecting Function							
Function for OND SW I							
On Delay	OFF						
Interval	ON						
Function for OFD	SW I						
Off Delay OFF							
One Shot	ON						

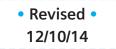
Selecting Time Range									
Time Range SW II SW III SW IV									
0.1s - 1 s	OFF	OFF	OFF						
1s - 10s	OFF	OFF	ON						
10s - 100s	OFF	ON	OFF						
0.1m - 1m	OFF	ON	ON						
1m - 10m	ON	OFF	OFF						
10m - 100m	ON	0FF	ON						
0.1h - 1h	ON	ON	OFF						
1h - 10h	ON	ON	ON						



Front Panel Timers

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Time Range	Function		Uses Clip 3TX7144-	Access	Adaptor	DIN Rail Mount Adaptor 3TX7144-
DPDT		12-240V AC/DC	OFD-DFPR-00	0.1S - 9990h	A,B,C,D,E,F,G,H,I,J	3TX7144-4E3	1L25	_	_	_
SPDT	12	12-240V AC/DC	OND-DFPR-01	0.1S - 9990h	A,B,C,D,E,F,G,H,I,J	3TX7144-4E2	1L25	_	_	_
DPDT		12-240V AC/DC	OND-DFPR-02	0.1S - 9990h	A,B,C	3TX7144-4E2	1L25	_	_	_

3TX71 plug-in relays





Multifuncti	ion Timer Modes	
Function	Name	Description
A	On Delay (Power On)	When input voltage U is applied, timing delay t begins. Relay contacts R change state after the time delay is complete. Contacts R return to their shelf state when input voltage U is removed. Trigger switch is not used in this function.
В	Repeat Cycle (Starting Off)	When input voltage U is applied, time delay t begins. When time delay t is complete, relay contacts R change state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.
С	Interval (Power On)	When input voltage U is applied, relay contacts R change state immediately and timing cycle begins. When time delay is complete, contacts return to shelf state. When input voltage U is removed, contacts will also return to their shelf state. Trigger switch is not used in this function.
D	Off Delay (S Break)	Input voltage U must be applied continuously. When trigger switch S is closed, relay contacts R change state. When trigger switch S is opened, delay t begins. When delay t is complete, contacts R return to their shelf state. If trigger switch S is closed before time delay t is complete, then time is reset. When trigger switch S is opened, the delay begins again, and relay contacts R remain in their energized state. If input voltage U is removed, relay contacts R return to their shelf state.
E	Retrigerable One Shot	Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. At the end of the preset time t, the relay contacts R return to their normal condition unless the trigger switch S is opened and closed prior to time out t (before preset time elapses). Continuous cycling of the trigger switch S at a rate faster than the preset time will cause the relay contacts R to remain closed. If input voltage U is removed, relay contacts R return to their shelf state.
F	Repeat Cycle (Starting On)	When input voltage U is applied, relay contacts R change state immediately and time delay t begins. When time delay t is complete, contacts return to their shelf state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.
G	Pulse Generator	Upon application of input voltage U, a single output pulse of 0.5 seconds is delivered to relay after time delay t. Power must be removed and reapplied to repeat pulse. Trigger switch is not used in this function.
Н	One Shot	Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. During time-out, the trigger signal S is ignored. The relay resets by applying the trigger switch S when the relay is not energized.
I	On/Off Delay (S Make/Break)	Input voltage U must be applied continuously. When trigger switch S is closed, time delay t begins. When time delay t is complete, relay contacts R change state and remain transferred until trigger switch S is opened. If input voltage U is removed, relay contacts R return to their shelf state.
J	Memory Latch (S Make)	Input voltage U must be applied continuously. Output changes state with every trigger switch S closure. If input voltage U is removed, relay contacts R return to their shelf state.

Socket Accessories

Access. Series	MOV	MOV	R/C	R/C	Diode	
	24VAC/DC	120VAC/DC	6-24VAC/DC	110-240VAC/DC	6-250VDC	
А	3TX7144-H1	3TX7144-H20	3TX7144-H4	3TX7144-H5	3TX7144-H6	
В	3TX7144-H9	3TX7144-H17	_	_	3TX7144-H12	

SIRIUS RELAYS

• Revised • 09/30/14

3TX71 plug-in relays

General specifications

Contact Characteristics	Units	3TX7109	TX7109 3TX7110			3TX7111				
Number and Type of Contacts			SPDT	SPDT	SPDT	DPDT	DPDT	4PDT	4PDT	
Contact Material			Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	
Thermal (Carrying) Current		Α	20	15	3 (Bifurcated)	12	3 (Bifurcated)	6	3 (Bifurcated)	
Maximum Switching Voltage		V	300	300	300	300	300	300	300	
Switching Current at Voltage		Resistive	16A @240V	15A @240V	3A @240V	_	3A @240V	6A @240V	3A @240V	
		Resistive	16A @120V	15A @120V	_	12A @120V	3A @120V	6A @120V	3A @120V	
		Resistive	16A @ 28	15A @ 28	_	12A @ 28	3A @ 30	6A @ 28	3A @ 30	
		HP	1/2 @ 120VAC	1/2 @ 120VAC	_	1/3 @ 120VAC	1/16 @ 120VAC	1/3 @ 120VAC	1/16 @ 120VAC	
		HP	1 @ 240VAC	1 @ 240VAC	_	_	_	1 @ 240VAC	_	
		Pilot Duty	B300	B300	_	B300	_	B300	_	
Minimum Switching Requirement		mA	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	3 @ 17VDC (.4W)	100 @ 5VDC (.5W)	3 @ 17VDC (.4W)	100 @ 5VDC (.5W)	3 @ 17VDC (.4W)	
Coil Characteristics										
Voltage Range	AC	٧	6240	6240	6240	6240	6240	6240	6240	
	DC	٧	6125	6125	6125	6125	6125	6125	6125	
Operating Range	AC	%	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110	
	DC	%	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110	
Average Consumption	AC	VA	1.2	0.9	0.9	1.2	1.2	1.2	1.2	
	DC	W	0.9	0.7	0.7	0.9	0.9	0.9	0.9	
Drop-out Voltage Threshold	AC	%	15	15	15	15	15	15	15	
	DC	%	10	10	10	10	10	10	10	
Performance Characteris	tics									
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	100,000	100,000	100,000	200,000	200,000	200,000	200,000	
Mechanical Life	Unpowered		10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	
Operating Time (response time)		ms	20	20	20	20	20	20	20	
Dialectric Strength	Between Coil and Contact	V(rms)	2500	2500	2500	2500	2500	2500	2500	
	Between Poles	V(rms)	1500	1500	1500	1500	1500	1500	1500	
	Between Contacts	V(rms)	1500	1500	1500	1500	1500	1500	1500	
Environment										
Product Certifications	Standard Version		UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	
Ambient Air Temperature	Storage	°C	-40+85	-40+85	-40+85	-40+85	-40+85	-40+85	-40+85	
around the Device	Operational	°C	-40+55	-40+55	-40+55	-40+55	-40+55	-40+55	-40+55	
Vibration Resistance	Operational	q-n	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	
Shock Resistance		g-n	10	10	10	10	10	10	10	
Degree of Protection			IP40	IP40	IP40	IP40	IP40	IP40	IP40	
Weight		grams	36	29	29	36	36	36	36	

Contact Characteristics		Units	3TX7112		3TX7114	3TX7115		3TX7116	3TX7117
Number and Type of Contacts			DPDT	3PDT	DPDT	DPDT	3PDT	3PDT	4PDT
Contact Material			Silver Alloy	Silver Allov	Silver Allov	Silver Alloy	Silver Alloy	Silver Allov	Silver Allov
Thermal (Carrying) Current		Α	10	10	15	10	10	15	15
Maximum Switching Voltage		٧	300	300	300	300	300	300	300
Switching Current at Voltage		Resistive	10A @240V	10A @240V	12A @277V	10A @277V	10A @277V	12A @277V	12A @277V
		Resistive	10A @120V	10A @120V	15A @120V	10A @120V	10A @120V	15A @120V	15A @120V
		Resistive	10A @ 28	10A @ 28	12A @ 28	10A @ 28	10A @ 28	12A @ 28	12A @ 28
		HP	1/3 @ 120VAC	1/3 @ 120VAC	1/2 @ 120VAC	1/3 @ 120VAC	1/3 @ 120VAC	1/2 @ 120VAC	1/2 @ 120VAC
		HP	1/2 @ 240VAC	1/2 @ 240VAC	1 @ 240VAC	1/2 @ 240VAC	1/2 @ 240VAC	3/4 @ 240VAC	3/4 @ 240VAC
		Pilot Duty	B300	B300	B300	B300	B300	B300	B300
Minimum Switching Requirement		mA	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)
Coil Characteristics									
Voltage Range	AC	٧	6240	6240	6240	6240	6240	6240	6240
	DC	V	6125	6125	6125	6125	6125	6125	6125
Operating Range	AC	%	85 to 110						
	DC	%	80 to 110						
Average Consumption	AC	VA	1.2	1.2	1.2	1.2	1.2	1.5	1.5
	DC	W	0.9	0.9	0.9	0.9	0.9	1.4	1.5
Drop-out Voltage Threshold	AC	%	15	15	15	15	15	15	15
	DC	%	10	10	10	10	10	10	10
Performance Characteristics									
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	200,000	200,000	100,000	100,000	100,000	200,000	200,000
Mechanical Life	Unpowered		10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Operating Time (response time)		ms	20	20	20	20	20	20	20
Dialectric Strength	Between Coil and Contact	V(rms)	2500	2500	2500	2500	2500	2500	2500
	Between Poles	V(rms)	1500	1500	1500	1500	1500	2500	2500
	Between Contacts	V(rms)	1500	1500	1500	1500	1500	1500	2500
Environment									
Product Certifications	Standard Version		UL,RoHS						
Ambient Air Temperature	Storage	°C	-40+85	-40+85	-40+85	-40+85	-40+85	-40+85	-40+85
around the Device	Operational	°C	-40+55	-40+55	-40+55	-40+55	-40+55	-40+55	-40+55
Vibration Resistance	Operational	g-n	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10	10	10	10	10	10	10
Degree of Protection			IP40						
Weight		grams	89	89	36	88	88	60	60

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SIRIUS RELAYS

3TX71 plug-in relays

General specifications

Contact Characteristics	Units	3TX7119	3TX7127	3TX7130			
Number and Type of Contacts			DPDT	DPDT	4PDT	4PDT	All
Contact Material			Silver Alloy	Silver Alloy	Fine Silver	Silver Alloy	Silver Alloy
Thermal (Carrying) Current		A	20	12	3	5	40
Maximum Switching Voltage	-	V	600	300	300	300	600
Switching Current at Voltage		Resistive	20A @300V	12A @240V	3A @240V	12A @240V	40A @277V
		Resistive	_	12A @120V	3A @120V		_
		Resistive	20A @ 28	12A @ 28	3A @ 30		40A @ 28
		HP	1/3 @ 120VAC	1/3 @ 120VAC	1/16 @ 120VAC	_	_
		HP	1/2 @ 600VAC	1/2 @ 240VAC	1/10 @ 240VAC	_	_
		Pilot Duty	B600	B300	<u> </u>	_	_
Minimum Switching Requirement		mA	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	10 @ 5VDC (.5W)	100 @ 5VDC (.5W)	1000 @ 12VAC/DC
Coil Characteristics							
Voltage Range	AC	V	6240	6240	6240	6240	6600
	DC	٧	6125	6125	6125	6125	6600
Operating Range	AC	%	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110
	DC	%	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110
Average Consumption	AC	VA	2.75	1.2	1.2	1.2	10
	DC	W	2	0.9	0.9	0.9	4
Drop-out Voltage Threshold	AC	%	15	15	15	15	10
	DC	%	10	10	10	10	10
Performance Characterist	ics						
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	100,000	100,000	100,000	100,000	100,000
Mechanical Life	Unpowered		10,000,000	10,000,000	10,000,000	10,000,000	1,000,000
Operating Time (response time)		ms	20	20	20	20	30
Dialectric Strength	Between Coil and Contact	V(rms)	2000	1,500	1240	1240	2200
-	Between Poles	V(rms)	2000	1,500	1240	1240	2200
	Between Contacts	V(rms)	1500	1500	500	500	1500
Environment							
Product Certifications	Standard Version		UL	UL,RoHS	UL,RoHS	UL,RoHS	UL
Ambient Air Temperature	Storage	°C	-40+85	-40+85	-40+85	-40+85	-40+85
around the Device	Operational	°C	-40+55	-40+55	-40+70	-40+70	-40+70
Vibration Resistance	Operational	q-n	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10	10	10	10	_
Degree of Protection			IP40	IP67	IP67	IP67	Open
Weight		grams	88	130	45	45	227 to 312

Contact Characteristics		Units	3TX7131			3TX7132		3TX7136	3TX7137
Number and Type of Contacts			DPST-NO	DPDT	DPDT	SPDT	SPDT	DPDT	DPDT
Contact Material			Silver Allov	Silver Allov	Silver Alloy	Silver Allov	Silver Allov	Silver Allov	Silver Allov
Thermal (Carrying) Current		Α	30	30 DPDT-NO	3 DPDT-NC	30 SPDT-NO	3 DPDT-NC	12	16
Maximum Switching Voltage		٧	600	300	300	300	300	300	300
Switching Current at Voltage		Resistive	20A @300V	30A @277V	3A @277V	30A @277V	3A @277V	12A @240V	16A @277V
		Resistive	_	_	_	_	_	_	16A @120V
		Resistive	20A @ 28	20A @ 28	3A @ 28	10A @ 28	3A @ 28	12A @ 28	16A @ 28
		HP	1/3 @ 120VAC	1 @ 120VAC	_	1 @ 120VAC	_	1/2 @ 120VAC	1/2 @ 120VAC
		HP Pilot Duty	1/2 @ 600VAC	3 @ 240VAC	_	2 @ 240VAC	_	1/3 @ 240VAC	1/3 @ 240VAC
			_	_	_	_	_	B300	B300
Minimum Switching Requirement		mA	500 @ 12VAC/DC	500 @ 12VAC/DC	500 @ 12VAC/DC	1000 @ 12VAC/5VDC	500 @ 12VAC/DC	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)
Coil Characteristics									
Voltage Range	AC	٧	12240	12240	12240	12277	12277	12120	6240
	DC	٧	6110	6110	6110	5110	5110	12110	6125
Operating Range	AC	%	85 to 120	85 to 120	85 to 120	85 to 120	85 to 120	85 to 110	85 to 110
	DC	%	75 to 120	75 to 120	75 to 120	75 to 120	75 to 120	80 to 110	80 to 110
Average Consumption	AC	VA	4	4	4	2.8	2.8	1.8	3
	DC	W	1.7	1.7	1.7	1	1	1.8	1.4
Drop-out Voltage Threshold	AC	%	10	10	10	10	10	15	15
	DC	%	10	10	10	10	10	10	10
Performance Characteris	tics								
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Mechanical Life	Unpowered		5,000,000	5,000,000	5,000,000	10,000,000	10,000,000	10,000,000	5,000,000
Operating Time (response time)		ms	15	15	15	15	15	35	20
Dialectric Strength	Between Coil and Contact	V(rms)	4000	4000	4000	2500	2500	1500	1500
	Between Poles	V(rms)	2000	2000	2000	1500	1500	500	1500
	Between Contacts	V(rms)	1500	1500	1500	1500	1500	1500	1500
Environment									
Product Certifications	Standard Version		UL	UL	UL	UL	UL	UL	UL
Ambient Air Temperature	Storage	°C	-40+85	-40+85	-40+85	-40+85	-40+85	-40+85	-40+85
around the Device	Operational	°C	-40+55	-40+55	-40+55	-40+55	-40+55	-40+70	-40+70
Vibration Resistance	Operational	g-n	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10	10	10	10	10	10	10
Degree of Protection			_	_	_	_	_	IP40	IP40
Weight		grams	86	86	86	33	33	110	87

SIRIUS RELAYS

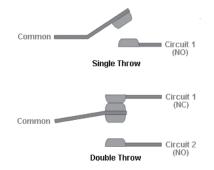
Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

3TX71 plug-in relays

Overview

Contact arrangement - throws



Throw is the number of different closed contact positions per pole. In other words a throw describes the total number of different circuits each pole controls.

The following abbreviations are used to indicate contact configurations:

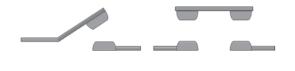
SPST Single-pole, single-throw

SPDT Single-pole, double-throw

DPST Double-pole, single-throw

DPDT Double-pole, double-throw

Contact arrangement - break

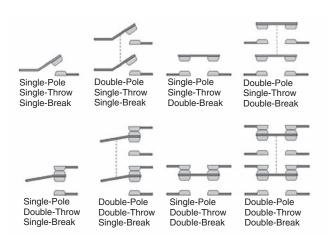


Double-Break

Break is the number of separate contacts the switch uses to open or close an individual circuits. If the relay breaks the circuit in one place, then it is a single break relay. If the relay breaks the circuit in two places, then it is a double break relay.

Contact arrangements overview

Single-Break



This illustration shows various contact arrangement types.

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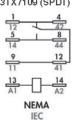
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Coupling Relays and Interfaces

SIRIUS RELAYS

3TX71 plug-in relays

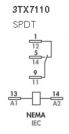




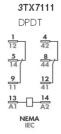
3TX7112 DPDT

3TX7113

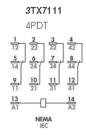
DPDT, 3PST, 3PDT



3TX7112 3PDT

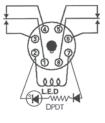


3TX7112-1L, -1D DPDT

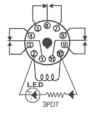


3TX7112-1N, -1F 3PDT

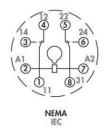




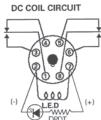
AC COIL CIRCUIT

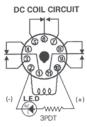


AC COIL CIRCUIT



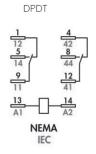




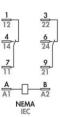




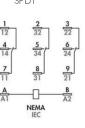








3TX7115 3PDT



DPDT

Coupling Relays and Interfaces

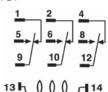
SIRIUS RELAYS

3TX71 plug-in relays

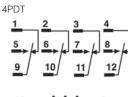
Circuit diagrams

3TX7116

3PDT



3TX7117



3TX7119 (DPDT)

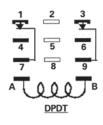


3TX7119 (3PDT)



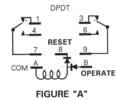
3TX7121

DPDT, 3PDT



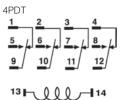


DPDT

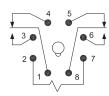


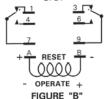
SINGLE WOUND AC COILS

3TX7126/3TX7127

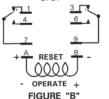


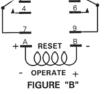
3TX7127 (DPDT)



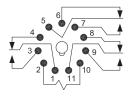


SINGLE WOUND DC COILS





3TX7127 (3PDT)



3TX7130



3TX7130 **SPDT**



3TX7130

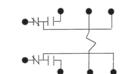


3TX7130

SPST-NC



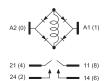
3TX7130 DPDT



3TX7130 (DPDT)



3TX7131 (DPST-NO) (AC)



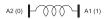
Coupling Relays and Interfaces

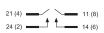
SIRIUS RELAYS

3TX71 plug-in relays

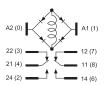
Circuit diagrams

3TX7131 (DPST-NO) (DC)

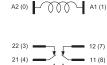




3TX7131 (DPDT) (AC)



3TX7131 (DPDT) (DC)



3TX7132 (SPDT) (AC)

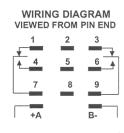


3TX7132 (SPDT) (DC)

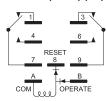


3TX7136

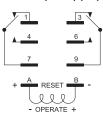
DPDT



3TX7137 (DPDT) (AC)

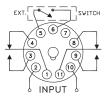


3TX7137 (DPDT) (DC)

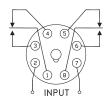


INPUT SIGNAL

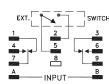
OFD-DFOB (DPDT)



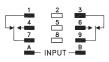
OND-DFOB (DPDT)



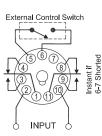
OFD-DFSB (DPDT)



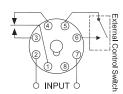
OND-DFSB (DPDT)



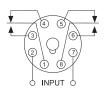
OFD-DFPR-00 (DPDT)



OND-DFPR-01 (SPDT)



OND-DFPR-02 (DPDT)



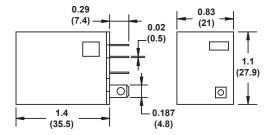
Coupling Relays and Interfaces

SIRIUS RELAYS

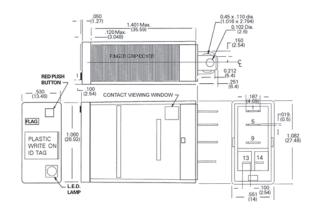
3TX71 plug-in relays

Dimension drawings

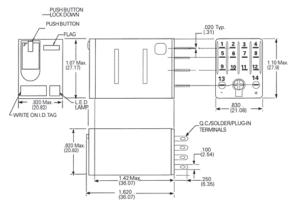
3TX7109 (SPDT) (clear cover)



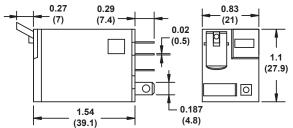
3TX7110 SPDT



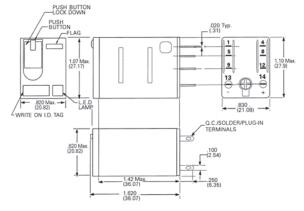
3TX7111 4PDT



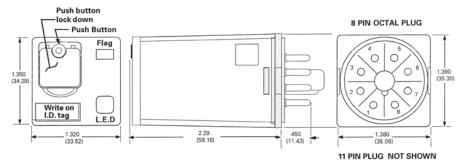
3TX7109 (SPDT) (full feature)



3TX7111 DPDT



3TX7112 DPDT



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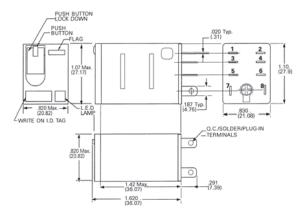
Coupling Relays and Interfaces

SIRIUS RELAYS

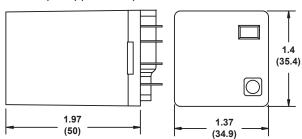
3TX71 plug-in relays

Dimension drawings

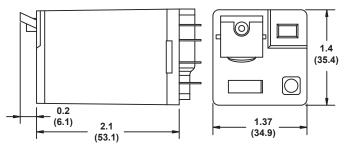
3TX7114 DPDT



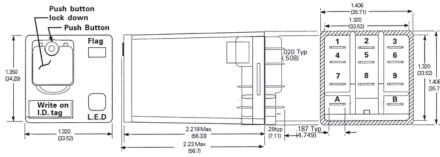
3TX7115 (DPDT) (clear cover)



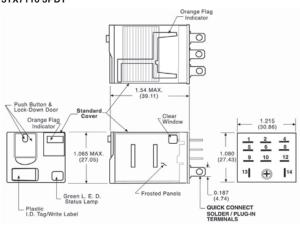
3TX7115 (DPDT) (full feature)



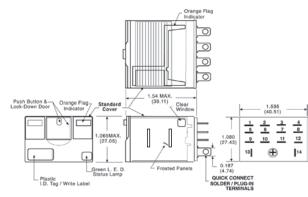
3TX7115 3PDT



3TX7116 3PDT



3TX7117 4PDT



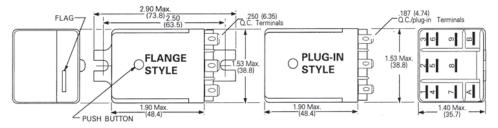
Coupling Relays and Interfaces

SIRIUS RELAYS

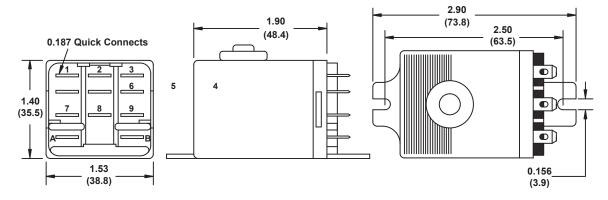
3TX71 plug-in relays

Dimension drawings

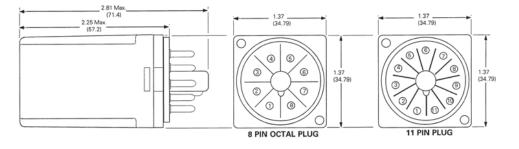
3TX7119 DPDT



3TX7119 (3PDT)



3TX7120



3TX7121/3TX7122 2.90 Max. -(73.8) 2.50 -(3.5) -(3.

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Coupling Relays and Interfaces

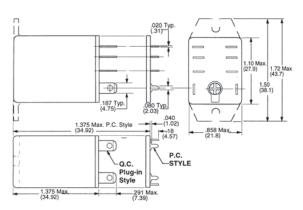
3TX71 plug-in relays

• Revised • 12/10/14

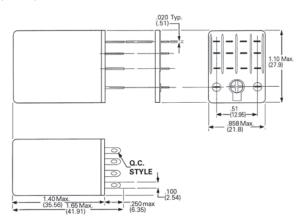
SIRIUS RELAYS

Dimension drawings

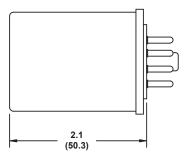
3TX7123

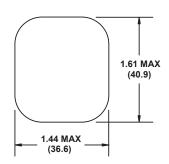


3TX7126

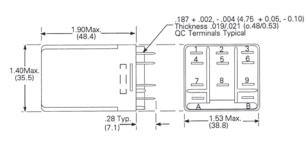


3TX7127 (DPDT)

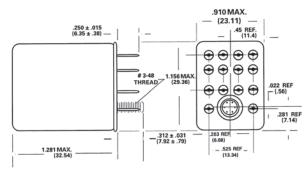




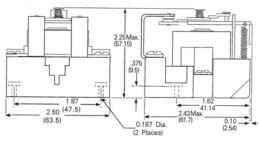
3TX7127 3PDT



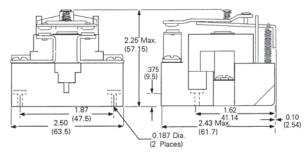
3TX7127 4PDT



3TX7130 SPST NC



3TX7130 SPST NO



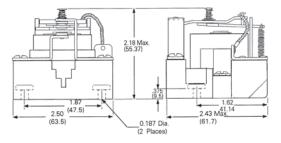
Coupling Relays and Interfaces

SIRIUS RELAYS

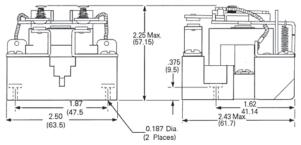
3TX71 plug-in relays

Dimension drawings

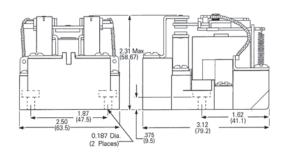
3TX7130 SPDT



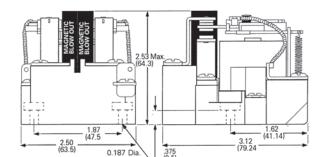
3TX7130 DPST NO



3TX7130 DPDT

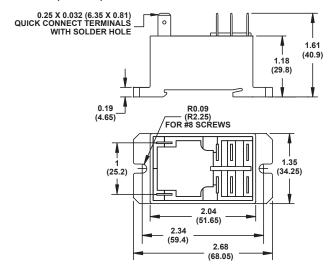


3TX7130 DPDT with magnetic blowout

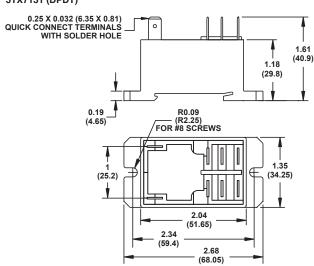


(2 Places)-

3TX7131 (DPST-NO)



3TX7131 (DPDT)



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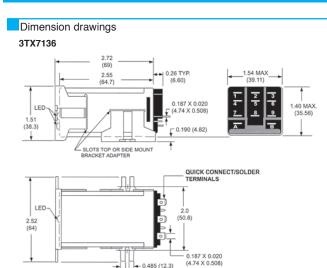
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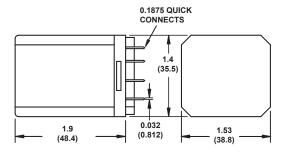
Coupling Relays and Interfaces

SIRIUS RELAYS

3TX71 plug-in relays

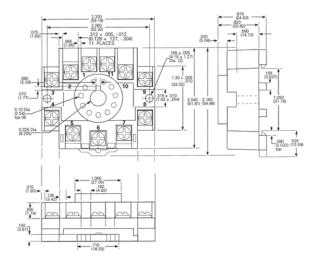


3TX7137 (DPDT)

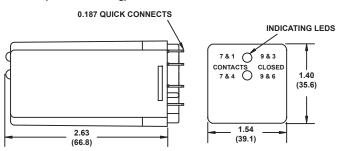


0.14 (3.55)

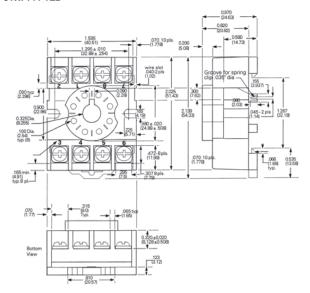
3TX7144-1E3



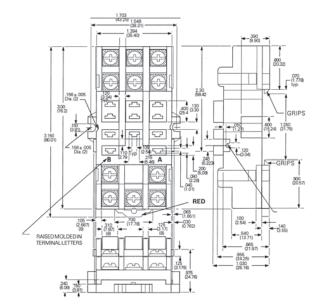
3TX7136 (DPDT Alternating)



3TX7144-1E2



3TX7144-1E4



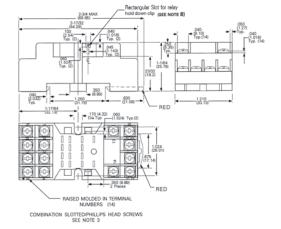
Coupling Relays and Interfaces

SIRIUS RELAYS

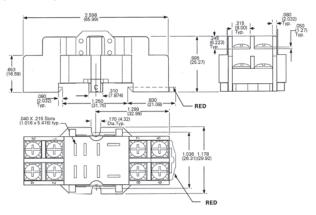
3TX71 plug-in relays

Dimension drawings

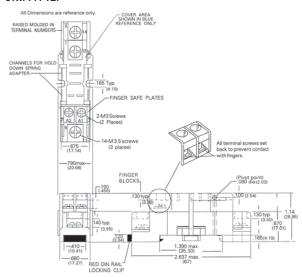
3TX7144-1E5



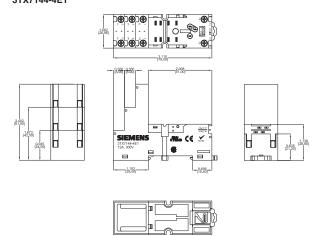
3TX7144-1E6



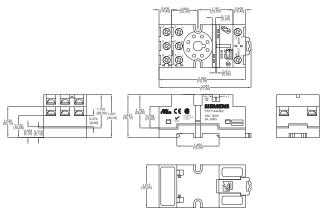
3TX7144-1E7



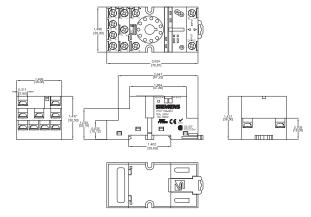
3TX7144-4E1



3TX7144-4E2



3TX7144-4E3



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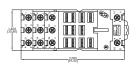
Coupling Relays and Interfaces

SIRIUS RELAYS

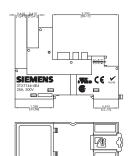
3TX71 plug-in relays

Dimension drawings





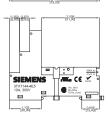


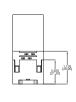


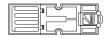


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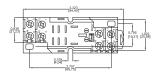




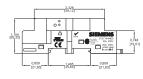




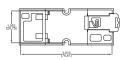
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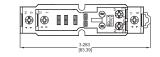




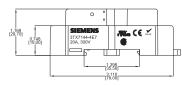




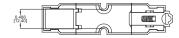
3TX7144-4E7



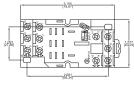






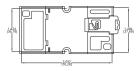


3TX7144-4E8





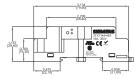




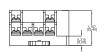
3TX7144-4E9











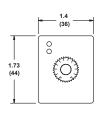
Coupling Relays and Interfaces

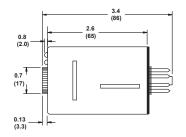
SIRIUS RELAYS

3TX71 plug-in relays

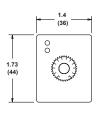
Dimension drawings

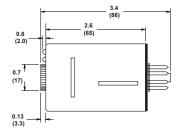
OFD-DFOB (DPDT)



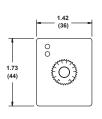


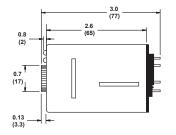
OND-DFOB (DPDT)



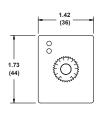


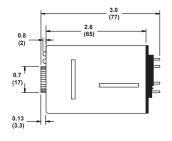
OFD-DFSB (DPDT)



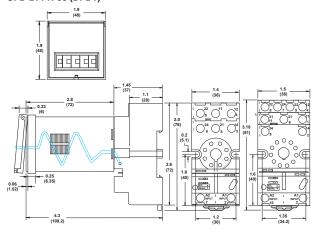


OND-DFSB (DPDT)

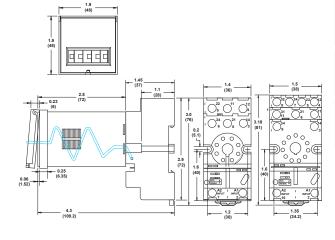




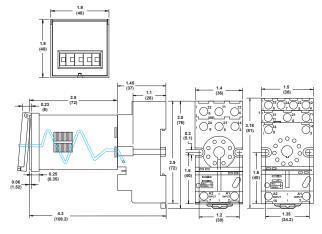
OFD-DFPR-00 (DPDT)



OND-DFPR-01 (SPDT)



OND-DFPR-02 (DPDT)



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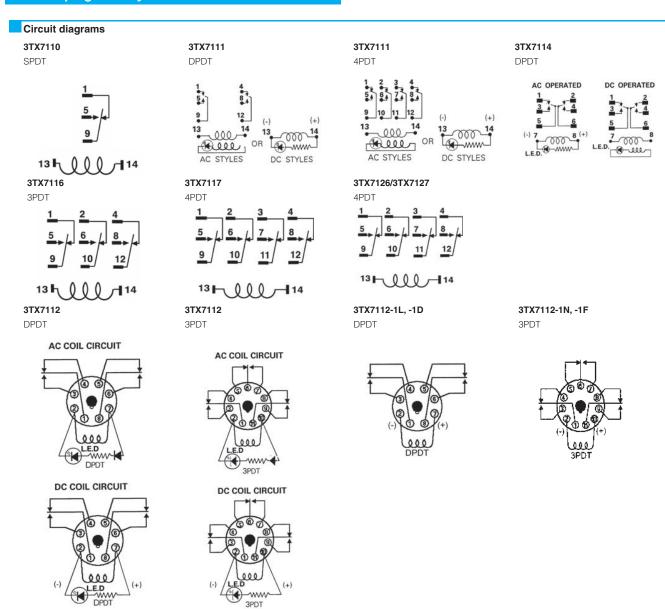
9

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Coupling Relays and Interfaces

SIRIUS RELAYS

3TX71 plug-in relays



Bracketed values: Socket designations. Without brackets: Contact/coil designations.

Coupling Relays and Interfaces

3TX71 plug-in relays



SIRIUS RELAYS

3TX7130

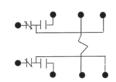
SPST-NO



3TX7130 DPDT

3TX7113

DPDT, 3PST, 3PDT

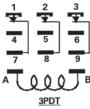


3TX7121

3TX7130

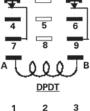
SPDT

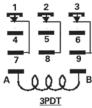




DPDT, 3PDT

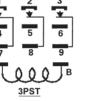


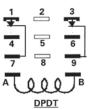


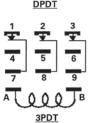


3TX7125

DPDT









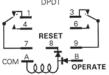
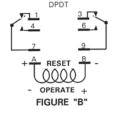


FIGURE "A"

SINGLE WOUND DC COILS

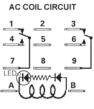


3TX7130 DPST-NO

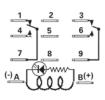


3TX7115

DPDT

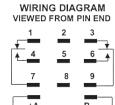


DC COIL CIRCUIT



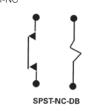
3TX7136

DPDT



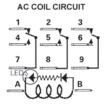
INPUT SIGNAL

3TX7130 SPST-NC



3TX7115

3PDT



DC COIL CIRCUIT



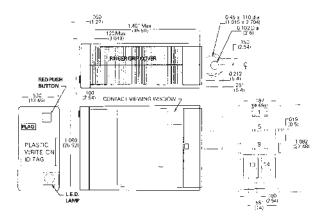
Coupling Relays and Interfaces

SIRIUS RELAYS

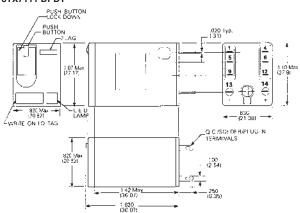
3TX71 plug-in relays

Dimension drawings

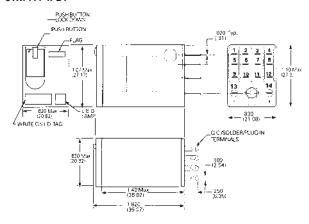
3TX7110



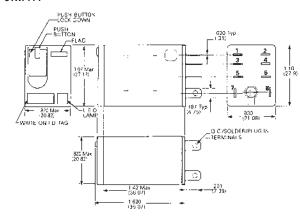
3TX7111 DPDT



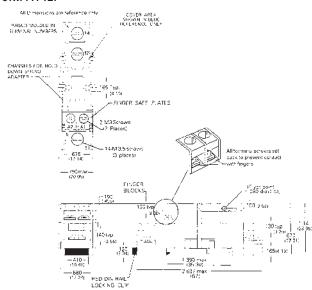
3TX7111 4PDT



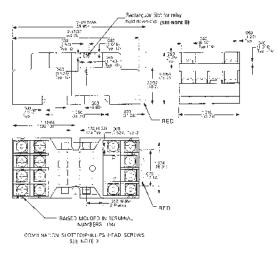
3TX7114



3TX7144-1E7



3TX7144-1E5

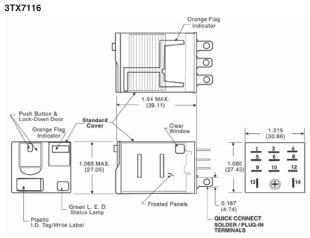


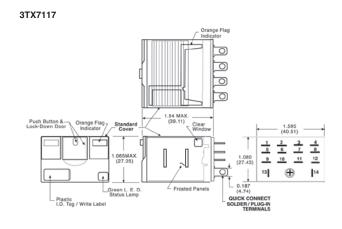
Coupling Relays and Interfaces

SIRIUS RELAYS

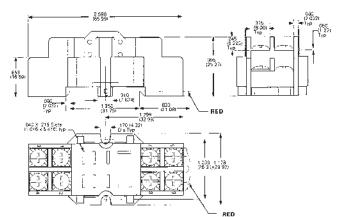
3TX71 plug-in relays

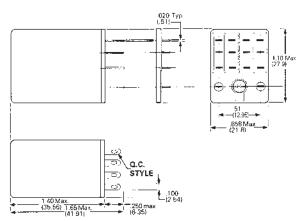
Dimension drawings



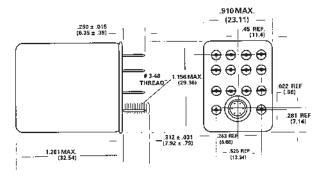


3TX7144-1E6



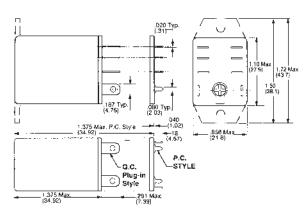


3TX7127





3TX7126



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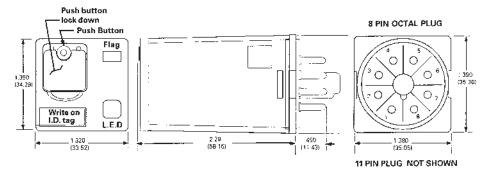
Function Relays, Interfaces and Converters Coupling Relays and Interfaces

SIRIUS RELAYS

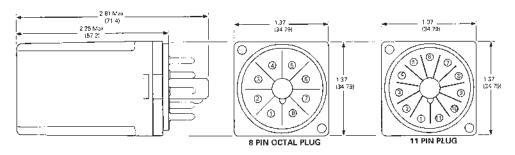
3TX71 plug-in relays

Dimension drawings

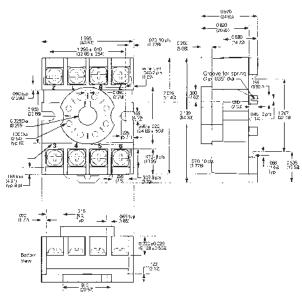
3TX7112



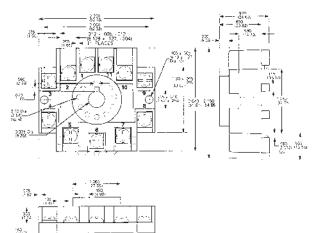
3TX7120



3TX7144-1E2



3TX7144-1E3



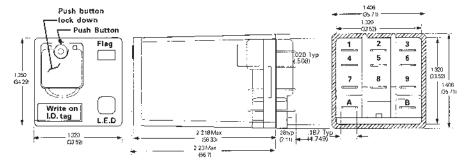
Coupling Relays and Interfaces

SIRIUS RELAYS

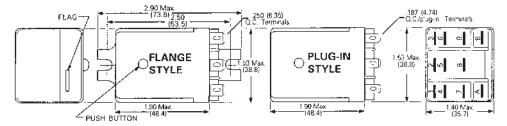
3TX71 plug-in relays

Dimension drawings

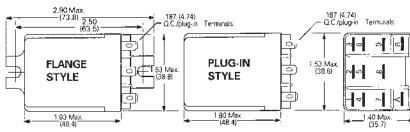




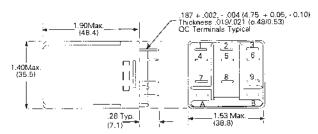
3TX7119



3TX7121/3TX7122

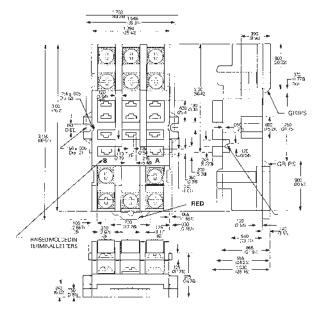


3TX7127



3TX7144-1E4

3TX7123



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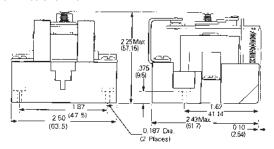
Function Relays, Interfaces and Converters Coupling Relays and Interfaces

SIRIUS RELAYS

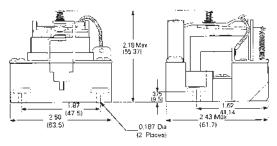
3TX71 plug-in relays

Dimension drawings

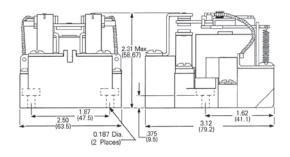
3TX7130 SPST NC



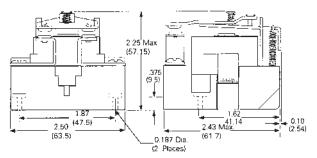
3TX7130 SPDT



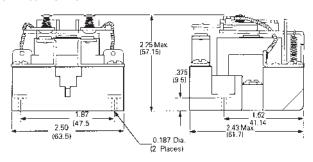
3TX7130 DPDT



3TX7130 SPST NO

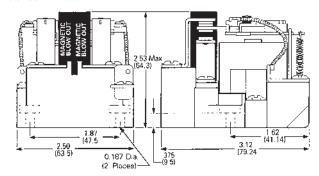


3TX7130 DPST NO

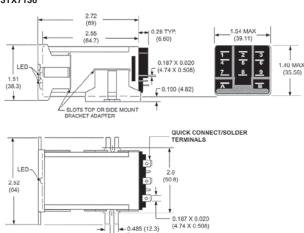


3TX7130 DPDT with magnetic

blowout

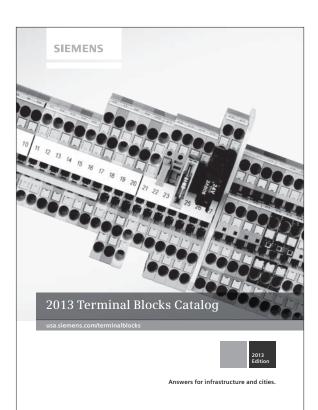


3TX7136



0.14 (3.55)

Control Circuit Components Terminal Blocks



Siemens complete terminal block offering is found in the 2013 Terminal Block Supplemental Catalog, Order No. PDCA-TERMB-1013

In this section you will find the Table of Contents for the 2013 Terminal Block Supplemental and information not found in the supplemental catalog.

A PDF version of the catalog can be downloaded from the Siemens' Internet Site at:

www.usa.siemens.com/terminalblocksupplement

Contents	Pages	Contents
Section 1		Section 3
8WH and 8WA Terminal Blocks General data	1/3	8WH6 iPo Installation Introduction
Section 2		8WH installation termin
8WH6 iPo Plug-In Terminals		Section 4
Introduction		8WH2 Spring-Loaded Introduction

Section 3 8WH6 iPo Installation Terminals Introduction	1
8WH N-conductor isolating screw terminals 3/10	
8WH installation terminals	
Section 4 8WH2 Spring-Loaded Terminals Introduction)
General data on 8WH	
8WH through-type terminals	
8WH hybrid through-type terminals	
8WH fuse terminals	
8WH isolating blade terminals	
8WH isolating terminals	5
8WH two-tier terminals	
8WH three-tier terminals4/33	
8WH four-tier motor terminals	
8WH diode terminals	
8WH two-tier diode terminals)

10

Pages

11

Control Circuit Components Terminal Blocks

Contents	Pages	Contents	Pages
Section 5		Section 8	
8WH5 Combination Plug-In Terminals		Accessories for 8WH Terminal Blocks	
Introduction	5/2	Accessories for labeling system	8/2
8WH5 through-type terminals	5/5	Standard labeling system	8/3
8WH5 hybrid through-type terminals		Mounting accessories	8/8
with iPo connection	5/7		
8WH9 plugs	5/8	Section 9	
		8WA1 Screw Terminals	
Section 6		Introduction	
8WH3 Insulation Displacement Termin	als	General data on 8WA	9/3
Introduction	6/2	8WA through-type terminals	9/9
8WH through-type terminals	6/5	8WA N-conductor isolating and	
8WH two-tier terminals	6/9	branch terminals	
8WH isolating terminals	6/11	8WA Insta or three-tier terminals	
		8WA two-tier terminals	9/19
Section 7		8WA two-tier terminals with	
8WH1 Screw Terminals		electronic components	
Introduction	7/2	8WA diode and isolating terminals	
General data on 8WH		8WA terminals for components	
8WH through-type terminals		8WA fuse terminals	9/25
8WH fuse terminals		8WA through-type terminals with	0.40.0
8WH isolating blade terminals		soldered and plug-in connection	
8WH isolating terminals	7/11	8WA measuring transformer terminals	
8WH two-tier terminals		8WA transformer terminals	9/32
8WH two-tier terminals with isolating	7/15		
function/isolating blade		Section 10	
8WH diode terminals		Accessories for 8WA Terminal Blocks	
8WH two-tier diode terminals	7/18	Accessories for labeling system	
8WH high-current terminals		Standard labeling system	10/3
8WH shield terminals	7/24	Mounting accessories	10/5

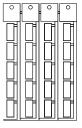
Terminal Blocks Labeling Plates for Ink Plotter System

8WA1/8WH

Labeling accessories:

Labeling plates for modular terminals, 1 frame = 68 plates

Equipment identification labels, 1 frame = 20 labels



Description	Inscription area/color W × H	Order No.	List Price \$	Price Unit (PU)	Order Multiples
	mm			Labels	Labels
8WA blank labeling plates (plotter inscription)				
Labeling plates					
for 8WA1 and 8WA2 individually detachable	5×7 , white 5×10 , white	8WA8 850-2AY 8WA8 851-2AY		100 100	1020 1020
for 8WA1 singly, for 8WA2 together to be used in grid pattern					
Terminal size 2.5 mm ²	5 × 10	8WA8 854-2AY		100	1260
for 8WA2 from terminal size 4 mm ²	6 × 7	8WA8 853-2AY		100	1080
	6 × 10	8WA8 855-2AY		100	1080
Equipment identification labels	20×9 , white	3TX4 210-0R		100	380

Description	Inscription area/color Width	Order No.	List Price \$	Price Unit (PU)	Order Multiples
	mm			Labels	Labels
8WA blank labeling plates (plotter inscription)				
Labeling plates					
Front (Top)					
Individually detachable	4.2	8WH8 112-1AA05		100	1024
	5.2 and 6.2	8WH8 112-2AA05		100	1400
	8.2, 10 and 15	8WH8 112-4AA05		100	1000
Flat (Side)					
Individually detachable	4.2, 5.2, 6.2, 8.2, and 10	8WH8 113-1AA05		100	2000
	15	8WH8 113-6AA05		100	1080

Computer labeling system for individual inscription of:

• Labeling plates for terminal blocks

Device labeling plates

• Label plates for individual wires

Obtain from:

Murrplastik Systems, Inc. North American Operations 2367 North Penn Road, Suite 200 Telephone: 877-340-3444
Fax: 215-822-7626
E-Mail: cablemgmt@murrplastik.com
Internet: www.murrplastik.com

8WA and 8WH Labeling Plates per Frame					
8WA Labeling Plates		8WH Labeling Plates			
Order No.	Labels per Frame	Order No.	Labels per Frame		
8WA8 850-2AY, 8WA8 851-2AY ¹)	68	8WH8 112-1AA05, 8WH8 112-4AA05	64		
8WA8 854-2AY	84	8WH8 112-2AA05	88		
8WA8 853-2AY, 8WA8 855-2AY	72	8WH8 113-1AA05	mixed		
3TX4 210-0R	20	8WH8 113-6AA05	19		

¹⁾ Not suitable for two-tier terminals (lower tier); push-on terminals: 8WA1 010–1PQ00, 8WA1 808, 8WA1011-1DQ10 and 8WA1011-1DS10.

Terminal Blocks

Special Label Instructions

8WA1/8WA2

Description

8WA8848... 8WA8847... labels are used when special label inscriptions are required. See page 12/5 for Special Label Order Form.

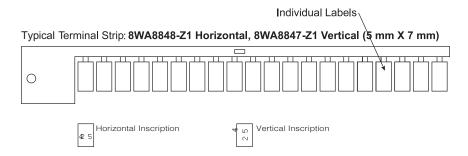
Ordering information

- Select catalog number required for your order
- Type legibly the catalog no. and quantity in the area provided. The printed, legible inscription must be exactly how it is to appear on the completed labels.

NOTE: If the form selected is being completed by someone other than the end user, please make sure that the end user

reviews the layout before submitting the form to customer service.

- Fax completed forms to: Siemens Customer Service FAX 800-547-5864
- Lead time. Typical lead time is five (5) working days from the time customer service receives a completed and approved order form.



Note: Special Labeling Plates are sold in multiples of 100 labels I.E. 100, 200,..., etc. Orders cannot be placed in strips.

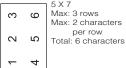
Selection data

Label dimensions ¹) mm	Strips per order	Labels per strip	Rows per label	Characters per label	Inscription format	Order No.	List Price \$	Order Multiples Labels
5 x 7 mm 5 x 7 mm	5 5	20 20	2	6 6	Horizontal Vertical	8WA8 848-Z1 8WA8 847-Z1		100 100

Horizontal 8WA8848-Z1

1 2 Max: 2 rows Max: 3 characters per row Total: 6 characters

Vertical 8WA8847-Z1



Vertical inscription 8WA8 847-mm (100 labels)

Inscription as required (100 labels)

Z1 (5 mm / 7 mm)

Horizontal inscription 8WA8 848-mm (100 labels)

Z1 (5 mm / 7 mm)

Z1 (5 mm / 7 mm)

Z1 (5 mm / 7 mm)

Without inscription 8WA8 848-mm (100 labels)

2AY (100 labels)

2AY (100 labels)

1) 25.4 mm = 1.00 inch.

8WA1/8WA2

SIEMENS

Special 8WA884... Label inscriptions (Label Size 5 mm x 7 mm - 100 labels)

Order Form

Account No. Date										
Distributor										
Address										
City, State/Zip Code										
ontact Person Purchase Order No.										
elephone () Requested Ship Date										
AX () Siemens Order No.										
rpe or print legibly in areas below exactly how the information is to appear on the 8WA884Labels	e or print legibly in areas below exactly how the information is to appear on the 8WA884Labels									
8WA884 - Z1										
Qty										
Note: Qty 1 = 100 labels with markings per this page only.										
Oty 2 = 200 labels with										
markings per this page I.E. 1,2,3,,100 (Twice)										

 $\textbf{REPRODUCE THIS FORM BEFORE COMPLETING.} \ \textbf{FAX completed form to: Customer Service at 800-547-5864.}$

Terminal Blocks

Notes

		Introduction
Contents	Pages	A
3SE International (IEC) Limit Switches		S & S
3SE5 General data		
Overview	3/4 - 13/9	
3SE5 plastic enclosures		Plastic, 31 mm
3SE5, selection and ordering data, 31 mm width	15 - 13/18 19 - 13/22	[Singles]
3SE5 metal enclosures		Plastic, 50 mm
3SE5, selection and ordering data, 31 mm width	31 - 13/34 35 - 13/38 39 - 13/41	Plastic, 90 mm
3SE5 metal enclosures, compact design 3SE5, selection and ordering data	45 - 13/46	Metal, 40 mm
3SE5 open type design 3SE5, selection and ordering data	13/47	9
3SE5 accessories and spare parts 3SE5, selection and ordering data	48 - 13/50	2 .
3SE5 support information		M . 1 50
Technical specifications. Configuration - actuation and operating travel	52 - 13/57 58 - 13/60	Metal, 56 mm
3SE03 North American (NEMA) Limit Switches		3SE5, Open-type
Plug-in and NEMA 6P Submersible Overview Technical specifications, modular plug-in and NEMA Type 6P submersible Ordering and selection data: Modular, plug-in metal housing	13/63	Control of the contro
NEMA type 6P submersible, prewired cable NEMA type 6P submersible, prewired receptacle Modular, Plug-in and NEMA 6P sumbersible as components. Levers for plug-in and NEMA type 6P submersible	13/65 13/66 13/67 68 - 13/69 13/70	3SE5, Compact Design
Metal Enclosure		100 (\$10) 1000 1700 1700
Ordering and selection data	74 - 13/75 13/75	3SE03, Modular Plug-in

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Design



Plug-in



3SE03, Metal Enclosure

Introduction

Contents	Pages
3SE Mechanical Safety	
3SE7 Cable-operated Switches Overview, technical data and travel diagrams Selection and ordering data13 Dimension drawings	/77 - 13/79
3SE5 interlock switches with separate actuator	
Overview. 3SE5, selection and ordering data, plastic	/82 - 13/83 /84 - 13/85 13/86 13/87 13/88 13/89 /90 - 13/91 13/92
3SE5 interlock switches with solenoid locking	
General data	13/95 13/96 13/97 13/98 13/99
3SE5 / 3SE2 hinge switches	
General data 3SE5, selection and ordering data, plastic 3SE5, selection and ordering data, metal 3SE2, selection and ordering data, plastic with integrated hinge 3SE5, contact blocks and operating travel diagrams 3SE5, dimension drawings 3SE2, technical data 3SE2, contact blocks and operating travel diagrams 3SE2, dimension drawings	13/102 13/103 13/104 13/105 13/105 13/106 13/106
3SE6 RFID Non-Contact Safety Switches	
General data and system overview	13/109
3SE6 magnetic monitoring systems	
General data	13/112 13/113 13/114
3SB3 Two-hand Control. 3SB3, selection and ordering data	13/116



3SE



Metal, 40 mm



Interlock, Metal, 54 mm



Hinge, Plastic, 31 mm



3SE6 RFID Switch



3SE6, Magnet System



3SB3 Two-Hand Control

Introduction **Contents Pages** Safety Relays **SIRIUS 3SK1 Safety Relays** Selection and ordering data......13/120 - 13/125 3SK1 Cross reference from 3TK28......13/127 - 13/128 SIRIUS 3TK28 Safety Relays 3RK3 Modular Safety System 3TK2845 Selection and ordering data......13/147 - 13/150 **************** 3RK3

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3

4

5

6

___ 8

9

11

Introduction

Overview















3SE5 23., 3SE5 21.

3SE5 13., 3SE5 11.,

3SE5 12.,

3SE5 16.

3SE5 232, 3SE5 212,

3SE5 132, 3SE5 112,

	3SE5 21. 3SF1 2.4	3SF1 244	3SE5 11., 3SF1 114	3SF1 124		3SE5 212, 3SF1 2.4	3SE5 112, 3SF1 1.4
	Position swit	ches, standar	d			Safety hinge	switches
Enclosure							
Plastic	1	✓	/	_	_	1	1
Metal	1	_	/	1	✓	1	1
Dimensions (W x H x D) in mm	$31 \times 68 \times 33$	50 × 53 × 33	40 × 78 × 38	56 × 78 × 38	56 × 100 × 38	$31 \times 68 \times 33$	$40 \times 78 \times 38$
Degree of protection	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP65, IP66/IP67	IP66/IP67
Standards	Mounting and	Operating	Mounting and	Operating	Operating	Mounting and	Mounting and
IEC 60947-5-1	operating points acc. to EN 50047	points acc. to EN 50047	operating points acc. to EN 50041	points acc. to EN 50041	points acc. to EN 50047	operating points acc. to EN 50047	operating points acc. to EN 50041
Approvals	CE, UL, CSA, C	CCC	CE, UL, CSA, (CCC		CE, UL, CSA, (CCC
Contact blocks							
2 slow-action contacts	1 NO + 1 NC, 2	2 NC	1 NO + 1 NC,	2 NC	_	1 NO + 1 NC	
2 snap-action contacts	1 NO + 1 NC		1 NO + 1 NC		_	1 NO + 1 NC	
• Short stroke	1 NO + 1 NC		/		_	√	
• With 2 × 2 mm contact gap	1 NO + 1 NC		/		_	/	
3 slow-action contacts • With make-before-break	1 NO + 2 NC, 2 1 NO + 2 NC	2 NO + 1 NC	1 NO + 2 NC, 2 1 NO + 2 NC	2 NO + 1 NC	_	1 NO + 2 NC 1 NO + 2 NC	
3 snap-action contacts	1 NO + 2 NC		1 NO + 2 NC		_	1 NO + 2 NC	
2 x (2 or 3 contacts)	_		_		✓	_	
Special features							
LED status display	✓		✓		—	✓	
Increased corrosion protection	✓		✓		✓	✓	
Explosion protection (ATEX)	_		✓		✓	✓	
ASIsafe integrated	✓		✓		_	✓	
Electrical specifications							
Insulation voltage U_i	400 V		400 V			400 V	
Conventional thermal current I_{the}	6 A/10 A (3-/2-	pole)	6 A/10 A (3-/2-	pole)		6 A/10 A (3-/2-	pole)
Connections							
Cable entry		$2 \times M20 \times 1.5$	$1 \times M20 \times 1.5$	$3 \times M20 \times 1.5$	$1 \times M20 \times 1.5$	$1 \times M20 \times 1.5$	$1 \times M20 \times 1.5$
M12 connector socket, 4-, 5- or 8-pole	✓	✓	✓	✓	✓	✓	✓
Connector socket, 6-pole + PE	_	_	✓	1	_	_	_
Actuators							
Rounded plungers and roller plungers	✓		✓			_	
Roller and angular roller levers	✓		✓			_	
Spring rod	✓		✓			_	
Twist levers and rod actuators	✓		✓			_	
Fork lever	_		✓			_	
Hinge switches	_		_			✓	
Page Complete units Modular system Ambient temperature –40 °C ASIsafe ATEX	13/10, 13/27 13/13, 13/29 13/23, 13/42 on-line on-line	13/19 13/21 13/23 on-line on-line	13/15, 13/31 13/17, 13/33 13/26, 13/43 on-line on-line	13/35 13/37 13/43 on-line on-line	13/39 13/40 13/43 — on-line	13/102 — on-line	13/103 — on-line on-line

[✓] Available

[—] Not available

Introduction

	a.a.a.	Inches	G Family C		
3SE5 413, 3SE5 423	3SE5 250	3SE5 232, 3SE5 242, 3SF1 2.4	3SE5 112, 3SE5 122, 3SF1 1.4	3SE5 322, 3SE5 312, 3SF1 3.4	3SE63

	3SE5 423		3SE5 242, 3SF1 2.4	3SE5 122, 3SF1 1.4	3SE5 312, 3SF1 3.4	
	Compact design	Open-type	Safety switch separate act		Safety switches with solenoid interlocking	RFID safety switch
Enclosure						
Plastic	_	1	1	1	✓	✓
Metal	1		1	1	✓	_
Dimensions (W x H x D) in mm	30 × ×, 40 × ×	30 × 48.5 × 20	$31 \times 68 \times 33$, $50 \times 53 \times 33$	40 × 78 × 38, 56 × 78 × 38	54 × 185 × 44	25 × 91 × 22
Degree of protection	IP66/IP67	IP10 or IP20	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP69K
Standards IEC 60947-5-1	_	Mounting and operating points acc. to EN 50047	acc. to	Mounting acc. to EN 50041	EN 1088	Category 4 acc. to ISO 13849-1, PL e acc. to ISO 13849-1, SIL 3 acc. to IEC 61508
Approvals	CE, UL, CSA	_	CE, TÜV, UL, C	CSA, CCC	CE, TÜV, UL, CSA, CCC	CE, TÜV
Contact blocks						
2 slow-action contacts	_	1 NO + 1 NC	1 NO + 1 NC		_	_
2 snap-action contacts • Short stroke	1 NO + 1 NC —	1 NO + 1 NC	_		_	_
• With 2 × 2 mm contact gap	_	✓				
3 slow-action contacts	_	1 NO + 2 NC	1 NO + 2 NC		_	_
With make-before-break	_	1 NO + 2 NC				
3 snap-action contacts	_	1 NO + 2 NC	_		_ (4.10, 0.10)	_
6 slow-action contacts	_	_	_		2 × (1 NO + 2 NC)	_
Special features			,		,	,
LED status display	_	_	1		/	√
Increased corrosion protection	_	_	✓ .		✓	✓
Explosion protection (ATEX)	_	_	✓		_	_
ASIsafe integrated	_	_	✓		✓	_
Electrical specifications						
Insulation voltage U_i	400 V	400 V	400 V		400 V	_
Conventional thermal current I_{the}	10 A	6 A	6 A		6 A	_
Connections Cable entry	_	_		1 × M20 × 1.5, 3 × M20 × 1.5	3 × M20 × 1.5	_
M12 connector socket, 4-, 5- or 8-pole	✓	_	✓	✓	✓	✓
Molded cables	1	_	_	_	_	_
AS-Interface	_	_	1	1	✓	_
Actuators						
Plungers, twist levers	✓	✓	_		_	_
Separate actuators	_	_	✓		✓	_
Page						
Complete units	13/46	13/47	13/82	13/85	13/95	_
Modular system	_	_	_	_	_	13/110
ASIsafe	_	_	on-line	on-line	on-line	
ATEX	_	_	on-line	on-line	_	_

[✓] Available

[—] Not available

SIRIUS 3SE5 International Limit Switches

General Data

Overview

Position switches in the innovative SIRIUS 3SE5 series are modern in design, compact, modular and simple to connect.

Complete units

Popular versions of the position switches in standard enclosures are available as complete units.



Position switches with plastic and metal enclosures

Modular system

The 3SE5 series features a new modular system comprising different sizes of the basic switch and an actuator which must be ordered separately. Thanks to the modular construction of the switch the user can select the right solution for his application from numerous versions and install it himself in a very short time. The short delivery times of the modules enable fast replacement and thus ensure high plant availability.



Examples of selection options in the modular system

Design

Enclosure sizes

All enclosure versions have an integrated chlorinated rubber diaphragm for high functional safety in cold and aggressive environments.

The 3SE5 switches are available in five different enclosure sizes with 2 or 3 contacts and with the XL enclosure:

- Open-type position switch IP20 or IP10
- Plastic enclosures according to EN 50047 (31 mm wide), IP65, 1 cable entry
- Plastic enclosures (50 mm wide), IP66/IP67, 2 cable entries
- Metal enclosures according to EN 50047, (31 mm wide), IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041 (40 mm wide), IP66/IP67, 1 cable entry
- Metal enclosures (56 mm wide), IP66/IP67, 3 cable entries
- XL metal enclosures with 4 to 6 contacts, 56 mm wide, IP66/ IP67, 3 cable entriesEnclosure versions

Various basic switches can be selected for the 3SE5 series:

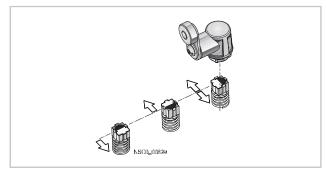
- With contact blocks with two or three contacts (screw terminals) designed as slow-action or snap-action contacts; the slow-action contacts also make-before-break
- Optional LED status display
- With mounted four or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- With increased corrosion protection
- Versions for operating temperature to -40° C
- Metal enclosures for explosion protection (ATEX)
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs

Actuator variants

All operating mechanisms can be rotate around the axis in increments of 22.5°. The following actuator variants are available:

- Standard, rounded and roller plungers
- Roller and angular roller levers
- Spring rods
- Twist levers and rod actuators
- Fork levers with twist actuator

The actuator rollers are available with various materials and diameters.



Twist actuators for twist levers and rod actuators, with setting of switching to right, left or right/left (standard for all twist actuators except version for fork levers)

General Data

Optional LED indicators

LED indicators available for all enclosure sizes



The enclosure versions can be supplied with an LED signaling indicator (1 \times green + 1 \times yellow). This is the first time that optical signaling equipment is also available for small standard enclosures according to EN 50047. The LED signaling indicators are available in all common voltages (24 V DC and 230 V AC).

Additional contacts

Exchangeable two and three-pole switching blocks for all enclosure sizes



The three-pole switching block (2 NC, 1 NO) in snap-action and slow-action is regularly available for all enclosure forms. It offers more switching through redundant shutdowns (2 NC contacts) with simultaneous signaling (1 NO contact). The same installation space is required as for a two-pole switching block.

Contact reliability

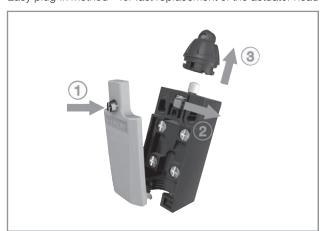
The new contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e. g. 1 mA at 5 V DC.

Positive opening →

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

Mounting

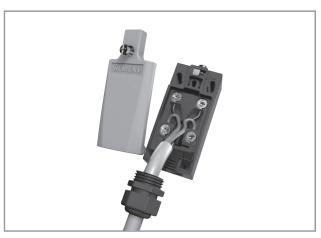
Easy plug-in method – for fast replacement of the actuator head



- (1) Open cover
- (2) Actuate locking lever
- (3) Replace the head (turnable by 16 x 22.5°)
- (4) Lock and close the cover

Fast connection method

For plastic enclosure with a width of 31 mm



These position switches can be wired quickly and easily as an added customer benefit. The connecting cable is first connected to the terminals of the contact block and then guided through a slit into the cable gland opening. The time saved through this new connection method is approx. 20 to 25 %.

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SIRIUS 3SE5 International Limit Switches

General Data

Benefits

The 3SE5 position switches differ from the previous series through the following new characteristics:

- The modular design of the product range allows a number of versions with a smaller number of bearing types for enclosures and operating mechanisms.
- All actuators can be turned around the axis in increments of 22.5° (see picture on page 13/6).
- Rounded and roller plungers according to EN 50041 with 3 mm overtravel (total travel 9 mm) for greater tolerance when switching
- All enclosure sizes now also including the small enclosure 31 mm wide – are optionally available with an LED signaling indicator (see picture on page 13/7).
- All enclosure versions have an integrated chlorinated rubber diaphragm (high functional safety in cold and aggressive environments).
- All contact blocks are replaceable (see page 13/49).
- The three-pole contact blocks are available for all enclosure sizes (see picture on page 13/7).
- Elements with 1 NO + 2 NC slow-action contacts with makebefore-break and 2 NO + 1 NC
- The short-stroke contact block 1 NO + 1 NC improves the precision of the switching operation through a reduced actuation path.
- The contact block with 1 NO + 1 NC snap-action contacts with 2 x 2 mm contact opening is suitable for simultaneous disconnection and signaling, particularly in the elevator industry
- NEW: XL enclosures for accommodating two 2- or 3-pole contact blocks
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting (see picture on page 13/7).
- The ASIsafe electric component is integrated for the versions with the AS-Interface connection (see on-line); an additional adapter is not required.

Application

With the standard position switches, mechanical positions of moved machine parts are converted into electrical signals. Through their modular and uniform design and large number of versions, the devices can meet practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. And many different actuator versions are available to match the mechanical configuration of the moved machined parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw-glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to the IEC standard 60947-5-1 with the symbol $_{\rm q}$.

Category 2 according to ISO 13849-1 (EN 954-1) can be attained with 3SE5 position switches with $_{\rm Q}$, and category 3 or 4 when using an additional position switch, if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges. The operating mechanisms (actuators) must also be connected to the enclosure by keyed techniques. The corresponding operating mechanisms are marked in the catalog with $_{\rm Q}$.

Contacts for each application

- Snap-action contacts: NC and NO contacts switch simultaneously – regardless of the actuating speed (v_{min} = 0.01 m/s) and contact erosion.
- Slow-action contacts: Difference in travel between "NC contact opens" and "NO contact closes"; the switching speed is the same as or proportional to the actuating speed (v_{min} = 0.4 m/s).
- Slow-action contacts with make-before-break: e.g. suitable for adding a second function to a sequence control.

Operating mechanisms for each application

Standard, rounded and roller plungers

- Operation in direction of the plunger axis or in case of roller plunger with bar at right angles to the plunger axis
- The roller plunger is recommended for lateral actuation and relatively long overtravel.

Roller and angular roller levers

 For actuators made of finely ground steel in the form of cams, straight-edges (approach angle 30°) or cam disks

Spring rod

- Can be used for undefined actuations and changing starting conditions
- Starting from any direction is possible

Twist levers and rod actuators

- For a high starting speed (v = 1.5 m/s)
- Variety of starting options
- Insensitive to oil, grinding dust and coarse-grained material
- Adjustment of the lever in increments of 10°
- Can be adjusted with left or right switching

Fork lever

- Switchable in two directions
- Latching actuator
- For reciprocating movements

Limit Switches SIRIUS 3SE5 International Limit Switches

General Data

Options

On the following pages you will find selection tables for complete units as well as components of the modular system.

Complete units

Modular system

The difference between units is indicated in the selection and ordering data by gray backgrounds.

Using the modular system you can assemble switch variants which are not available as complete units. Each complete unit can also be supplied as a module.

A basic switch for the modular system comprises an enclosure with a contact block and a cover. Among the basic switches the following versions, for example, can be selected:

- Basic enclosure with teflon plunger
- Version with increased corrosion protection
- Version with 2 LEDs

- Version with M12 connector socket or 6-pole + PE
- Version with M12 connector socket and with 2 LEDs

For the plastic enclosures with a width of 31 and 50 mm the basic switches are designed as complete units with rounded plunger (according to standard).

Online configurator

The online configurator helps you not only to select and order the right position switch but also to create complete product documentation.

- · Product data sheets
- Dimensional drawings
- Operating travel diagrams
- CAD data in 2D and 3D model images
- Ordering data
- Product photos

www.siemens.com/sirius/configurators

Complete units

Ordering example

Required:

- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered:

	Version	Complete units	
		Order No.	
Complete units	• Enclosure width 31 mm		
	Angular roller levers		
	With metal lever and plastic roller 13 mm		
Tanada a	Slow-action contacts 1 NO + 1 NC	3SE5 232-0BF10	

Modular system

Ordering example 1

Required:

- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered separately:

	Version	Modular system	
		Order No.	
Basic switches	 Enclosure width 31 mm 		
	With teflon plunger Slow-action contacts 1 NO + 1 NC	3SE5 232-0BC05	
		+	
Operating mech	nanisms		
	Angular roller levers Metal lever, plastic roller	3SE5 000-0AF10	

Ordering example 2

Required:

- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Twist lever, high-grade steel lever and plastic roller

To be ordered separately:

	Version	Modular system
		Order No.
Basic switches	• Enclosure width 31 mm	
Jan San	With teflon plunger	
Samuel S	Slow-action contacts 1 NO + 1 NC	3SE5 232-0BC05
		+
Twist actuators		
	Twist actuators	3SE5 000-0AK00
	Twist levers	
8	High-grade steel lever, plastic roller	3SE5 000-0AA31

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SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 31 mm acc. to EN 50047

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP65 \cdot Cable entry M20 \times 1.5¹⁾

	Version	Contacts	LEDs		DT	Complete units		PU (UNIT,	PS
						Configurator	()	SET, M)	
						Order No.	Price per PU		
Complete uni	ts ²⁾ • Enclosure width 31 mm						10		
حام	Rounded plungers, type B, ac	c. to EN 5004	7						
8	With teflon plunger								
Editation	Slow-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 232-0BC05		1	1 un
	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 232-0CC05		1	1 un
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	\odot	Α	3SE5 232-0HC05		1	1 un
Rounded	Snap-action contacts • Short stroke, integrated ³⁾	1 NO + 1 NC	_	→	В	3SE5 232-0FC05		1	1 un
Ü	Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	_	€	В	3SE5 232-0GC05		1	1 un
	Slow-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 232-0KC05		1	1 un
	Snap-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 232-0LC05		1	1 un
	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	>	3SE5 232-0MC05		1	1 un
	Slow-action contacts	2 NO + 1 NC	_	€	Α	3SE5 232-0PC05		1	1 un
all a	With increased corrosion protection	on							
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 232-0BC05-1CA0		1	1 un
AND ARCHY	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 232-0CC05-1CA0		1	1 un
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 232-0KC05-1CA0		1	1 un
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 232-0LC05-1CA0		1	1 un
Vith increased orrosion	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 232-0MC05-1CA0		1	1 un
rotection	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 232-0PC05-1CA0		1	1 un
	With M12 connector socket, 4-pole	(250 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 234-0BC05-1AC4		1	1 un
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	\odot	Α	3SE5 234-0HC05-1AC4		1	1 un
	Slow-action contacts	2 NC	_	\odot	В	3SE5 234-0KC05-1AE0		1	1 un
	Snap-action contacts	2 NC	_	\odot	Α	3SE5 234-0LC05-1AE0		1	1 un
ale.	With 2 LEDs, yellow/green								
	Slow-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 232-1KC05		1	1 un
Shirten I	Snap-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 232-1LC05		1	1 un
***	Slow-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 232-3KC05		1	1 un
	Snap-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 232-3LC05		1	1 un
Vith 2 LEDs	With M12 connector socket, 5-pole and 2 LEDs	(125 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	24 V DC	\odot	В	3SE5 234-1BC05-1AF3		1	1 un
	Snap-action contacts	1 NO + 1 NC	24 V DC	\odot	В	3SE5 234-1CC05-1AF3		1	1 un

Tor online configurator see www.siemens.com/sirius/configurators .

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ A cable gland with seal must be used with the quick-connect method.

²⁾ Popular versions.

³⁾ Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts \cdot Degree of protection IP65 \cdot Cable entry M20 \times 1.5 $^{1)}$

	Version	Contacts	LEDs	DT	Complete units		PU (UNIT.	PS*
					Configurator	<u> </u>	SET, M)	
					Order No.	Price per PU		
Complete uni	ts ²⁾ • Enclosure width 31 mm							
A	Roller plungers, type C acc. to	o EN 50047						
All De	With plastic roller 10 mm							
8	Slow-action contacts	1 NO + 1 NC	_	→ B	3SE5 232-0BD03		1	1 unit
Annalista S	Snap-action contacts • Integrated ³⁾	1 NO + 1 NC	_	→ A	3SE5 232-0HD03		1	1 unit
Roller plunger	Snap-action contacts • Short stroke, integrated ³⁾	1 NO + 1 NC	_	Э В	3SE5 232-0FD03		1	1 unit
rioner pluriger	Slow-action contacts	1 NO + 2 NC	_	Э В	3SE5 232-0KD03		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→ ▶	3SE5 232-0LD03		1	1 unit
	Actuator head rotated by 90°							
	Snap-action contacts	1 NO + 2 NC	_	Э В	3SE5 232-0LD03-1AH0		1	1 unit
	With M12 connector socket, 4-pole	e (250 V, 4 A)						
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	Э В	3SE5 234-0HD03-1AC4		1	1 unit
	Roller plungers with central fi	ixing						
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	→ В	3SE5 232-0HD10		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	→ В	3SE5 232-0KD10		1	1 unit
Roller plunger with central fixing	g							
	Roller levers, type E acc. to E	N 50047						
	With metal lever and plastic roller							
	Slow-action contacts	1 NO + 1 NC	_	→ ▶	3SE5 232-0BE10		1	1 unit
98	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	→ A	3SE5 232-0HE10		1	1 unit
Stationes	Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 232-0KE10		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→ B	3SE5 232-0LE10		1	1 unit
	With M12 connector socket, 4-pole			<u> </u>	00E3 202 0EE10		'	
Roller lever	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	Э В	3SE5 234-0HE10-1AC4		1	1 unit
_	Angular roller levers	1110 1 1110		<u> </u>	COLO ZOT CITETO TACT		'	
	With metal lever and plastic roller	13 mm						
	Slow-action contacts	1 NO + 1 NC	_	→ ▶	3SE5 232-0BF10		1	1 unit
306	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	€ ▶	3SE5 232-0HF10		1	1 unit
The state of the s	Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 232-0KF10		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→ B	3SE5 232-0LF10		1	1 unit
	chap dotton contacts	1110 1 2 110		<u> </u>	33E0 E0E 0E1 10			1 GIIIL

[©] For online configurator see www.siemens.com/sirius/configurators .

Angular roller

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ A cable gland with seal must be used with the quick-connect method.

²⁾ Popular versions.

³⁾ Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts \cdot Degree of protection IP65 \cdot Cable entry M20 \times 1.5¹⁾

	Version	Contacts	LEDs	DT	Complete units		PU (UNIT,	PS*
					Configurator	₹ <u>`</u> }	SET, M)	
					Order No.	Price per PU		
Complete units	s ²⁾ • Enclosure width 31 mm							
1	Spring rods							
- 1	Length 142.5 mm, with plastic plun	•						
- 1	Snap-action contacts, integrated ³⁾	1 NO + 1 NC		A	3SE5 232-0HR01		1	1 unit
ı	With M12 connector socket, 4-pole	, ,		_				
4	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	В	3SE5 234-0HR01-1AC4		1	1 unit
	Twist levers, type A acc. to EN	1 50047						
9.	With metal lever 21 mm and plastic							
Spring rod	Slow-action contacts	1 NO + 1 NC	_	→ ►	3SE5 232-0BK21		1	1 unit
Spring rod	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	→ ►	3SE5 232-0HK21		1	1 unit
9_	Slow-action contacts	1 NO + 2 NC	_	Э В	3SE5 232-0KK21		1	1 unit
②	Snap-action contacts	1 NO + 2 NC	_	Э В	3SE5 232-0LK21		1	1 unit
	With M12 connector socket, 4-pole							
SHOMEN'S	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	Э В	3SE5 234-0HK21-1AC4		1	1 unit
	With metal lever 35 mm and plastic	roller 19 mm						
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	Э В	3SE5 232-0HK15		1	1 unit
Twist lever								
	Twist levers, adjustable length	1						
9	With metal lever with grid hole and plastic roller 19 mm							
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC		→ A	3SE5 232-0HK60		1	1 unit
DI .	With metal lever and plastic roller 1			9 A	33E3 232-0HK00		ı	- I UIIIL
8	Slow-action contacts	1 NO + 1 NC	_	В	3SE5 232-0BK50		1	1 unit
18	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	>	3SE5 232-0HK50		1	1 unit
5	Snap-action contacts	1 NO + 2 NC		В	3SE5 232-01K50		1	1 unit
	With M12 connector socket, 4-pole				COLO LOL CLICO		'	
Twist lever,	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	В	3SE5 234-0HK50-1AC4		1	1 unit
adjustable length								
I	Rod actuators							
1	With aluminum rod, length 200 mm			_				
1	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	В	3SE5 232-0HK80		1	1 unit
	With plastic rod, length 200 mm							
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	•	3SE5 232-0HK82		1	1 unit
	With M12 connector socket, 4-pole			5	0055 004 017500 440			4
E20-201	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	В	3SE5 234-0HK82-1AC4		1	1 unit
Rod actuator								

To ronline configurator see www.siemens.com/sirius/configurators .

Note:

If the device you require is not available as a complete unit, see "Modular System", page 13/13.

<sup>Positive opening according to IEC 60947-5-1, Appendix K.

A cable gland with seal must be used with the quick-connect method.</sup>

²⁾ Popular versions.

³⁾ Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 31 mm acc. to EN 50047

Modular system

2 or 3 contacts \cdot Degree of protection IP65 \cdot Cable entry M20 \times 1.5¹⁾

	Version	Contacts	LEDs		DT	Modular system		PU (UNIT,	PS*
						Configurator	É	SÈT, M)	
						Order No.	Price per		
Basic switches	s • Enclosure width 31 mm (with	า rounded plu	ınger ²⁾)						
Alexander of the same of the s	With teflon plunger								
2	Slow-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 232-0BC05		1	1 unit
Taleances	Snap-action contacts	1 NO + 1 NC	_	\odot		3SE5 232-0CC05		1	1 unit
	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	\odot		3SE5 232-0HC05		1	1 unit
Basic switch	Snap-action contacts • Short stroke, integrated ³⁾	1 NO + 1 NC	_	€	В	3SE5 232-0FC05		1	1 unit
Dasic Switch	Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	_	→	В	3SE5 232-0GC05		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 232-0KC05		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot		3SE5 232-0LC05		1	1 unit
	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	Α	3SE5 232-0MC05		1	1 unit
	Slow-action contacts	2 NO + 1 NC	_	€	Α	3SE5 232-0PC05		1	1 unit
A COL	With increased corrosion protection	on ⁴⁾							
	Slow-action contacts	1 NO + 1 NC	_	€	В	3SE5 232-0BC05-1CA0		1	1 unit
EMILARCHS	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 232-0CC05-1CA0		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	€	В	3SE5 232-0KC05-1CA0		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	€	В	3SE5 232-0LC05-1CA0		1	1 unit
With increased corrosion	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	В	3SE5 232-0MC05-1CA0		1	1 unit
protection	Slow-action contacts	2 NO + 1 NC	_	→	В	3SE5 232-0PC05-1CA0		1	1 unit
حلح	With M12 connector socket, 4-pole	, ,		_					
	Slow-action contacts	1 NO + 1 NC	_	€	В	3SE5 234-0BC05-1AC4		1	1 unit
Statute	Snap-action contacts, integrated ³⁾	1 NO + 1 NC	_	→	Α	3SE5 234-0HC05-1AC4		1	1 unit
	Slow-action contacts	2 NC	_	→	В	3SE5 234-0KC05-1AE0		1	1 unit
₩	Snap-action contacts	2 NC	_	→	Α	3SE5 234-0LC05-1AE0		1	1 unit
With M12 socket	With 2 LEDs, yellow/green								
	Slow-action contacts	1 NO + 2 NC	24 V DC	€	В	3SE5 232-1KC05		1	1 unit
9.	Snap-action contacts	1 NO + 2 NC	24 V DC	⊕	В	3SE5 232-1LC05		1	1 unit
***	Slow-action contacts	1 NO + 2 NC	230 V AC	⊕	В	3SE5 232-3KC05		1	1 unit
	Snap-action contacts	1 NO + 2 NC	230 V AC	⊕	В	3SE5 232-3LC05		1	1 unit
AUL OLED	Shap-action contacts	1110 + 2110	200 V AC	٠	D	33L3 232-3L003		'	i uiiii
With 2 LEDs	With M12 connector socket, 5-pole and 2 LEDs	(125 V, 4 A)							
18	Slow-action contacts	1 NO + 1 NC	24 V DC	→	В	3SE5 234-1BC05-1AF3		1	1 unit
- Cartering	Snap-action contacts	1 NO + 1 NC		€	В	3SE5 234-1CC05-1AF3		1	1 unit
Ų.	onap-action contacts	TINO + TINO	24 V DO		Ь	35E3 254-10003-1A1 3		ı	i uiiit
With M12 socket and 2 LEDs			Not						

© For online configurator see www.siemens.com/sirius/configurators.

Note:

[→] Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

¹⁾ A cable gland with seal must be used with the quick-connect method.
2) For enclosures with widths of 31mm, the basic switch is a complete unit with rounded plungers.

³⁾ Subsequent replacement of contact blocks is not possible.

⁴⁾ Use corresponding high-grade steel lever.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 31 mm acc. to EN 50047

	Version	Diameter		DT	Modular system	PU (UNIT,	PS
		mm			Order No. Price po		
Operating med	chanisms						
A	Roller plungers, type C acc. to EN 50047						
	Plastic rollers	10	\odot		3SE5 000-0AD03	1	1 un
	High-grade steel rollers	10	\odot	В	3SE5 000-0AD04	1	1 un
Roller plunger							
	Roller plungers with central fixing	40		_	2075 202 24742		
all the same of th	Plastic rollers	10	→		3SE5 000-0AD10	1	1 ur
	High-grade steel rollers	10	\odot	В	3SE5 000-0AD11	1	1 ur
Mills a service I finding							
Vith central fixing	Roller levers, type E acc. to EN 50047						
	Metal lever, plastic roller	13	→		3SE5 000-0AE10	1	1 u
	Metal lever, high-grade steel roller	13	€		3SE5 000-0AE11	1	1 ui
	High-grade steel lever, plastic roller	13	€		3SE5 000-0AE12	1	1 ui
Roller lever	High-grade steel lever, high-grade steel roller	13	€		3SE5 000-0AE13	1	1 ui
Toller level	Angular roller levers				000000000000000000000000000000000000000		
0	Metal lever, plastic roller	13	→		3SE5 000-0AF10	1	1 ur
0	Metal lever, high-grade steel roller	13	€		3SE5 000-0AF11	1	1 ui
	High-grade steel lever, plastic roller	13	€		3SE5 000-0AF12	1	1 ur
Angular roller	High-grade steel lever, high-grade steel roller	13	€		3SE5 000-0AF13	1	1 ur
ever							
1	Spring rods (for switches with snap-action contacts only)						
I	Plastic plunger and high-grade steel spring:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)			•	3SE5 000-0AR01	1	1 u
	Length 76 mm (spring 23.5 mm, plunger 10 mm)			•	3SE5 000-0AR03	1	1 u
L	• Length 242.5 mm (spring 150 mm, plunger 50 mm))		В	3SE5 000-0AR04	1	1 ui
7	High-grade steel plunger and spring:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)			В	3SE5 000-0AR02	1	1 ur
Spring rod Fwist actuator	2						
	Twist actuators, plastic (without lever)						
			_		3SE5 000-0AK00		
19	Switching right and/or left, adjustable		€		0020 000 0AR00	1	1 ui
	Levers for twist actuators		→		OCEO GOO GAILLOG	1	1 ui
wist actuator		047				1	1 ur
wist actuator	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller	19	→	•	3SE5 000-0AA21	1	1 uı
wist actuator	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller	19 19	→	► B	3SE5 000-0AA21 3SE5 000-0AA22	1 1	1 uı 1 uı
wist actuator	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing	19 19 19	→→→	► B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23	1 1 1	1 uı 1 uı 1 uı
4	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller	19 19 19 30	→→→	► B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25	1 1 1 1	1 ui 1 ui 1 ui 1 ui
wist actuator	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller	19 19 19	→→→	B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23	1 1 1	1 ui 1 ui 1 ui 1 ui 1 ui
4	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller	19 19 19 30 19	•••••	B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31	1 1 1 1 1	1 ui 1 ui 1 ui 1 ui 1 ui
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller	19 19 19 30 19	•••••	B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31	1 1 1 1 1	1 u 1 u 1 u 1 u 1 u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole	19 19 19 30 19	• • • • • •• • • • • • •	► B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA24	1 1 1 1 1 1	1 u 1 u 1 u 1 u 1 u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller	19 19 19 30 19 19		► B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA24	1 1 1 1 1 1 1	1 u 1 u 1 u 1 u 1 u 1 u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, high-grade steel roller	19 19 19 30 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA60	1 1 1 1 1 1 1	1 u 1 u 1 u 1 u 1 u 1 u 1 u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller	19 19 19 30 19 19 19		► B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA61 3SE5 000-0AA67	1 1 1 1 1 1 1 1	1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller	19 19 19 30 19 19 19 19 50 50		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA68	1 1 1 1 1 1 1 1 1 1 1 1 1	1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller High-grade steel lever, plastic roller	19 19 19 30 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA61 3SE5 000-0AA67	1 1 1 1 1 1 1 1	1 u 1 u 1 u 1 u 1 u 1 u 1 u 1 u 1 u 1 u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller	19 19 19 30 19 19 19 19 19 50 50 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA68 3SE5 000-0AA68	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 u 1 u 1 u 1 u 1 u 1 u 1 u 1 u 1 u 1 u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers, adjustable length Metal lever, plastic roller	19 19 19 30 19 19 19 19 19 50 50 19 19		▶ B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA68 3SE5 000-0AA62 3SE5 000-0AA63 3SE5 000-0AA63	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller	19 19 19 30 19 19 19 19 19 19 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA67 3SE5 000-0AA68 3SE5 000-0AA62 3SE5 000-0AA63 3SE5 000-0AA63	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 uri 1 uri
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, plastic roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller	19 19 19 30 19 19 19 19 50 50 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA62 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA63	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller	19 19 19 30 19 19 19 19 50 50 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA50 3SE5 000-0AA50 3SE5 000-0AA51 3SE5 000-0AA55 3SE5 000-0AA55	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 u u 1 u u
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, plastic roller Metal lever, roller with ball bearing Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller	19 19 19 30 19 19 19 19 50 50 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA62 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA63	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui 1 ui
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller Twist levers, adjustable length Metal lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller	19 19 19 30 19 19 19 19 19 50 50 19 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA68 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA50 3SE5 000-0AA50 3SE5 000-0AA51 3SE5 000-0AA55 3SE5 000-0AA57 3SE5 000-0AA57 3SE5 000-0AA57	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller Twist levers, adjustable length High-grade steel roller High-grade steel lever, high-grade steel roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Rod actuators	19 19 19 19 19 19 19 19 19 19 19 19 50 50 19 19 19 19 19 19 19 19 19 19 19 19 19		► B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA61 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA53 3SE5 000-0AA53 3SE5 000-0AA51 3SE5 000-0AA55 3SE5 000-0AA55 3SE5 000-0AA57 3SE5 000-0AA58 3SE5 000-0AA58 3SE5 000-0AA52 3SE5 000-0AA52 3SE5 000-0AA52	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur
wist lever	Levers for twist actuators Twist levers 21 mm, straight, type A acc. to EN 500 Metal lever, plastic roller Metal lever, high-grade steel roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers 30 mm, straight 1) Metal lever, plastic roller Twist levers, adjustable length, with grid hole Metal lever, plastic roller Metal lever, plastic roller Metal lever, rubber roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller Twist levers, adjustable length Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller Metal lever, plastic roller High-grade steel lever, plastic roller High-grade steel lever, plastic roller	19 19 19 30 19 19 19 19 19 50 50 19 19 19 19		▶ B B B B B B ▶ B B B B B B B B B B B B B B B B B B B	3SE5 000-0AA21 3SE5 000-0AA22 3SE5 000-0AA23 3SE5 000-0AA25 3SE5 000-0AA31 3SE5 000-0AA32 3SE5 000-0AA60 3SE5 000-0AA61 3SE5 000-0AA67 3SE5 000-0AA62 3SE5 000-0AA63 3SE5 000-0AA63 3SE5 000-0AA50 3SE5 000-0AA51 3SE5 000-0AA51 3SE5 000-0AA55 3SE5 000-0AA57 3SE5 000-0AA58 3SE5 000-0AA58 3SE5 000-0AA58	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur 1 ur

 $[\]begin{cal} \bigodot \end{cal}$ Positively driven actuator, necessary in safety circuits.

¹⁾ Can be clinch mounted (turned through 180°, rear of lever).

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/67 · Cable entry M20 × 1.5

2 or 3 contacts	· Degree of protection IP66/6	67 · Cable entry	/ M20 × 1.5	5				
	Version	Contacts	LEDs	D'	Complete units		PU (UNIT,	PS
					Configurator	©	SET, M)	
					Order No.	Price per PU		
Complete units	s ¹⁾ • Enclosure width 40 mm							
	Plain plungers							
0 0	With high-grade steel plunger			O -				
January III	Slow-action contacts	1 NO + 1 NC		→ B	3SE5 132-0BB01		1	1 un
	Snap-action contacts	1 NO + 1 NC		→ B	3SE5 132-0CB01		1	1 un
	Slow-action contacts	1 NO + 2 NC		→ B	3SE5 132-0KB01		1	1 ur
Plain plunger	Snap-action contacts	1 NO + 2 NC		→ B	3SE5 132-0LB01		1	1 ur
	Slow-action contacts	2 NO + 1 NC		→ B	3SE5 132-0PB01		1	1 ur
A	Rounded plungers, type B a	acc. to EN 5004	11					
4	With plastic plunger			_				
9 6	Slow-action contacts	1 NO + 1 NC		→ A	3SE5 132-0BC03		1	1 un
ALL THE STREET	Snap-action contacts	1 NO + 1 NC	_	→ A	3SE5 132-0CC03		1	1 un
	Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0KC03		1	1 un
	Snap-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0LC03		1	1 un
Rounded plunger	Slow-action contacts	2 NO + 1 NC	_	→ B	3SE5 132-0PC03		1	1 un
a	Roller plungers, type C acc	. to EN 50041						
	With plastic roller 13 mm							
	Slow-action contacts	1 NO + 1 NC	_	Э В	3SE5 132-0BD05		1	1 un
9 6	Snap-action contacts	1 NO + 1 NC	_	→ A	3SE5 132-0CD05		1	1 ur
1.25(ma)()	Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0KD05		1	1 un
	Snap-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0LD05		1	1 un
	Slow-action contacts	2 NO + 1 NC		→ B	3SE5 132-0PD05		1	1 un
Roller plunger								
	Roller levers							
	With metal lever and plastic roll	er 22 mm						
	Slow-action contacts	1 NO + 1 NC	_	→ B	3SE5 132-0BE05		1	1 un
9 6	Snap-action contacts	1 NO + 1 NC	_	→ A	3SE5 132-0CE05		1	1 un
	Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0KE05		1	1 ur
	Snap-action contacts	1 NO + 2 NC	_	Э В	3SE5 132-0LE05		1	1 ur
	Slow-action contacts	2 NO + 1 NC	_	→ B	3SE5 132-0PE05		1	1 un
Roller lever								
0	Angular roller levers							
0	With metal lever and plastic roll							
-	Slow-action contacts	1 NO + 1 NC		→ B	3SE5 132-0BF05		1	1 un
	Snap-action contacts	1 NO + 1 NC		→ B	3SE5 132-0CF05		1	1 ur
	Snap-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0LF05		1	1 un
Angular roller								
ever								
1	Spring rods							
	Length 142.5 mm, with plastic p	•						
Į.	Snap-action contacts	1 NO + 1 NC		В	3SE5 132-0CR01		1	1 un
ä	Snap-action contacts	1 NO + 2 NC	_	В	3SE5 132-0LR01		1	1 un
2								
0 0								
England III								
Spring red								
pring rod								

Spring rod

4

^

7

10

11

2

12

 $[\]begin{tabular}{l} \begin{tabular}{l} \begin{tabu$

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 40 mm acc. to EN 50041

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Complete units		PU (UNIT,	PS*
						Configurator		SET, M)	
						Order No. Price			
Complete un	its ¹⁾ • Enclosure width 40 mm						10		
	Twist levers, type A acc. to E	N 50041							
	With metal lever 27 mm and plas	tic roller 19 mm							
(4)	Slow-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 132-0BJ01		1	1 unit
	Snap-action contacts	1 NO + 1 NC	-	\odot	>	3SE5 132-0CJ01		1	1 unit
and a second	Slow-action contacts	1 NO + 2 NC	-	\odot	В	3SE5 132-0KJ01		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 132-0LJ01		1	1 unit
	Slow-action contacts	2 NO + 1 NC	-	\odot	В	3SE5 132-0PJ01		1	1 unit
Twist lever	<u></u>								
•	Twist levers, adjustable leng								
6	With metal lever with grid hole ar	-		_					
	Snap-action contacts	1 NO + 1 NC			В	3SE5 132-0CJ60		1	1 unit
(4)	Snap-action contacts	1 NO + 2 NC	_	igotharpoons	В	3SE5 132-0LJ60		1	1 unit
Twist lever, adju able length, with grid hole									
	With metal lever and plastic rolle	r 19 mm							
*	Snap-action contacts	1 NO + 1 NC	-		Α	3SE5 132-0CJ50		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_		В	3SE5 132-0LJ50		1	1 unit
Twist lever, adju	st-								
able length									
1	Rod actuators, type D, acc. t With aluminum rod, length 200 m								
- 1	Snap-action contacts	1 NO + 1 NC	-		В	3SE5 132-0CJ80		1	1 unit
	With plastic rod, length 200 mm								
	Snap-action contacts	1 NO + 1 NC	-		A	3SE5 132-0CJ82		1	1 unit
Rod actuator									
® Ear online con	efigurator coo www.ciomone.com/cirius	/oonfigurators	Mot	٥.					

Tor online configurator see www.siemens.com/sirius/configurators.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 13/17.

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 40 mm acc. to EN 50041

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Modular system		PU (UNIT.	PS:
						Configurator	()	SET, M)	
						Order No.	Price per PU		
Basic switche	es · Enclosure width 40 mm								
	With M20 x 1.5 connecting thread	I			_				
0 0	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 132-0BA00		1	1 un
SHIDE STATE	Snap-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 132-0CA00		1	1 ur
	 Gold-plated contacts 			\odot	В	3SE5 132-0CA00-1AC1		1	1 ur
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 132-0KA00		1	1 ur
asic switch	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 132-0LA00		1	1 ur
aoio omion	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 132-0MA00		1	1 un
	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 132-0PA00		1	1 ur
	With increased corrosion protect	ion ¹⁾							
9 6	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 132-0BA00-1CA0		1	1 ur
Grand Company	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 132-0CA00-1CA0		1	1 ur
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 132-0KA00-1CA0		1	1 ur
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 132-0LA00-1CA0		1	1 ur
/ith increased orrosion	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 132-0MA00-1CA0		1	1 ur
rotection	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 132-0PA00-1CA0		1	1 ur
alexa.	With M12 connector socket, 4-po	le (250 V, 4 A)							
9 6	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 134-0BA00-1AC4		1	1 ur
2017/A18/A18	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 134-0CA00-1AC4		1	1 ur
	Slow-action contacts	2 NC	_	\odot	В	3SE5 134-0KA00-1AE0		1	1 ur
	Snap-action contacts	2 NC	_	€	В	3SE5 134-0LA00-1AE0		1	1 ur
ith M12 socket									
200	With 2 LEDs, yellow/green								
G C	Slow-action contacts	1 NO + 2 NC	24 V DC	→	С	3SE5 132-1KA00		1	1 ur
No.	Snap-action contacts	1 NO + 2 NC	24 V DC	→	С	3SE5 132-1LA00		1	1 ur
	Slow-action contacts	1 NO + 2 NC	230 V AC	→	С	3SE5 132-3KA00		1	1 uı
	Snap-action contacts	1 NO + 2 NC	230 V AC	€	С	3SE5 132-3LA00		1	1 ur
ith 2 LEDs									

Tor online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

 Use corresponding high-grade steel lever.

Note:

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 40 mm acc. to EN 50041

	Version	Diameter	DT	Modular system	PU	PS*
		mm		Order No. Price pe		
Operating mec	hanisms	mm			J	
W.	Plain plungers					
	High-grade steel plungers	10	→ A	3SE5 000-0AB01	1	1 unit
Plain plunger						
	Rounded plungers, type B acc. to EN 50041 Plastic plungers	10	→ B	3SE5 000-0AC03	1	1 unit
	Roller plungers, type C acc. to EN 50041	10	<u> </u>	0020 000 04000	· ·	1 dilit
	Plastic plunger, plastic roller	13	Э В	3SE5 000-0AD05	1	1 unit
Plunger	Plastic plunger, high-grade steel roller	13	→ B	3SE5 000-0AD06	1	1 unit
- Idanger	Roller levers					
	Metal lever with plastic roller, plastic base	22	→ B	3SE5 000-0AE05	1	1 unit
10						
Roller lever						
	Angular roller levers Metal lever with plastic roller, plastic base	22	⊛ В	3SE5 000-0AF05	1	1 unit
~	Wetar lever with plastic foliof, plastic base	22	© B	0023 000 0AI 03		1 dilit
The same of						
Angular roller						
lever						
	Spring rods (for switches with snap-action contacts of Plastic plunger and high-grade steel spring:	only) 7				
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)	,	В	3SE5 000-0AR01	1	1 unit
1	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		В	3SE5 000-0AR03	1	1 unit
嵩	 Length 242.5 mm (spring 150 mm, plunger 50 mm) High-grade steel plunger and spring: 	7	В	3SE5 000-0AR04	1	1 unit
Spring rod	• Length 142.5 mm (spring 50 mm, plunger 50 mm)	1	В	3SE5 000-0AR02	1	1 unit
Twist actuators						
	Twist actuators, plastic (without lever)					
	• For twist levers and rod actuators,		Э В	3SE5 000-0AJ00	1	1 unit
월	switching right and/or left, adjustable Levers for twist actuators					
Twist actuator	Twist levers, offset, type A acc. to EN 50041					
æ	Metal lever 27 mm, plastic roller	19	→ ▶	3SE5 000-0AA01	1	1 unit
T.	Metal lever 27 mm, high-grade steel roller	19	→ ►	3SE5 000-0AA02	1	1 unit
	Metal lever 27 mm, roller with ball bearing Metal lever 27 mm, 2 plastic rollers	19 19	→ B→ ►	3SE5 000-0AA03 3SE5 000-0AA04	1	1 unit 1 unit
Twist lever	Metal lever 27 mm, plastic roller	30	→ B	3SE5 000-0AA05	1	1 unit
- A	Metal lever 27 mm, rubber roller	50	€ ▶	3SE5 000-0AA08	1	1 unit
9 9	High-grade steel lever 27 mm, plastic roller	19	→ B	3SE5 000-0AA11	1	1 unit
ВП	High-grade steel lever 27 mm, high-grade steel roller Metal lever 35 mm, plastic roller	19 19	→ ► → B	3SE5 000-0AA12 3SE5 000-0AA15	1	1 unit
	Twist levers 30 mm, straight ¹⁾	19	<u> </u>	35E5 000-0AA 15		1 unit
	Metal lever, plastic roller	19	Э В	3SE5 000-0AA24	1	1 unit
der der	Metal lever, plastic roller	30	Э В	3SE5 000-0AA26	1	1 unit
B U	Twist levers, adjustable length, with grid hole		_			
Twist lever, adjust-		19	→ B	3SE5 000-0AA60	1	1 unit
able length	Metal lever, high-grade steel roller Metal lever, rubber roller	19 50	→ B→ B	3SE5 000-0AA61 3SE5 000-0AA68	1	1 unit 1 unit
	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA66	1	1 unit
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA63	1	1 unit
1	Twist levers, adjustable length					
at	Metal lever, plastic roller	19	A	3SE5 000-0AA50	1	1 unit
7	Metal lever, high-grade steel roller Metal lever, plastic roller	19 30	B B	3SE5 000-0AA51 3SE5 000-0AA55	1	1 unit 1 unit
	Metal lever, rubber roller	50	В	3SE5 000-0AA58	1	1 unit
	High-grade steel lever, plastic roller	19	В	3SE5 000-0AA52	1	1 unit
Dod ochusts:	High-grade steel lever, high-grade steel roller	19	В	3SE5 000-0AA53	1	1 unit
Rod actuator	Rod actuators, type D acc. to EN 50041	6	r	2555 000 04 490	4	4
	Aluminum rod, length 200 mm	6	В	3SE5 000-0AA80	1	1 unit 1 unit
	Spring rod, length 200 mm	6	R	3SE5 000-0AA81	1	
	Spring rod, length 200 mm Plastic rod, length 200 mm	6 6	B B	3SE5 000-0AA81 3SE5 000-0AA82	1	1 unit

Can be clinch mounted (turned through 180°, rear of lever).

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures **Enclosure width 50 mm**

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 2 \times (M20 \times 1.5)

	Version	Contacts	LEDs		DT	Complete units		PU	PS*
						0	.0.	(UNIT, SET, M)	
						Configurator	É	J=1,,	
						Order No.	Price per		
Complete units	s ¹⁾ • Enclosure width 50 mm						FU		
	Rounded plungers								
	With teflon plunger								
Theodoraes .	Slow-action contacts	1 NO + 1 NC	_	\odot	•	3SE5 242-0BC05		1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 242-0CC05		1	1 unit
Dounded plunger	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	\odot	•	3SE5 242-0HC05		1	1 unit
Rounded plunger	Snap-action contacts • Short stroke, integrated ²⁾	1 NO + 1 NC	_	→	В	3SE5 242-0FC05		1	1 unit
	Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	_	→	В	3SE5 242-0GC05		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0KC05		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0LC05		1	1 unit
	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	Α	3SE5 242-0MC05		1	1 unit
	Slow-action contacts	2 NO + 1 NC	_	\odot	Α	3SE5 242-0PC05		1	1 unit
A DO	With increased corrosion protection	on							
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 242-0BC05-1CA0		1	1 unit
Tittetrata	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	_	В	3SE5 242-0HC05-1CA0		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0KC05-1CA0		1	1 unit
With increased	Snap-action contacts	1 NO + 2 NC	_	_	В	3SE5 242-0LC05-1CA0		1	1 unit
corrosion protection	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 242-0MC05-1CA0		1	1 unit
	Slow-action contacts	2 NO + 1 NC	_	€	В	3SE5 242-0PC05-1CA0		1	1 unit
	With 2 LEDs, yellow/green								
	Slow-action contacts	1 NO + 2 NC	24 V DC	_	В	3SE5 242-1KC05		1	1 unit
Samuel 1	Snap-action contacts	1 NO + 2 NC	24 V DC	_	В	3SE5 242-1LC05		1	1 unit
	Slow-action contacts	1 NO + 2 NC	230 V AC	_	В	3SE5 242-3KC05		1	1 unit
With 2 LEDs	Snap-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 242-3LC05		1	1 unit
A	Roller plungers								
	With plastic roller 10 mm								
30 CE	Slow-action contacts	1 NO + 1 NC	_	\odot	•	3SE5 242-0BD03		1	1 unit
1 Millions	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	\odot	•	3SE5 242-0HD03		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	•	3SE5 242-0LD03		1	1 unit
Roller plunger									

To online configurator see www.siemens.com/sirius/configurators .

[→] Positive opening according to IEC 60947-5-1, Appendix K.

Popular versions.
 Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 50 mm

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 2 \times (M20 \times 1.5)

2 01 0 001114013	Degree of protection if oon c	7 Oabic citi	.i y Z ^ (ivi20 /	\ 1.0	')				
	Version	Contacts	LEDs	Г	DT	Complete units		PU (UNIT,	PS*
						Configurator	()	SET, M)	
						Order No.	Price per		
Complete units	s ¹⁾ • Enclosure width 50 mm								
	Roller levers								
	With metal lever and plastic roller	13 mm							
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 242-0BE10		1	1 unit
Introduction	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	\odot	•	3SE5 242-0HE10		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0LE10		1	1 unit
Dellanlavan	With M12 connector socket, 4-pole	right (250 V, 4	A)						
Roller lever	Snap-action contacts	2 NC	_	\odot	В	3SE5 244-0LE10-1AE0		1	1 unit
	Twist levers								
	With metal lever 21 mm and plastic	c roller 19 mm							
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 242-0BK21		1	1 unit
8 8	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	\odot		3SE5 242-0HK21		1	1 unit
Technology (Snap-action contacts	1 NO + 2 NC	_	€	В	3SE5 242-0LK21		1	1 unit
Twist lever									
	Twist levers, adjustable length	h							
	With metal lever and plastic roller								
	Snap-action contacts, integrated ²⁾		_		В	3SE5 242-0HK50		1	1 unit
Twist lever, adjust- able length									

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Note:

If the device you require is not available as a complete unit, see "Modular System", page 13/21.

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

²⁾ Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures **Enclosure width 50 mm**

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 2 \times (M20 \times 1.5)

	<u> </u>		, ,						
	Version	Contacts	LEDs		DT	Modular system		PU (UNIT,	PS*
						Configurator	()}	SET, M)	
						Order No.	Price per		
Basic switche	es · Enclosure width 50 mm (with	h rounded plu	inger ¹⁾)				10		
Duole om tone	With teflon plunger	roundou pre	90. /						
	Slow-action contacts	1 NO + 1 NC	_	→		3SE5 242-0BC05		1	1 unit
Bassan	Snap-action contacts	1 NO + 1 NC		€	В	3SE5 242-0CC05		1	1 unit
	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	€	>	3SE5 242-0HC05		1	1 unit
Basic switches	Snap-action contacts • Short stroke, integrated ²⁾	1 NO + 1 NC	_	→	В	3SE5 242-0FC05		1	1 unit
	Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	_	→	В	3SE5 242-0GC05		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0KC05		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0LC05		1	1 unit
	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	Α	3SE5 242-0MC05		1	1 unit
	Slow-action contacts	2 NO + 1 NC	_	\odot	Α	3SE5 242-0PC05		1	1 unit
	With increased corrosion protection	on ³⁾							
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 242-0BC05-1CA0		1	1 unit
Statement	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	\odot	В	3SE5 242-0HC05-1CA0		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 242-0KC05-1CA0		1	1 unit
With increased corrosion protection	Snap-action contacts	1 NO + 2 NC	_	→	В	3SE5 242-0LC05-1CA0		1	1 unit
P	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 242-0MC05-1CA0		1	1 unit
	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 242-0PC05-1CA0		1	1 unit
and the second	With 2 LEDs, yellow/green								
	Slow-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 242-1KC05		1	1 unit
Thinkney .	Snap-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 242-1LC05		1	1 unit
	Slow-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 242-3KC05		1	1 unit
With 2 LEDs	Snap-action contacts	1 NO + 2 NC	230 V AC	→	В	3SE5 242-3LC05		1	1 unit
For online conf	figurator see www.siemens.com/sirius/d	configurators.	No	te:					
	ng according to IEC 60947-5-1, Appendent actuator, necessary in safety circuits		Sel	ection	aid	see page 13/9.			

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 50 mm, the basic switch is a complete unit with rounded plungers.

³⁾ Use corresponding high-grade steel lever.

	Version	Diameter	DT	Modular system		PU (UNIT, SET, M)	PS*
		mm		Order No.	Price per PU		
Operating me	chanisms						
<u> </u>	Roller plungers, type C acc. to EN 50047						
	Plastic rollers	10	→ A	3SE5 000-0AD03		1	1 unit
	High-grade steel rollers	10	Э В	3SE5 000-0AD04		1	1 unit
Roller plungers							
	Roller plungers with central fixing						
	Plastic rollers	10	Э В	3SE5 000-0AD10		1	1 unit
	High-grade steel rollers	10	Э В	3SE5 000-0AD11		1	1 unit
With central fixing	g						

→ Positively driven actuator, necessary in safety circuits.

²⁾ Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure width 50 mm

	Version	Diameter	DT	Modular system		PU (UNIT, SET, M)	P
		mm		Order No.	Price per PU	J=1,,	
perating mec	hanisms						
	Roller levers, type E acc. to EN 50047						
	Metal lever, plastic roller	13	→ A	3SE5 000-0AE10		1	1 ui
	Metal lever, high-grade steel roller	13	Э В	3SE5 000-0AE11		1	1 u
	High-grade steel lever, plastic roller	13	Э В	3SE5 000-0AE12		1	1 u
oller lever	High-grade steel lever, high-grade steel roller	13	Э В	3SE5 000-0AE13		1	1ι
	Angular roller levers						
	Metal lever, plastic roller	13	→ A	3SE5 000-0AF10		1	1ι
0	Metal lever, high-grade steel roller	13	Э в	3SE5 000-0AF11		1	1 ເ
TE 7	High-grade steel lever, plastic roller	13	→ A	3SE5 000-0AF12		1	1 (
ngular roller ver	High-grade steel lever, high-grade steel roller	13	→ B	3SE5 000-0AF13		1	1 (
	Spring rods						
	(for switches with snap-action contacts only)	-					
	Plastic plunger and high-grade steel spring:	7	_				
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		В	3SE5 000-0AR01		1	1 (
	 Length 76 mm (spring 23.5 mm, plunger 10 mm) 		В	3SE5 000-0AR03		1	1 (
E	 Length 242.5 mm (spring 150 mm, plunger 50 mm) 		В	3SE5 000-0AR04		1	1 (
	High-grade steel plunger and spring:	7					
ring rod	Length 142.5 mm (spring 50 mm, plunger 50 mm)		В	3SE5 000-0AR02		1	1 ι
vist actuators							
	Twist actuators, plastic (without lever)		(A)	2055 202 241622		_	_
The second second	Switching right and/or left, adjustable		→ A	3SE5 000-0AK00		1	1 (
	Levers for twist actuators						
ist actuator	Twist levers 21 mm, straight, type A acc. to EN 500						
	Metal lever, plastic roller	19	→ A	3SE5 000-0AA21		1	1ι
	Metal lever, high-grade steel roller	19	→ B	3SE5 000-0AA22		1	1 (
	Metal lever, roller with ball bearing	19	→ B	3SE5 000-0AA23		1	1 (
-	Metal lever, plastic roller	30	Э В	3SE5 000-0AA25		1	1 (
ist lever	High-grade steel lever, plastic roller	19	Э В	3SE5 000-0AA31		1	1
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA32		1	1
M	Twist levers 30 mm, straight ¹⁾						
1 N	Metal lever, plastic roller	19	Э В	3SE5 000-0AA24		1	1 (
1 11	Metal lever, plastic roller	30	Э В	3SE5 000-0AA26		1	1
	Twist levers, adjustable length, with grid hole						
1,401	Metal lever, plastic roller	19	→ В	3SE5 000-0AA60		1	1 (
	Metal lever, high-grade steel roller	19	Э В	3SE5 000-0AA61		1	1
ist lever,	Metal lever, plastic roller	50	Э В	3SE5 000-0AA67		1	1
justable length	Metal lever, rubber roller	50	Э В	3SE5 000-0AA68		1	1 (
	High-grade steel lever, plastic roller	19	Э В	3SE5 000-0AA62		1	1 (
	High-grade steel lever, high-grade steel roller	19	Э В	3SE5 000-0AA63		1	1
1	Twist levers, adjustable length						
	Metal lever, plastic roller	19	Α	3SE5 000-0AA50		1	1 (
ļ.	Metal lever, high-grade steel roller	19	В	3SE5 000-0AA51		1	1 (
4	Metal lever, plastic roller	30	В	3SE5 000-0AA55		1	1 (
I	Metal lever, plastic roller	50	В	3SE5 000-0AA57		1	1 1
I	Metal lever, rubber roller	50	В	3SE5 000-0AA58		1	1 1
I	High-grade steel lever, plastic roller	19	В	3SE5 000-0AA52		1	1 1
ll a atuat : :	High-grade steel lever, high-grade steel roller	19	В	3SE5 000-0AA52		1	1
d actuator	Rod actuators	.0		000 0AA00		1	
	Aluminum rod, length 200 mm	6	В	3SE5 000-0AA80		1	1 :
	_						
	Spring rod, length 200 mm	6	В	3SE5 000-0AA81		1	1 (
	Plastic rod, length 200 mm	6	В	3SE5 000-0AA82		1	1

[→] Positively driven actuator, necessary in safety circuits.

¹⁾ Can be clinch mounted (turned through 180°, rear of lever).

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Ambient temperature to –40 °C

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP65 or IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs	DT	Complete units	PL (UNIT		PG
					Configurator	SET, M	Ó	
					Order No.	Price		
Complete un	its ¹⁾ • Enclosure width 31 mn	1				per PU		
A	Roller plungers with centra							
	Snap-action contacts	1 NO + 1 NO	- C	Э В	3SE5 232-0CD10-1AJ0		1 unit	41K
3								
POMON								
Roller plunger								
with central								
ixing	Twist levers, type A acc. to	EN 50047						
	With high-grade steel lever 21		roller 19 mm	1				
3	Snap-action contacts	1 NO + 1 NO	C —	→ A	3SE5 232-0CK31-1AJ0		1 unit	41K
.								
8-34668G2/S								
Twist lever								
- IWIST ICVCI	Twist levers, adjustable lei	nath						
	With high-grade steel lever wit and plastic roller 19 mm							
- T	Snap-action contacts	1 NO + 1 NO	C —	→ A	3SE5 232-0CK62-1AJ0		1 unit	41K
	Snap-action contacts	1 NO + 2 NO	C —	→ B	3SE5 232-0LK62-1AJ0		1 unit	41K
9								
0								
Twist lever,								
adjustable length								
Complete un	its ¹⁾ • Enclosure width 50 mn	n						
	Twist levers							
	With metal lever 21 mm and pla							
0	Snap-action contacts, integrated		2 —	→ B	3SE5 242-0HK21-1AJ0		1 unit	41K
9	Twist levers, adjustable led With high-grade steel lever wit	-	nlactic roller					
	19 mm	n gna noie and	piastic roller					
000	Snap-action contacts, integrated	1 ²⁾ 1 NO + 1 NO	C —	Э В	3SE5 242-0HK62-1AJ0		1 unit	41K
2								
Twist lever,								
adjustable								

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

Note:

If the device you require is not available as a complete unit, see "Modular System", see page 13/24.

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16

[→] Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

¹⁾ Popular versions.

²⁾ Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Ambient temperature to -40 °C

Modular system

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5

Basic switches Basic switch Basic switches	Begree of protection in co of t	1 00/11 01 00	2010 01111 9 1112	-0 /\	1.0				
	Version	Contacts	LEDs		DT	Modular system		PU (UNIT,	PS*
						Configurator	()	SÉT, M)	
						Order No.	Price per PU		
Basic switches	• Enclosure width 31 mm (with	rounded plu	nger ¹⁾)						
- Calma	With teflon plunger								
	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 232-0CC05-1AJ0		1	1 unit
Taliances	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 232-0KC05-1AJ0		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→	В	3SE5 232-0LC05-1AJ0		1	1 unit
Basic switch									
Basic switches	• Enclosure width 50 mm (with	rounded plu	nger ¹⁾)						
1	With teflon plunger								
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 242-0BC05-1AJ0		1	1 unit
Steadynas	Snap-action contacts, integrated ²⁾	1 NO + 1 NC	_	→	В	3SE5 242-0HC05-1AJ0		1	1 unit
Basic switch									
S For online confid	gurator see www.siemens.com/sirius/c	onfigurators	Note						

For online configurator see www.siemens.com/sirius/configurators.

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

¹⁾ For enclosures with widths of 31 and 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Ambient temperature to -40 °C

	Version	Diameter	DT	Modular system		PU	PS*
						(UNIT, SET, M)	
		mm		Order No.	Price per PU		
Operating me	chanisms						
A .	Roller plungers, type C acc. to EN 50047						
	Plastic rollers	10	Э В	3SE5 000-0AD03-1AJ0		1	1 unit
Roller plunger							
	Roller levers, type E acc. to EN 50047						-
	Metal lever, plastic roller	13	Э В	3SE5 000-0AE10-1AJ0		1	1 unit
20	High-grade steel lever, plastic roller	13	Э В	3SE5 000-0AE12-1AJ0		1	1 unit
oller lever	Angular roller levers						
0	Metal lever, plastic roller	13	Э В	3SE5 000-0AF10-1AJ0		1	1 unit
0	High-grade steel lever, plastic roller	13	→ B	3SE5 000-0AF10-1AJ0		1	1 unit
E	r light-grade steer lever, plastic roller	15	9 0	33E3 000-0AF12-1A00			i uiiit
ngular roller							
wist actuato	rs						
	Twist actuators, plastic (without lever)						
(4)	Switching right and/or left, adjustable		Э В	3SE5 000-0AK00-1AJ0		1	1 unit
wist actuator							
	Levers for twist actuators						
⊕	Twist levers straight, 21 mm, type A acc. to I	EN 50047					
	Metal lever, plastic roller	19	Э В	3SE5 000-0AA21-1AJ0		1	1 unit
vist lever	High-grade steel lever, plastic roller	19	Э В	3SE5 000-0AA31-1AJ0		1	1 unit
Notiovoi	Twist levers, adjustable length, with grid hol	e					
	Metal lever, plastic roller	19	Э В	3SE5 000-0AA60-1AJ0		1	1 unit
2	High-grade steel lever, plastic roller	19	Э В	3SE5 000-0AA62-1AJ0		1	1 unit
Ä							
8							
vist lever,							
djustable length	ı						

→ Positively driven actuator, necessary in safety circuits.

13/25

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Ambient temperature to -40 °C

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Begies of proteotion in conin o	7 Odbie citi	1 y 1 1 1 2 0 × 1 . 0						
	Version	Contacts	LEDs	D	TC	Modular system		PU (UNIT,	PS*
						Configurator	()	SET, M)	
						Order No.	Price per PU		
Basic switches	• Enclosure width 40 mm								_
	With M20 □ 1.5 connecting thread								
0 0	Snap-action contacts	1 NO + 1 NC	_	→ B	3	3SE5 132-0CA00-1AJ0		1	1 unit
Section of	Slow-action contacts	1 NO + 2 NC	_	→ B	3	3SE5 132-0KA00-1AJ0		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→ B	3	3SE5 132-0LA00-1AJ0		1	1 unit
Basic switch									
For online confid	gurator see www.siemens.com/sirius/c	onfigurators	Note						

For online configurator see www.siemens.com/sirius/configurators.

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*
		mm		Order No. Price per		
Operating med	hanisms					
A	Rounded plungers, type B acc. to EN 50041 Plastic plunger	10	→ B	3SE5 000-0AC03-1AJ0	1	1 unit
Rounded plunger						
	Roller plungers, type C acc. to EN 50041 Plastic plunger, plastic roller	13	→ B	3SE5 000-0AD05-1AJ0	1	1 unit
Roller plunger						
	Roller levers Metal lever with plastic roller, plastic base	22	→ B	3SE5 000-0AE05-1AJ0	1	1 unit
Roller lever						
Twist actuators	S					
	Twist actuators, plastic (without lever) ● For twist levers and rod actuators, switching right and/or left, adjustable		Э В	3SE5 000-0AJ00-1AJ0	1	1 unit
Twist actuator						
B	Levers for twist actuators					
	Twist lever, type A acc. to EN 50041	10	Э В	2005 000 04 401 14 10		4 . mia
	Metal lever, plastic roller High-grade steel lever, plastic roller	19 19	Э В	3SE5 000-0AA01-1AJ0 3SE5 000-0AA11-1AJ0	1	1 unit 1 unit
Twist levers	riigir grado eteeriorei, piaette reiter	.0	0 5			
	Twist levers, adjustable length, with grid hole					
8	Metal lever, plastic roller	19	Э В	3SE5 000-0AA60-1AJ0	1	1 unit
<u> </u>	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA62-1AJ0	1	1 unit
Twist lever, adjustable length	Lactuator necessary in safety circuits					

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 31 mm acc. to EN 50047

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Complete units		PU	PS ¹
		Contacto	2200		<i>D</i> 1	·		(UNIT, SET, M)	10
						Configurator	\$	S⊏I, IVI)	
						Order No.	Price per PU		
Complete units	¹⁾ • Enclosure width 31 mm								
rafter .	Rounded plungers, type B, ac	cc. to EN 5004	17						
J. 6	With plunger			_					
SIGNAS CO	Slow-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 212-0BC05		1	1 uni
	Snap-action contacts	1 NO + 1 NC	_	_	Α	3SE5 212-0CC05		1	1 uni
	Slow-action contacts	1 NO + 2 NC	_	→	Α	3SE5 212-0KC05		1	1 uni
ounded plunger	Snap-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 212-0LC05		1	1 uni
	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	Α	3SE5 212-0MC05		1	1 uni
	Slow-action contacts	2 NO + 1 NC	_	\odot	Α	3SE5 212-0PC05		1	1 uni
allera .	With increased corrosion protecti	on							
. 61	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 212-0BC05-1CA0		1	1 uni
METHOD IN	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 212-0CC05-1CA0		1	1 un
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 212-0KC05-1CA0		1	1 un
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 212-0LC05-1CA0		1	1 un
lith increased orrosion	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 212-0MC05-1CA0		1	1 un
rotection	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 212-0PC05-1CA0		1	1 un
W S	With M12 connector socket, 5-pol								
	Slow-action contacts	1 NO + 1 NC	_	→	В	3SE5 214-0BC05-1AC5		1	1 un
	Snap-action contacts	1 NO + 1 NC	_	→	В	3SE5 214-0CC05-1AC5		1	1 un
	Slow-action contacts	2 NC	_	€	В	3SE5 214-0KC05-1AE1		1	1 un
	Snap-action contacts	2 NC	_	→	В	3SE5 214-0LC05-1AE1		1	1 un
	With 2 LEDs, yellow/green					0020 214 02000 TAE1			- 1 01
	Slow-action contacts	1 NO + 2 NC	24 V DC	→	В	3SE5 212-1KC05		1	1 un
8 6	Snap-action contacts	1 NO + 2 NC		€	Α	3SE5 212-1LC05		1	1 un
***	Slow-action contacts	1 NO + 2 NC		⊕	В	3SE5 212-3KC05		1	1 un
	Snap-action contacts	1 NO + 2 NC		⊕	В	3SE5 212-3LC05		1	1 un
/ith 2 LEDs	With M12 connector socket, 5-pol and 2 LEDs		200 V AC			3523 212-32003			
	Slow-action contacts	1 NO + 1 NC	24 V DC	→	В	3SE5 214-1BC05-1AF3		1	1 un
	Snap-action contacts	1 NO + 1 NC		€	В	3SE5 214-1CC05-1AF3		1	1 un
e e	Plain plungers	1110 1 1110	21700			0020 214 10000 1A10			- 1 011
E	With high-grade steel plunger								
0 6	Slow-action contacts	1 NO + 1 NC		→	В	3SE5 212-0BB01		1	1 un
	Snap-action contacts	1 NO + 1 NC	_	⊕	В	3SE5 212-0BB01		1	1 un
	Slow-action contacts	1 NO + 2 NC	_	⊕	В	3SE5 212-0CB01		1	1 un
	Snap-action contacts	1 NO + 2 NC		⊕	В	3SE5 212-0KB01		1	1 un
ain plunger					ט	00E0 Z1Z-0EB01			
A	Roller plungers, type C acc. t	O EN 5004/							
	With plastic roller 10 mm								
	Slow-action contacts	1 NO + 1 NC	_	→	A	3SE5 212-0BD03		1	1 ur
	Snap-action contacts	1 NO + 1 NC	_	→	В	3SE5 212-0CD03		1	1 ur
	Slow-action contacts	1 NO + 2 NC	_	→	Α	3SE5 212-0KD03		1	1 un
	Snap-action contacts	1 NO + 2 NC		€	В	3SE5 212-0LD03		1	1 un

To online configurator see www.siemens.com/sirius/configurators .

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[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Complete units		PU (UNIT,	PS*
						Configurator		SET, M)	
						Order No.	Price per PU		
Complete units	1) • Enclosure width 31 mm								
	Roller levers, type E acc. to El	V <i>50047</i>							
	With metal lever and plastic roller	13 mm							
	Slow-action contacts	1 NO + 1 NC	_	€	Α	3SE5 212-0BE10		1	1 unit
Tanana I	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 212-0CE10		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	€	В	3SE5 212-0KE10		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 212-0LE10		1	1 unit
Roller lever									
	Angular roller levers								
0	With metal lever and plastic roller	13 mm							
	Slow-action contacts	1 NO + 1 NC	_	→	В	3SE5 212-0BF10		1	1 unit
Fantana I	Snap-action contacts	1 NO + 1 NC	_	→	В	3SE5 212-0CF10		1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	→	В	3SE5 212-0KF10		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	€	В	3SE5 212-0LF10		1	1 unit
Angular roller									
lever	Twist levers, type A acc. to EN	I 50047							
	With metal lever 21 mm and plastic								
(i)	Slow-action contacts	1 NO + 1 NC	_	→	Α	3SE5 212-0BK21		1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	€	Α	3SE5 212-0CK21		1	1 unit
	Slow-action contacts	1 NO + 2 NC		⊙	В	3SE5 212-0KK21		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	⊙	В	3SE5 212-0LK21		1	1 unit
					_			•	
Twist lever									
	Twist levers, adjustable length	1							
	With metal lever with grid hole and plastic roller 19 mm								
9	Snap-action contacts	1 NO + 1 NC	_	→	Α	3SE5 212-0CK60		1	1 unit
9 [-	Slow-action contacts	1 NO + 2 NC	_	€	В	3SE5 212-0KK60		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	€		3SE5 212-0LK60		1	1 unit
1303	With metal lever and plastic roller				-			· · · · · · · · · · · · · · · · · · ·	
	Slow-action contacts	1 NO + 1 NC	_		Α	3SE5 212-0BK50		1	1 unit
	Snap-action contacts	1 NO + 1 NC	_		В	3SE5 212-0CK50		1	1 unit
Twist lever, adjust- able length	Snap-action contacts	1 NO + 2 NC	_		В	3SE5 212-0LK50		1	1 unit
able leligili	urator see www.siemens.com/sirius/c	onfigurators		Note:					

To ronline configurator see www.siemens.com/sirius/configurators .

Note

If the device you require is not available as a complete unit, see "Modular System", see page 13/29.

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 31 mm acc. to EN 50047

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Modular system		PU	PS
						Configurator	₩	(UNIT, SET, M)	
						Ouden Ne			
						Order No.	Price per PU		
Basic switche	es • Enclosure width 31 mm (wi	th rounded plu	ınger ¹⁾)						
all a	With plunger								
. 61	Slow-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 212-0BC05		1	1 ur
SHEARING T	Snap-action contacts	1 NO + 1 NC	_	\odot	Α	3SE5 212-0CC05		1	1 ur
	Slow-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 212-0KC05		1	1 u
	Snap-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 212-0LC05		1	1 u
Basic switch	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	Α	3SE5 212-0MC05		1	1 ur
	Slow-action contacts	2 NO + 1 NC	_	\odot	Α	3SE5 212-0PC05		1	1 ur
allo-	With increased corrosion protect	tion ²⁾							
. 51	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 212-0BC05-1CA0		1	1 ur
SHEARING TO	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 212-0CC05-1CA0		1	1 ur
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 212-0KC05-1CA0		1	1 ur
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 212-0LC05-1CA0		1	1 u
ith increased	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	В	3SE5 212-0MC05-1CA0		1	1 u
rotection	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 212-0PC05-1CA0		1	1 u
ales	With M12 connector socket, 5-po	le (125 V, 4 A)							
. 61	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 214-0BC05-1AC5		1	1 u
NAME OF TAXABLE PARTY.	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 214-0CC05-1AC5		1	1 u
	Slow-action contacts	2 NC	_	\odot	В	3SE5 214-0KC05-1AE1		1	1 u
₩	Snap-action contacts	2 NC	_	→	В	3SE5 214-0LC05-1AE1		1	1 u
/ith M12 socket									
4	With 2 LEDs, yellow/green				_				
	Slow-action contacts	1 NO + 2 NC	24 V DC	→	В	3SE5 212-1KC05		1	1 ui
MANAGES .	Snap-action contacts	1 NO + 2 NC	24 V DC	→	Α	3SE5 212-1LC05		1	1 uı
	Slow-action contacts	1 NO + 2 NC	230 V AC	→	В	3SE5 212-3KC05		1	1 u
Vith 2 LEDs	Snap-action contacts	1 NO + 2 NC	230 V AC	→	В	3SE5 212-3LC05		1	1 ur
MITZ LLDS	With M12 connector socket, 5-po and 2 LEDs	le (125 V, 4 A)							
86	Slow-action contacts	1 NO + 1 NC	24 V DC	\odot	В	3SE5 214-1BC05-1AF3		1	1 ur
	Snap-action contacts	1 NO + 1 NC	24 V DC	€	В	3SE5 214-1CC05-1AF3		1	1 ui
Vith M12 socket nd 2 LEDs									
For online conf	figurator see www.siemens.com/sirius	/configurators .	No	te:					

To ronline configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

	Version	Diameter	DT	Modular system		PU (UNIT,	PS*
		mm		Order No.	Price per PU	SÈT, M)	
Operating med	hanisms						
	Plain plungers High-grade steel plungers	10	→ A	3SE5 000-0AB01		1	1 unit
Plain plunger	Roller plungers, type C acc. to EN 50047						
	Plastic rollers High-grade steel rollers	10 10	→ A→ B	3SE5 000-0AD03 3SE5 000-0AD04		1	1 unit 1 unit
Roller plunger	riigir-grade steerrollers	10	© D	33L3 000-0AD04		'	1 Ullit

[→] Positively driven actuator, necessary in safety circuits.

For enclosures with widths of 31mm, the basic switch is a complete unit with rounded plungers.

²⁾ Use corresponding high-grade steel lever.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 31 mm acc. to EN 50047

	Version	Diameter	DT	Modular system		PU	PS'
		mm		Order No.	Price per	SET, M)	
perating mec	hanisms	mm			FU		
A	Roller plungers with central fixing						
	Plastic rollers	10	→ B	3SE5 000-0AD10		(UNIT, SET, M) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 uni
	High-grade steel rollers	10	Э В	3SE5 000-0AD11			1 uni
/ith central fixing							
	Roller levers, type E acc. to EN 50047						
	Metal lever, plastic roller	13	→ A	3SE5 000-0AE10		1	1 un
	Metal lever, high-grade steel roller	13	Э В	3SE5 000-0AE11		1	1 un
	High-grade steel lever, plastic roller	13	Э В	3SE5 000-0AE12		1	1 ur
oller lever	High-grade steel lever, high-grade steel roller	13	Э В	3SE5 000-0AE13		1	1 un
	Angular roller levers						
	Metal lever, plastic roller	13	→ A	3SE5 000-0AF10		1	1 un
	Metal lever, high-grade steel roller	13	Э В	3SE5 000-0AF11		1	1 un
	High-grade steel lever, plastic roller	13	→ A	3SE5 000-0AF12		1	1 un
ngular roller	High-grade steel lever, high-grade steel roller	13	Э В	3SE5 000-0AF13		1	1 un
ver	Coulon and for quitable with one paties contests						
	Spring rods (for switches with snap-action contacts of Plastic plunger and high-grade steel spring:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)	•	В	3SE5 000-0AR01		1	1 un
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		В	3SE5 000-0AR03		1	1 un
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		В	3SE5 000-0AR04		1	1 un
•	High-grade steel plunger and spring:	7		0055 000 04 000			
pring rod	Length 142.5 mm (spring 50 mm, plunger 50 mm)		В	3SE5 000-0AR02			1 un
wist actuators							
	Twist actuators, plastic (without lever)						
	Switching right and/or left, adjustable		→ A	3SE5 000-0AK00		1	1 un
	Levers for twist actuators					(UNIT, SET, M) 1	
wist actuator	Twist levers, straight, type A acc. to EN 50047		<u> </u>			(UNIT, SET, M) 1	
	Metal lever 21 mm, plastic roller	19	→ A	3SE5 000-0AA21			1 un
4	Metal lever 21 mm, high-grade steel roller	19	→ B	3SE5 000-0AA22			1 un
	Metal lever 21 mm, roller with ball bearing	19	→ B	3SE5 000-0AA23			1 un
.)	Metal lever 21 mm, plastic roller	30	→ B	3SE5 000-0AA25			1 un
wist levers	High-grade steel lever 21 mm, plastic roller	19	→ B	3SE5 000-0AA31			1 un
	High-grade steel lever 21 mm, high-grade steel roller	19	→ B	3SE5 000-0AA32		1	1 un
a a	Twist levers 30 mm, straight ¹⁾	10	O 5			1	1 un
	Metal lever, plastic roller	19	→ B→ B	3SE5 000-0AA24 3SE5 000-0AA26			1 un
8 N	Metal lever, plastic roller	30	→ □	33E3 000-0AA20			
	Twist levers, adjustable length, with grid hole	10	O 5				
	Metal lever, plastic roller	19	→ B	3SE5 000-0AA60			1 un
QL (QL	Metal lever, high-grade steel roller	19	→ B	3SE5 000-0AA61			1 un
8 U	Metal lever, plastic roller	50	→ B	3SE5 000-0AA67			1 un
wist lever, adjust-	Metal lever, rubber roller	50	→ B	3SE5 000-0AA68			1 un
ble length	riigir grade eteer level, plaetie reliei	19	→ B→ B	3SE5 000-0AA62			1 un
	High-grade steel lever, high-grade steel roller Twist levers, adjustable length	19	⊕ □	3SE5 000-0AA63		- '	1 un
1	Metal lever, plastic roller	19	А	3SE5 000-0AA50		1	1 un
1	Metal lever, high-grade steel roller	19	В	3SE5 000-0AA51			1 un
1	Metal lever, plastic roller	30	В	3SE5 000-0AA51			1 un
_1	Metal lever, plastic roller	50	В	3SE5 000-0AA55			1 un
IJ,	Metal lever, rubber roller	50	В	3SE5 000-0AA58			1 un
1	High-grade steel lever, plastic roller	19	В	3SE5 000-0AA52			1 un
1	High-grade steel lever, high-grade steel roller	19	В	3SE5 000-0AA53			1 un
1	Rod actuators, type D acc. to EN 50041			00E0 000 0AA00			- i ui
1	Aluminum rod, length 200 mm	6	В	3SE5 000-0AA80		1	1 un
		-		ON ONNO		'	
od actuator	-	6	R	3SE5 000-04481		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 i i n
od actuator	Spring rod, length 200 mm Plastic rod, length 200 mm	6	B B	3SE5 000-0AA81 3SE5 000-0AA82			1 un 1 un

[→] Positively driven actuator, necessary in safety circuits.

¹⁾ Can be clinch mounted (turned through 180°, rear of lever).

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Complete units		PU (UNIT,	PS ³
						Configurator	€6	OCT MA	
						Order No.	Price pe		
omplete uni	ts ¹⁾ • Enclosure width 40 mr	n							
	Plain plungers								
0	With high-grade steel plunge	r							
MARKE THE	Slow-action contacts	1 NO + 1 NO	· —	_	Α	3SE5 112-0BB01		1	1 uni
	Snap-action contacts	1 NO + 1 NO	- ·	_	Α	3SE5 112-0CB01		1	1 uni
	Slow-action contacts	1 NO + 2 NO				3SE5 112-0KB01		1	1 uni
ain plunger	Snap-action contacts	1 NO + 2 NO	· —	€	В	3SE5 112-0LB01		1	1 un
A	Rounded plungers, type I								
100	With high-grade steel plunge			_					
0	Slow-action contacts	1 NO + 1 NO		_		3SE5 112-0BC02		1	1 uni
August 1	Snap-action contacts	1 NO + 1 NO	- ·	_		3SE5 112-0CC02		1	1 uni
	Slow-action contacts	1 NO + 2 NO) —		В	3SE5 112-0KC02		1	1 uni
	Snap-action contacts	1 NO + 2 NO	· —	€	В	3SE5 112-0LC02		1	1 un
ounded plunge		t- FN 50041							
	Roller plungers, type C ac With high-grade steel roller 13		vertravel						
	Slow-action contacts	1 NO + 1 NO		→	•	3SE5 112-0BD02		1	1 uni
0	Snap-action contacts	1 NO + 1 NO			•	3SE5 112-0CD02		1	1 uni
AND DESCRIPTION OF THE PERSON	Slow-action contacts	1 NO + 2 NO		_		3SE5 112-0KD02		1	1 uni
	Snap-action contacts	1 NO + 2 NO		_		3SE5 112-0LD02		1	1 uni
	With M12 connector socket, 5					33E3 112-0LD02			i uiii
oller plunger	Snap-action contacts	1 NO + 1 NC		→	В	3SE5 114-1CD02-1AF3		1	1 uni
	Roller levers		21120			0020 111 10202 1111 0			
	With metal lever and plastic r	oller 22 mm							
	Slow-action contacts	1 NO + 1 NO	. —	→	•	3SE5 112-0BE01		1	1 uni
9	Snap-action contacts	1 NO + 1 NO			•	3SE5 112-0CE01		1	1 uni
MINES IN	Slow-action contacts	1 NO + 2 NO		_	В	3SE5 112-0KE01		1	1 uni
	Snap-action contacts	1 NO + 2 NO		_	В	3SE5 112-0LE01		1	1 uni
	onap action contacto		•	Ü	_				
oller lever									
	Angular roller levers	- II							
0	With metal lever and plastic r		`		В	20EE 112 ABEA1			1 uni
	Slow-action contacts	1 NO + 1 NO				3SE5 112-0BF01		1	1 uni
The Canada	Snap-action contacts	1 NO + 1 NO			D	3SE5 112-0CF01		1	1 uni
	Snap-action contacts	1 NO + 2 NO	-	€	В	3SE5 112-0LF01		1	1 uni
ngular roller									
/er	Spring rods								
1	Length 142.5 mm, with plastic	c plunger 50 mm							
	Snap-action contacts	1 NO + 1 NO	· —		•	3SE5 112-0CR01		1	1 uni
4									
0									
and a									
-									
oring rod									

For online configurator see www.siemens.com/sirius/configurators .

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 40 mm acc. to EN 50041

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Complete units	PU (UNIT,	PS*
						Configurator	SÈT, M)	
						Order No. Price per		
Complete units	s ¹⁾ • Enclosure width 40 mm							
0	Twist levers, type A acc. to EN							
	With metal lever 27 mm and plastic			_				
	Slow-action contacts	1 NO + 1 NC	_	→		3SE5 112-0BH01	1	1 unit
9	Snap-action contacts	1 NO + 1 NC	_	→		3SE5 112-0CH01	1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	_		3SE5 112-0KH01	1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	€	В	3SE5 112-0LH01	1	1 unit
	With M12 connector socket, 5-pole							
Twist lever	Snap-action contacts	1 NO + 1 NC		€	Α	3SE5 114-0CH01-1AC5	1	1 unit
	With M12 connector socket, 5-pole				_			
	Snap-action contacts	1 NO + 1 NC		→	В	3SE5 114-1CH01-1AF3	1	1 unit
	With metal lever 27 mm and high-g				_			
	Slow-action contacts	1 NO + 1 NC		→	В	3SE5 112-0BH02	1	1 unit
	Snap-action contacts	1 NO + 1 NC		€		3SE5 112-0CH02	1	1 unit
•	With M12 connector socket, 5-pole							
7	Snap-action contacts	1 NO + 1 NC	_	€	В	3SE5 114-1CH02-1AF3	1	1 unit
	With metal lever 30 mm and plastic			_				
(4)	Snap-action contacts	1 NO + 1 NC	_	€	Α	3SE5 112-0CH24	1	1 unit
	Twist levers, adjustable length							
66	With metal lever with grid hole and	plastic roller	19 mm	_				
-	Slow-action contacts	1 NO + 1 NC	_	\odot		3SE5 112-0BH60	1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	\odot		3SE5 112-0CH60	1	1 unit
Twist lever, adjust- able length, with grid hole	Snap-action contacts	1 NO + 2 NC	_	→	В	3SE5 112-0LH60	1	1 unit
gira riois	With metal lever and plastic roller 1	9 mm						
~	Slow-action contacts	1 NO + 1 NC	_		В	3SE5 112-0BH50	1	1 unit
	Snap-action contacts	1 NO + 1 NC	_		•	3SE5 112-0CH50	1	1 unit
WT _	Snap-action contacts	1 NO + 2 NC	_		В	3SE5 112-0LH50	1	1 unit
PIE	With M12 connector socket, 8-pole and 2 LEDs	(30 V, 2 A)						
6	Snap-action contacts	1 NO + 2 NC	24 V DC		В	3SE5 114-1LH50-1AD4	1	1 unit
	With metal lever and high-grade ste	el roller 19 m	m					
Twist lever, adjust- able length	Snap-action contacts	1 NO + 1 NC	_		В	3SE5 112-0CH51	1	1 unit
	Fork levers, latching							
	With metal lever and 2 plastic roller	's 19 mm						
3	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 112-0CT11	1	1 unit
G G G G G G G G G G G G G G G G G G G								
Fork lever								
1 OIK IEVEI	Rod actuators, type D, acc. to	EN 50041						
- 1	With aluminum rod, length 200 mm							
- 1	Snap-action contacts	1 NO + 1 NC	_			3SE5 112-0CH80	1	1 unit
	With plastic rod, length 200 mm	, 110 1 1 NO			_	5520 112 551100	<u> </u>	- i unit
	Snap-action contacts	1 NO + 1 NC			В	3SE5 112-0CH82	1	1 unit
Total Control of the	Shap-action contacts	TNOTTNO			Ь	355 112-00102	,	T driit
Rod actuator								
	aurator con unua ciemana com laisius las	onfiguratora	Note	:				
≈ ror oriline confic	gurator see www.siemens.com/sirius/co	omigurators .		-				

Tor online configurator see www.siemens.com/sirius/configurators .

If the device you require is not available as a complete unit, see "Modular System", page 13/33.

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 40 mm acc. to EN 50041

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Contacts	LEDs		DT	Modular system	PU (UNIT.	PS*
						Configurator	PU (UNIT, SET, M) 1	
						Order No. Price per		
asic switches	s • Enclosure width 40 mm							
de	With M20 × 1.5 connecting thread	l						
0	Slow-action contacts	1 NO + 1 NC	_	\odot	•	3SE5 112-0BA00	1	1 uni
PERSONAL PROPERTY.	Snap-action contacts	1 NO + 1 NC	_	\odot	•	3SE5 112-0CA00	1	1 uni
	 Gold-plated contacts 			\odot	В	3SE5 112-0CA00-1AC1	1	1 uni
	Slow-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 112-0KA00	1	1 uni
sic switch	Snap-action contacts	1 NO + 2 NC	_	\odot		3SE5 112-0LA00	1	1 uni
de la	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	•	3SE5 112-0MA00	1	1 un
Market .	Slow-action contacts	2 NO + 1 NC	_	€	•	3SE5 112-0PA00	1	1 uni
	With increased corrosion protect	ion ¹⁾						
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 112-0BA00-1CA0	1	1 uni
	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 112-0CA00-1CA0	1	1 uni
h increased rosion	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 112-0KA00-1CA0	1	1 uni
tection	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 112-0LA00-1CA0	1	1 uni
	Slow-action contacts with make- before-break	1 NO + 2 NC	_	€	В	3SE5 112-0MA00-1CA0	1	1 uni
in the same of the	Slow-action contacts	2 NO + 1 NC	_	→	В	3SE5 112-0PA00-1CA0	1	1 uni
	With M12 connector socket, 5-pol			_				
	Slow-action contacts	1 NO + 1 NC	_	→	В	3SE5 114-0BA00-1AC5		1 uni
	Snap-action contacts	1 NO + 1 NC	_	_		3SE5 114-0CA00-1AC5		1 uni
h M12 socket	Slow-action contacts	2 NC	_	→	В	3SE5 114-0KA00-1AE1		1 uni
4	Snap-action contacts	2 NC	_	→	В	3SE5 114-0LA00-1AE1	1	1 uni
8	With connector socket, 6-pole + F	PE (250 V, 10 A)						
14603	Slow-action contacts	1 NO + 2 NC	_	€	В	3SE5 115-0KA00-1AD1	1	1 uni
	Snap-action contacts	1 NO + 2 NC		→	<u> </u>	3SE5 115-0LA00-1AD1	1	1 uni
5	With connector socket, 6-pole + F and quick-release device	,						
n plug,	Snap-action contacts	1 NO + 1 NC	_	€	В	3SE5 115-0CA00-1AD0	1	1 unit
ole + PE	With 2 LEDs, yellow/green							
	Slow-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 112-1KA00	1	1 unit
Mary 15	Snap-action contacts	1 NO + 2 NC	24 V DC	\odot		3SE5 112-1LA00	1	1 uni
	Slow-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 112-3KA00	1	1 unit
	Snap-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 112-3LA00	1	1 unit
h 2 LEDs								
9	With M12 connector socket, 5-pol and 2 LEDs							
Sections .	Slow-action contacts	1 NO + 1 NC		\odot	В	3SE5 114-1BA00-1AF3	1	1 uni
	Snap-action contacts	1 NO + 1 NC	24 V DC	→	В	3SE5 114-1CA00-1AF3	1	1 uni
	With M12 connector socket, 8-pol and 2 LEDs	e (30 V, 2 A)						
th M12 socket d 2 LEDs	Snap-action contacts	1 NO + 2 NC	24 V DC	→	В	3SE5 114-1LA00-1AD4	1	1 unit
4	With connector socket, 6-pole + F	PE (10 A),						
0 0	Slow-action contacts	1 NO + 1 NC	24 V DC	→	В	3SE5 115-1BA00-1AF2	1	1 uni
	Snap-action contacts	1 NO + 1 NC		€		3SE5 115-1CA00-1AF2	1	1 uni
-	Snap-action contacts	2 NC	24 V DC	€		3SE5 115-1LA00-1AD2	1	1 uni
lith socket, pole + PE, nd 2 LEDs								

Product Category: POSW

[→] Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

¹⁾ Use corresponding high-grade steel lever.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 40 mm acc. to EN 50041

	Version	Diameter	DT	Modular system	PU (UNIT.	PS*
		mm		Order No. Price p	. (- /	
Operating mec	hanisms					
	Plain plungers		<u> </u>			
Д /	High-grade steel plungers	10	→ A	3SE5 000-0AB01	1	1 unit
	Rounded plungers, type B acc. to EN 50041 High-grade steel plungers, with 3 mm overtravel	10	€ ▶	3SE5 000-0AC02	1	1 unit
	Roller plungers, type C acc. to EN 50041	10	•	33E3 000-0AC02	1	i uiii
Plunger	High-grade steel roller, with 3 mm overtravel	13	→ ▶	3SE5 000-0AD02	1	1 uni
	Roller levers					
	Metal lever, plastic roller	22	→ ▶	3SE5 000-0AE01	1	1 uni
	Metal lever, high-grade steel roller	22	→ ►	3SE5 000-0AE02	1	1 uni
Roller lever	High-grade steel lever, plastic roller	22	→ B	3SE5 000-0AE03	1	1 uni
Noller level	High-grade steel lever, high-grade steel roller	22	→ B	3SE5 000-0AE04	1	1 uni
0	Angular roller levers Metal lever, plastic roller	22	→ ▶	3SE5 000-0AF01	1	1 uni
0	Metal lever, high-grade steel roller	22	→ B	3SE5 000-0AF02	1	1 uni
	High-grade steel lever, plastic roller	22	→ B	3SE5 000-0AF03	1	1 uni
Angular roller	High-grade steel lever, high-grade steel roller	22	→ B	3SE5 000-0AF04	1	1 uni
ever	Spring rods (for switches with snap-action contacts or	nly)				
	Plastic plunger and high-grade steel spring:	7	5	2055 200 24524		
	 Length 142.5 mm (spring 50 mm, plunger 50 mm) Length 76 mm (spring 23.5 mm, plunger 10 mm) 		B B	3SE5 000-0AR01 3SE5 000-0AR03	1 1	1 uni 1 uni
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		В	3SE5 000-0AR04	1	1 uni
Spring	High-grade steel plunger and spring:	7				
rod	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		В	3SE5 000-0AR02	1	1 uni
Twist actuators	s					
	Twist actuators, metal (without lever)					
	For twist levers and rod actuators, with him yight and (or left, adjustable)		→ A	3SE5 000-0AH00	1	1 uni
4	switching right and/or left, adjustable For fork levers, latching		→ ▶	3SE5 000-0AT10	1	1 uni
wist actuator	Levers for twist actuators					
	Twist levers, offset, type A acc. to EN 50041					
4	Metal lever 27 mm, plastic roller	19	→ A	3SE5 000-0AA01	1	1 uni
	Metal lever 27 mm, high-grade steel roller	19	→ A	3SE5 000-0AA02	1	1 uni
\mathcal{O}	Metal lever 27 mm, roller with ball bearing	19	→ B	3SE5 000-0AA03	1	1 uni
wist levers	Metal lever 27 mm, 2 plastic rollers	19	→ B	3SE5 000-0AA04	1	1 un
6 6	Metal lever 27 mm, plastic roller Metal lever 27 mm, rubber roller	30 50	→ B→ B	3SE5 000-0AA05 3SE5 000-0AA08	1	1 uni 1 uni
T T	High-grade steel lever 27 mm, plastic roller	19	→ B	3SE5 000-0AA00	1	1 uni
	High-grade steel lever 27 mm, high-grade steel roller	19	→ B	3SE5 000-0AA12	1	1 uni
H II	Metal lever 35 mm, plastic roller	19	→ B	3SE5 000-0AA15	1	1 uni
in in	Twist levers 30 mm, straight ¹⁾					
	Metal lever, plastic roller	19	→ B	3SE5 000-0AA24	1	1 uni
	Twist levers, adjustable length, with grid hole	40	♠ □	2055 222 24 4 22		4
Twist lever, adjust- able length	Metal lever, plastic roller Metal lever, high-grade steel roller	19 19	→ B → B	3SE5 000-0AA60 3SE5 000-0AA61	1	1 uni 1 uni
ible length	Metal lever, rubber roller	50	→ B	3SE5 000-0AA68	1	1 uni
4	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA62	1	1 uni
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA63	1	1 uni
F	Twist levers, adjustable length					
ork lever	Metal lever, plastic roller	19	Α	3SE5 000-0AA50	1	1 uni
1	Metal lever, high-grade steel roller	19	В	3SE5 000-0AA51	1	1 uni
1	Metal lever, plastic roller Metal lever, rubber roller	30 50	B B	3SE5 000-0AA55 3SE5 000-0AA58	1	1 uni 1 uni
1	High-grade steel lever, plastic roller	19	В	3SE5 000-0AA52	1	1 uni
1	High-grade steel lever, high-grade steel roller	19	В	3SE5 000-0AA53	1	1 uni
oit .	Fork levers (for switches with snap-action contacts on	ly)				
1	2 metal levers, 2 plastic rollers	19	→ ▶	3SE5 000-0AT01	1	1 uni
	2 metal levers, 2 high-grade steel rollers	19	→ B	3SE5 000-0AT02	1	1 uni
		19	→ B	3SE5 000-0AT03	1	1 uni
	2 high-grade steel levers, 2 plastic rollers	10				
	Rod actuators, type D acc. to EN 50041				4	1
Rod actuator		6 6	B B	3SE5 000-0AA80 3SE5 000-0AA81	1 1	1 uni 1 uni

[→] Positively driven actuator, necessary in safety circuits.

¹⁾ Can be clinch mounted (turned through 180°, rear of lever).

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 56 mm

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 3 \times (M20 \times 1.5)

	Version	Contacts	LEDs		DT	Complete units	PU (UNIT,	PS*
						Configurator	SÈT MÌ	
						Order No. Price pe	r J	
Complete units	s ¹⁾ • Enclosure width 56 mm							
0	Plain plungers							
	With high-grade steel plunger			_				
SECURIOS CO.	Slow-action contacts	1 NO + 1 NC		→	В	3SE5 122-0BB01	1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	_	В	3SE5 122-0CB01	1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	_	В	3SE5 122-0KB01	1	1 unit
Diain plunger	Snap-action contacts	1 NO + 2 NC		_	В	3SE5 122-0LB01	1	1 unit
Plain plunger	Slow-action contacts	2 NO + 1 NC	_	→	В	3SE5 122-0PB01	1	1 unit
<u> </u>	Rounded plungers							
	With high-grade steel plungers, wi			_				
0	Slow-action contacts	1 NO + 1 NC		→	В	3SE5 122-0BC02	1	1 unit
EMMANA	Snap-action contacts	1 NO + 1 NC		_		3SE5 122-0CC02	1	1 unit
	Slow-action contacts	1 NO + 2 NC	_	_	В	3SE5 122-0KC02	1	1 unit
	Snap-action contacts	1 NO + 2 NC		_	В	3SE5 122-0LC02	1	1 unit
Rounded plunger	Slow-action contacts	2 NO + 1 NC	_	€	В	3SE5 122-0PC02	1	1 unit
9	Roller plungers							
	With high-grade steel roller 13 mm	-						
0.00	Slow-action contacts	1 NO + 1 NC		→		3SE5 122-0BD02	1	1 unit
	Snap-action contacts		_	_		3SE5 122-0CD02	1	1 unit
	Slow-action contacts	1 NO + 2 NC		_		3SE5 122-0KD02	1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	€	В	3SE5 122-0LD02	1	1 unit
Roller plunger								
	Roller levers							
	With metal lever and plastic roller	22 mm						
	Slow-action contacts	1 NO + 1 NC	_	\odot		3SE5 122-0BE01	1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	\odot		3SE5 122-0CE01	1	1 unit
Interior Control	Slow-action contacts	1 NO + 2 NC	_	\odot		3SE5 122-0KE01	1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 122-0LE01	1	1 unit
	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 122-0PE01	1	1 unit
Roller lever	With metal lever and high-grade st	eel roller 22 mr	n					
	Snap-action contacts	1 NO + 1 NC	_	€	В	3SE5 122-0CE02	1	1 unit
	Angular roller levers							
	With metal lever and plastic roller	22 mm						
	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 122-0BF01	1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	\odot		3SE5 122-0CF01	1	1 unit
SMALARINE .	Slow-action contacts	2 NO + 1 NC	_	→	В	3SE5 122-0PF01	1	1 unit
Angular roller lever								

 $[\]begin{tabular}{l} \textcircled{9} \\ \hline \end{tabular}$ For online configurator see www.siemens.com/sirius/configurators .

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Industrial Controls Catalog

Product Category: POSW

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13

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures **Enclosure width 56 mm**

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 3 \times (M20 \times 1.5)

			` `					
	Version	Contacts	LEDs	D	Complete units		PU (UNIT,	PS*
					Configurator		SET, M)	
					Order No.	Price per		
Complete units	s ¹⁾ • Enclosure width 56 mm					PU		
Complete units	Spring rods							
- 1	Length 142.5 mm, with plastic plun	ner 50 mm						
	Snap-action contacts	1 NO + 1 NC	_	•	3SE5 122-0CR01		1	1 unit
	Shap ashen semasis							
1								
6 0								
Allianas .								
Spring rod								
	Twist levers							
	With metal lever 27 mm and plastic			_				
(4)	Slow-action contacts	1 NO + 1 NC	_	→ B	3SE5 122-0BH01		1	1 unit
6 6	Snap-action contacts	1 NO + 1 NC		→ A			1	1 unit
130,000	Slow-action contacts	1 NO + 2 NC		→ B			1	1 unit
	Snap-action contacts	1 NO + 2 NC		→ B			1	1 unit
	Slow-action contacts	2 NO + 1 NC		→ B	3SE5 122-0PH01		1	1 unit
Twist lever	With metal lever 27 mm and high-gr			O D	2055 400 201100			at country
	Snap-action contacts	1 NO + 1 NC		→ B	3SE5 122-0CH02		1	1 unit
	Snap-action contacts Twist levers, adjustable length	1 NO + 2 NC		→ B	3SE5 122-0LH02		1	1 unit
9	With metal lever with grid hole and		10 mm					
2	Slow-action contacts	1 NO + 1 NC		→ B	3SE5 122-0BH60		1	1 unit
6	Snap-action contacts	1 NO + 1 NC		→ B	3SE5 122-0CH60		1	1 unit
19	Snap-action contacts	1 NO + 2 NC		→ B	3SE5 122-0LH60		1	1 unit
	With metal lever and plastic roller 1							
2	Slow-action contacts	1 NO + 1 NC	_	В	3SE5 122-0BH50		1	1 unit
	Snap-action contacts	1 NO + 1 NC	_	•	3SE5 122-0CH50		1	1 unit
- I I I I	Snap-action contacts	1 NO + 2 NC	_	В	3SE5 122-0LH50		1	1 unit
Twist lever, adjust- able length								
abio iong	Fork levers, latching							
	With metal lever and 2 plastic roller	s 19 mm						
(A)	Snap-action contacts	1 NO + 1 NC	_	→ B	3SE5 122-0CT11		1	1 unit
0								
THE PARTY OF								
Fork lever								
TOIR level	Rod actuators							
1	With aluminum rod, length 200 mm							
	Snap-action contacts	1 NO + 1 NC	_	В	3SE5 122-0CH80		1	1 unit
e la	With plastic rod, length 200 mm							
	Snap-action contacts	1 NO + 1 NC	_	В	3SE5 122-0CH82		1	1 unit
Tana C								
Pod actuator								
Rod actuator		_	Note:					

Note:

If the device you require is not available as a complete unit, see "Modular System", page 13/37.

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Enclosure width 56 mm

inclosure

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 3 \times (M20 \times 1.5)

	Version	Contacts	LEDs		DT	Modular system		PU (UNIT.	PS*
						Configurator	()	SET, M)	
						Order No.	Price per		
Basic switche	es • Enclosure width 56 mm								
do	With 3 x M20 x 1.5 connecting the	read							
	Slow-action contacts	1 NO + 1 NC	_	\odot	•	3SE5 122-0BA00		1	1 uni
Interest Co.	Snap-action contacts	1 NO + 1 NC	_	\odot	•	3SE5 122-0CA00		1	1 uni
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 122-0KA00		1	1 uni
	Snap-action contacts	1 NO + 2 NC	_	\odot	Α	3SE5 122-0LA00		1	1 uni
asic switch	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	Α	3SE5 122-0MA00		1	1 uni
	Slow-action contacts	2 NO + 1 NC	_	\odot	•	3SE5 122-0PA00		1	1 uni
	With increased corrosion protect	tion ¹⁾							
9	Slow-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 122-0BA00-1CA0		1	1 uni
Install C	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 122-0CA00-1CA0		1	1 uni
	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 122-0KA00-1CA0		1	1 uni
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 122-0LA00-1CA0		1	1 uni
th increased	Slow-action contacts with make- before-break	1 NO + 2 NC	_	→	В	3SE5 122-0MA00-1CA0		1	1 uni
rrosion otection	Slow-action contacts	2 NO + 1 NC	_	\odot	В	3SE5 122-0PA00-1CA0		1	1 uni
	With 2 LEDs, yellow/green								
6	Slow-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 122-1KA00		1	1 uni
Installe C	Snap-action contacts	1 NO + 2 NC	24 V DC	\odot	В	3SE5 122-1LA00		1	1 uni
**	Slow-action contacts	1 NO + 2 NC	230 V AC	\odot	В	3SE5 122-3KA00		1	1 uni
	Snap-action contacts	1 NO + 2 NC	230 V AC	→	В	3SE5 122-3LA00		1	1 unit
/ith 2 L FDs									

With 2 LEDs

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

	Version	Diameter	DT	Modular system	PU (UNIT,	PS*
		mm		Order No. Price per PU	SET, M)	
Operating mec	hanisms					
n 🚇	Plain plungers High-grade steel plungers	10	→ A	3SE5 000-0AB01	1	1 unit
	Rounded plungers, type B acc. to EN 50041 High-grade steel plungers, with 3 mm overtravel	10	→ B	3SE5 000-0AC02	1	1 unit
Rounded plunger, roller plunger	Roller plungers, type C acc. to EN 50041 High-grade steel roller, with 3 mm overtravel	13	→ B	3SE5 000-0AD02	1	1 unit
Roller lever	Roller levers Metal lever, plastic roller Metal lever, high-grade steel roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller	22 22 22 22 22	→ A→ B→ B→ B	3SE5 000-0AE01 3SE5 000-0AE02 3SE5 000-0AE03 3SE5 000-0AE04	1 1 1	1 unit 1 unit 1 unit 1 unit
Angular roller lever	Angular roller levers Metal lever, plastic roller Metal lever, high-grade steel roller High-grade steel lever, plastic roller High-grade steel lever, high-grade steel roller	22 22 22 22	→ A→ B→ B→ B	3SE5 000-0AF01 3SE5 000-0AF02 3SE5 000-0AF03 3SE5 000-0AF04	1 1 1 1	1 unit 1 unit 1 unit 1 unit
Spring rod	Spring rods (for switches with snap-action contacts Plastic plunger and high-grade steel spring: • Length 142.5 mm (spring 50 mm, plunger 50 mm) • Length 76 mm (spring 23.5 mm, plunger 10 mm) • Length 242.5 mm (spring 150 mm, plunger 50 mm) High-grade steel plunger and spring: • Length 142.5 mm (spring 50 mm, plunger 50 mm)	7	В В В	3SE5 000-0AR01 3SE5 000-0AR03 3SE5 000-0AR04 3SE5 000-0AR02	1 1 1	1 unit 1 unit 1 unit 1 unit

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures **Enclosure width 56 mm**

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*
		mm		Order No. Price pe	r	
Twist actuator	'S					
	Twist actuators, metal (without lever) • For twist levers and rod actuators,		→ A	3SE5 000-0AH00	1	1 unit
	switching right and/or left, adjustable For fork levers, latching		⊕ B	3SE5 000-0AT10	1	1 unit
Twist actuator	- 1 of fork levers, laterning		9 b	33L3 000-0A110		1 dilit
	Levers for twist actuators					
	Twist levers 27 mm, offset, type A acc. to EN 5004	11				
G	Metal lever, plastic roller	19	→ A	3SE5 000-0AA01	1	1 unit
	Metal lever, high-grade steel roller	19	→ A	3SE5 000-0AA02	1	1 unit
(\cdot)	Metal lever, roller with ball bearing	19	⊕ B	3SE5 000-0AA03	1	1 unit
Twist lever	Metal lever, 2 plastic rollers	19	⊕ B	3SE5 000-0AA04	1	1 unit
	Metal lever, plastic roller	30	⊕ B	3SE5 000-0AA05	1	1 unit
	Metal lever, plastic roller	50	→ B	3SE5 000-0AA07	1	1 unit
	Metal lever, rubber roller	50	→ B	3SE5 000-0AA08	1	1 unit
	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA11	1	1 unit
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA12	1	1 unit
	Twist levers 35 mm, offset					
	Metal lever, plastic roller	19	→ B	3SE5 000-0AA15	1	1 unit
	Twist levers 30 mm, straight ¹⁾					
	Metal lever, plastic roller	19	Э В	3SE5 000-0AA24	1	1 unit
	Metal lever, plastic roller	30	Э В	3SE5 000-0AA26	1	1 unit
6 6	Twist levers, adjustable length, with grid hole					
	Metal lever, plastic roller	19	Э В	3SE5 000-0AA60	1	1 unit
8 N	Metal lever, high-grade steel roller	19	→ B	3SE5 000-0AA61	1	1 unit
A 11	Metal lever, plastic roller	50	→ B	3SE5 000-0AA67	1	1 unit
	Metal lever, rubber roller	50	→ B	3SE5 000-0AA68	1	1 unit
(C) (C)	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA62	1	1 unit
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA63	1	1 unit
	Twist levers adjustable length					
Twist lever, adjust able length	Metal lever, plastic roller	19	А	3SE5 000-0AA50	1	1 unit
able length	Metal lever, high-grade steel roller	19	В	3SE5 000-0AA51	1	1 unit
	Metal lever, plastic roller	30	В	3SE5 000-0AA55	1	1 unit
	Metal lever, plastic roller	50	В	3SE5 000-0AA57	1	1 unit
	Metal lever, rubber roller	50	В	3SE5 000-0AA58	1	1 unit
	High-grade steel lever, plastic roller	19	В	3SE5 000-0AA52	1	1 unit
	High-grade steel lever, high-grade steel roller	19	В	3SE5 000-0AA53	1	1 unit
	Fork levers (for switches with snap-action contacts	only)				
4	2 metal levers, 2 plastic rollers	19	Э В	3SE5 000-0AT01	1	1 unit
	2 metal levers, 2 high-grade steel rollers	19	→ B	3SE5 000-0AT02	1	1 unit
1 1	2 high-grade steel levers, 2 plastic rollers	19	→ B	3SE5 000-0AT03	1	1 unit
Fork lever	2 high-grade steel levers, 2 high-grade steel rollers		→ B	3SE5 000-0AT04	1	1 unit
rork level	Rod actuators, type D acc. to EN 50041					
	Aluminum rod, length 200 mm	6	В	3SE5 000-0AA80	1	1 unit
	Spring rod, length 200 mm	6	В	3SE5 000-0AA80	1	1 unit
	Plastic rod, length 200 mm	6	В	3SE5 000-0AA82	1	1 unit
	riadio roa, longin 200 mm	O		0020 000 0AA02	· ·	1 dilic
at						
Rod actuator						
_	n actuator na acceptivity and the size with					
Crosilively arive	n actuator, necessary in safety circuits.					

 [→] Positively driven actuator, necessary in safety circuits.
 Can be clinch mounted (turned through 180°, rear of lever).

Limit Switches SIRIUS 3SE5 International Limit Switches

Metal enclosures Enclosure width 56 mm, XL

Selection and ordering data

Complete units

4 or 5 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 3 \times (M20 \times 1.5)

	Version	Contacts	LEDs	DT	Complete units		PU (UNIT,	PS*
					Configurator	<u> </u>	SET, M)	
					Order No.	Price per		
complete unite	1) • Enclosure width 56 mm,	VI				PU		
omplete units	Plain plungers	XL .						
	With high-grade steel plunger							
€ Ø	Snap-action contacts	2 × (1 NO + 1 NC)	_	Э В	3SE5 162-0CB01		1	1 un
	onap action contacts	27(111011110)	`					
lain plunger	Rounded plungers							
	With high-grade steel plungers,	with 3 mm overtrave	ı					
	Slow-action contacts	1 NO + 1 NC and		Э В	3SE5 162-0EC02		1	1 un
EMILACIA CONT.	Slow-action contacts with make-							
	before-break 2 mm travel difference	1 NO +2 NC						
Rounded plunger								
F	Roller plungers	nm with 2 mm avarts	en el					
	With high-grade steel roller 13 r Slow-action contacts	2 × (1 NO + 1 NC)		€ B	3SE5 162-0BD02		1	1 un
	Snap-action contacts	2 × (1 NO + 1 NC)		• A	3SE5 162-0CD02		1	1 ur
Thistopia Committee of the Committee of	onap action contacto	2 × (1110 1 1110)		<i>y</i>	0020 102 00302			i dii
Roller plunger								
	Roller levers							
	With metal lever and plastic roll	er 22 mm						
	Slow-action contacts	$2 \times (1 \text{ NO} + 1 \text{ NC})$		€ B	3SE5 162-0BE01		1	1 un
	Snap-action contacts	2 × (1 NO + 1 NC)	_	● A	3SE5 162-0CE01		1	1 un
	With metal lever and high-grade							
Roller lever	Snap-action contacts	2 × (1 NO + 1 NC)	_	€ B	3SE5 162-0CE02		1	1 un
0	Angular roller levers							
	With metal lever and plastic roll							
	Snap-action contacts	2 × (1 NO + 1 NC)	_	∌ B	3SE5 162-0CF01		1	1 un
B 0 0								
ngular roller								
ever	Twist levers							
	With metal lever 27 mm and pla	stic roller 19 mm						
(4)	Snap-action contacts	2 × (1 NO + 1 NC)	_	● A	3SE5 162-0CH01		1	1 un
O THUMBER								

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 13/40.

¹⁾ Popular versions.

SIRIUS 3SE5 International Limit Switches

Metal enclosures Enclosure width 56 mm, XL

Modular system

4 or 6 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry 3 \times (M20 \times 1.5)

	Version	Contacts	LEDs	DT	Modular system		PU (UNIT,	PS*
					Configurator	()	SÉT, M)	
					Order No.	Price per PU		
Basic switches	s • Enclosure width 56 mm, X	L						
d	With 3 x M20 x 1.5 connecting the	nread						
0	Slow-action contacts	2 × (1 NO + 1 NC)	_	→ ▶	3SE5 162-0BA00		1	1 unit
1 States	Snap-action contacts	2 × (1 NO + 1 NC)	_	→ A	3SE5 162-0CA00		1	1 unit
	Slow-action contacts with make- before-break	2 × (1 NO + 2 NC)	_	→ A	3SE5 162-0DA00		1	1 unit
	With increased corrosion protect	ction ¹⁾						
	Slow-action contacts	2 × (1 NO + 1 NC)	_	Э В	3SE5 162-0BA00-1CA0		1	1 unit
Basic switch	Snap-action contacts	2 × (1 NO + 1 NC)	_	Э В	3SE5 162-0CA00-1CA0		1	1 unit
	Slow-action contacts with make- before-break	2 × (1 NO + 2 NC)	_	→ B	3SE5 162-0DA00-1CA0		1	1 unit

 $[\]ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	
		mm		Order No. Price p	per PU	
Operating med	hanisms					
.	Plain plungers					
	High-grade steel plungers	10	→ A	3SE5 000-0AB01	1	1 unit
Plain plunger						
fil	Rounded plungers, type B acc. to EN 50041					
	High-grade steel plungers, with 3 mm overtravel	10	→ B	3SE5 000-0AC02	1	1 unit
Rounded plunger						
	Roller plungers, type C acc. to EN 50041					
1911	High-grade steel roller, with 3 mm overtravel	13	Э В	3SE5 000-0AD02	1	1 unit
Roller plunger						
Piange	Roller levers					
	Metal lever, plastic roller	22	→ A	3SE5 000-0AE01	1	1 unit
	Metal lever, high-grade steel roller	22	-	3SE5 000-0AE02	1	1 unit
	High-grade steel lever, plastic roller	22	→ B	3SE5 000-0AE03	1	1 unit
	High-grade steel lever, high-grade steel roller	22	→ B	3SE5 000-0AE04	1	1 unit
Roller lever						
	Angular roller levers Metal lever, plastic roller	22	→ A	3SE5 000-0AF01	1	1 unit
	Metal lever, high-grade steel roller	22	→ B	3SE5 000-0AF01	1	
0	High-grade steel lever, plastic roller	22	→ B	3SE5 000-0AF 02	1	
18	High-grade steel lever, high-grade steel roller	22	⊕ B	3SE5 000-0AF04	1	
Angular roller ever			0 -			
1	Spring rods (for switches with snap-action contacts	only)				
1	Plastic plunger and high-grade steel spring:	7				
1	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		В	3SE5 000-0AR01	1	1 unit
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		В	3SE5 000-0AR03	1	
l	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		В	3SE5 000-0AR04	1	1 unit
	High-grade steel plunger and spring:	7	В	20EE 000 04 D02	1	1
Spring rod	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		В	3SE5 000-0AR02	1	1 unit
opiniy ioa						

[→] Positively driven actuator, necessary in safety circuits.

¹⁾ Use corresponding high-grade steel lever.

SIRIUS 3SE5 International Limit Switches

Metal enclosures Enclosure width 56mm and 56mm, XL

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*
		mm		Order No. Price per PU		
Twist actuators	s					
	Twist actuators, metal (without lever)		_			
	For twist levers and rod actuators, switching right and/or left, adjustable.		→ A	3SE5 000-0AH00	1	1 unit
	switching right and/or left, adjustableFor fork levers, latching		Э В	3SE5 000-0AT10	1	1 unit
Twist actuator			0 5	000000000000000000000000000000000000000		
	Levers for twist actuators					
	Twist levers 27 mm, offset, type A acc. to EN 5004		_			
65	Metal lever, plastic roller	19	→ A	3SE5 000-0AA01	1	1 unit
	Metal lever, high-grade steel roller	19	→ A	3SE5 000-0AA02	1	1 unit
Θ	Metal lever, roller with ball bearing	19	→ B	3SE5 000-0AA03	1	1 unit
Twist lever	Metal lever, 2 plastic rollers	19	→ B	3SE5 000-0AA04	1	1 unit
Twist actuators Twist actuators For twist levers, e. For fork levers, witching right a form of the lever, plastiful dever,	Metal lever, plastic roller	30	→ B	3SE5 000-0AA05	1	1 unit
	Metal lever, plastic roller	50	→ B	3SE5 000-0AA07	1	1 unit
	Metal lever, rubber roller	50	→ B	3SE5 000-0AA08	1	1 unit
	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA11	1	1 unit
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA12	1	1 unit
	Twist levers 35 mm, offset		_			
	Metal lever, plastic roller	19	→ B	3SE5 000-0AA15	1	1 unit
	Twist levers 30 mm, straight ¹⁾					
	Metal lever, plastic roller	19	→ B	3SE5 000-0AA24	1	1 unit
	Metal lever, plastic roller	30	→ B	3SE5 000-0AA26	1	1 unit
a a	Twist levers, adjustable length,					
YY	-	19	Ωр	3SE5 000-0AA60	1	1 unit
8 11		19	→ B→ B	3SE5 000-0AA60	1	1 unit
H II	Metal lever, high-grade steel roller	50	→ B		1	1 unit
8 11		50	→ B	3SE5 000-0AA67 3SE5 000-0AA68	1	1 unit 1 unit
	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA66	1	1 unit
	High-grade steel lever, high-grade steel roller	19	→ B	3SE5 000-0AA62	1	1 unit
	Twist levers, adjustable length	10		COLO COL CALAGO		- 1 01111
Twist lever, adjust-	Metal lever, plastic roller	19	А	3SE5 000-0AA50	1	1 unit
able length	Metal lever, high-grade steel roller	19	В	3SE5 000-0AA51	1	1 unit
	Metal lever, plastic roller	30	В	3SE5 000-0AA55	1	1 unit
	Metal lever, plastic roller	50	В	3SE5 000-0AA57	1	1 unit
	Metal lever, rubber roller	50	В	3SE5 000-0AA58	1	1 unit
	High-grade steel lever, plastic roller	19	В	3SE5 000-0AA52	1	1 unit
	High-grade steel lever, high-grade steel roller	19	В	3SE5 000-0AA53	1	1 unit
	Fork levers (for switches with snap-action contacts of	only)				
4	2 metal levers, 2 plastic rollers	19	Э В	3SE5 000-0AT01	1	1 unit
	2 metal levers, 2 high-grade steel rollers	19	→ B	3SE5 000-0AT02	1	1 unit
4	2 high-grade steel levers, 2 plastic rollers	19	→ B	3SE5 000-0AT03	1	1 unit
Fork lever	2 high-grade steel levers, 2 high-grade steel rollers	19	→ B	3SE5 000-0AT04	1	1 unit
I OIK IEVEI	Rod actuators, type D acc. to EN 50041					
1	Aluminum rod, length 200 mm	6	В	3SE5 000-0AA80	1	1 unit
1	Spring rod, length 200 mm	6	В	3SE5 000-0AA81	1	1 unit
1	Plastic rod, length 200 mm	6	В	3SE5 000-0AA82	1	1 unit
_L	Plastic rod, length 330 mm	6	В	3SE5 000-0AA83 ²⁾	1	1 unit
(III	-					
7						
Rod actuator						
a actaatoi						

 [→] Positively driven actuator, necessary in safety circuits.
 1) Can be clinch mounted (turned through 180°, rear of lever).

²⁾ For Enclosure width 56mm XL only.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Ambient temperature to –40 °C

Selection and ordering data

Modular system

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

2 01 3 001118018	Degree of protection (Foo)(Fo	7 Cable enti	TY 10120 X 1.5					
	Version	Contacts LE	LEDs	DT	Modular system		PU (UNIT, SET, M)	PS*
					Configurator	()		
					Order No.	Price per PU		
Basic switche	s • Enclosure width 31 mm (with	rounded plu	nger ¹⁾)					
all or	With plunger							
. 61	Snap-action contacts	1 NO + 1 NC	_	Э В	3SE5 212-0CC05-1AJ0		1	1 unit
ESIGNALIS	Slow-action contacts	1 NO + 2 NC	_	Э В	3SE5 212-0KC05-1AJ0		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→ B	3SE5 212-0LC05-1AJ0		1	1 unit
Basic switch								

 $[\]ensuremath{\mathfrak{G}}$ For online configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

N	oto:	
١٧	Ole.	

	Version	Diameter	DT	Modular system		PU (UNIT,	PS*	
		mm		Order No.	Price per PU	SÈT, M)		
perating me	chanisms							
<u> </u>	Roller plungers, type C acc. to EN 50047							
	Plastic rollers	10	→ B	3SE5 000-0AD03-1AJ0		1	1 uni	
ller plunger								
	Roller levers, type E acc. to EN 50047							
9	Metal lever, plastic roller	13	Э В	3SE5 000-0AE10-1AJ0		1	1 un	
	High-grade steel lever, plastic roller	13	→ B	3SE5 000-0AE12-1AJ0		1	1 uni	
ller lever								
	Angular roller levers		0.5					
0	Metal lever, plastic roller	13	→ B	3SE5 000-0AF10-1AJ0		1	1 un	
	High-grade steel lever, plastic roller	13	Э В	3SE5 000-0AF12-1AJ0		1	1 un	
gular roller ver								
wist actuato								
	Twist actuators, plastic (without lever)							
	Switching right and/or left, adjustable		→ B	3SE5 000-0AK00-1AJ0		1	1 uni	
rist actuator								
	Levers for twist actuators							
	Twist lever straight, 21 mm, type A acc. to	EN 50047						
*	Metal lever, plastic roller	19	→ B	3SE5 000-0AA21-1AJ0		1	1 uni	
)	High-grade steel lever, plastic roller	19	Э В	3SE5 000-0AA31-1AJ0		1	1 un	
rist lever								
	Twist levers, adjustable length, with grid he		_					
•	Metal lever, plastic roller	19	→ B	3SE5 000-0AA60-1AJ0		1	1 uni	
Ţ	High-grade steel lever, plastic roller	19	→ B	3SE5 000-0AA62-1AJ0		1	1 uni	
wist lever, djustable length	n							

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Ambient temperature to –40 °C

Complete units

2 or 3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version Contacts LEDs DT Complete units			PU (UNIT,	PS*			
					Configurator	()	SÉT, M)	
					Order No.	Price per PU		
Complete units	s · Enclosure width 40 mr	n						
Л	Rounded plungers, typ	e B acc. to EN 5004	11					
	With high-grade steel plun	gers, with 3 mm overt	ravel					
THE STATE OF THE S	Snap-action contacts	1 NO + 1 NC	_	→ B	3SE5 112-0CC02-1AJ0		1	1 unit
Rounded plunger								
	Twist levers, adjustable	e length						
	With high-grade steel lever and plastic roller 19 mm	with grid hole						
	Snap-action contacts	1 NO + 1 NC	_	→ B	3SE5 112-0CH62-1AJ0		1	1 unit

Twist lever, adjustable length

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

If the device you require is not available as a complete unit, see "Modular System".

Modular system

2, 3 or 4 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

2, 3 Of 4 CO	ntacts · Degree of protection	i iP66/iP67 · Cable en	try IVIZU X	1.5					
	Version	Contacts	LEDs		DT	Modular system		PU (UNIT,	PS*
						Configurator	()	SET, M)	
						Order No.	Price per		
Basic switch	hes · Enclosure width 40 m	m					10		
- Charles	With M20 □ 1.5 connecting								
0 0	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 112-0CA00-1AJ0		1	1 unit
Fired Street	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 112-0KA00-1AJ0		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	→	В	3SE5 112-0LA00-1AJ0		1	1 unit
	·								
Basic switch									
Basic switc	hes • Enclosure width 56 m	m							
- Charles	With 3 x M20 x 1.5 connect	ting thread							
	Snap-action contacts	1 NO + 1 NC	_	\odot	В	3SE5 122-0CA00-1AJ0		1	1 unit
THE REAL PROPERTY.	Slow-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 122-0KA00-1AJ0		1	1 unit
	Snap-action contacts	1 NO + 2 NC	_	\odot	В	3SE5 122-0LA00-1AJ0		1	1 unit
Basic switch									
Basic switch	hes • Enclosure width 56 m	m, XL							
do	With 3 x M20 x 1.5 connect	ting thread							
0 8 2	Slow-action contacts	2 × (1 NO + 1 NC)	_	\odot	В	3SE5 162-0BA00-1AJ0		1	1 unit
19 may 1	Snap-action contacts	2 × (1 NO + 1 NC)	_	\odot	В	3SE5 162-0CA00-1AJ0		1	1 unit
_									
Basic switch									

To online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits. Note:

Selection aid see page 13/9.

Siemens Industry, Inc. Industrial Controls Catalog

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Ambient temperature to -40 °C

	Version	Diameter	DT	Modular system		PU (UNIT, SET, M)	PS*
		mm		Order No.	Price per PU	JL I, IVI)	
Operating med	chanisms						
M	Rounded plungers, type B acc. to EN 50041						
	High-grade steel plungers, with 3 mm overtravel	10	→ B	3SE5 000-0AC02-1AJ0		1	1 unit
Rounded plunger							
(4)	Roller plungers, type C acc. to EN 50041						
	High-grade steel roller, with 3 mm overtravel	10	→ B	3SE5 000-0AD02-1AJ0		1	1 unit
Roller plunger							
	Roller levers						
	Metal lever, plastic roller	13	→ В	3SE5 000-0AE01-1AJ0		1	1 unit
>0	High-grade steel lever, plastic roller	13	Э В	3SE5 000-0AE03-1AJ0		1	1 unit
Roller lever							
A CONTRACT OF THE CONTRACT OF	Angular roller levers						
0	Metal lever, plastic roller	13	⊛ В	3SE5 000-0AF01-1AJ0		1	1 unit
0	High-grade steel lever, plastic roller	13	→ B	3SE5 000-0AF03-1AJ0		1	1 unit
Angular roller							
lever Twist actuator	2						
T Wist dotadtor	Twist actuators, metal (without lever)						
	Switching right and/or left, adjustable		Э В	3SE5 000-0AH00-1AJ0		1	1 unit
Twist actuator							
	Levers for twist actuators						
6	Twist levers, type A acc. to EN 50041 Metal lever, plastic roller	19	⊕ в	3SE5 000-0AA01-1AJ0		1	1 unit
	High-grade steel lever, plastic roller	19	⊕ B	3SE5 000-0AA01-1AJ0		1	1 unit
\odot	riigir grado otodi lovol, pladilo rollol	10	0.5	0020 000 0AATT 1A00			1 01110
Twist lever							
	Twist levers, adjustable length, with grid hole						
Y	Metal lever, plastic roller	19	→ B	3SE5 000-0AA60-1AJ0		1	1 unit
8	High-grade steel lever, plastic roller	19	Э В	3SE5 000-0AA62-1AJ0		1	1 unit
8							
A P							
H-							
Twist lever, adjustable length							
	a actuator, no acceptivi in actaty disquita						

 $igoplus ext{Positively driven actuator, necessary in safety circuits.}$

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Compact design

Overview



Compact design in width 30 mm

Particularly in harsh environments or on equipment with limited space, the small 3SE5 4 position switches in compact design with a depth of 16 mm and a weight of only 80 g (without cable) are ideal. Above all the versions with molded cable can be mounted in the most confined places.

3SE5 4 compact position switches are available in two different widths as complete units:

- The 3SE5 413 series complies with the EU standard and features a 30 mm wide enclosure with drilled holes at a distance of 20 mm.
- The 3SE5 423 series meets the requirements of the US market and features a 40 mm wide enclosure with drilled holes at a spacing of 25 mm.

Both the enclosure and the twist actuator are made of metal and comply with the high IP67 degree of protection. Following actuators are available:

- Rounded plungers
- Rounded plungers with central fixing
- Rounded plungers with external seal
- Roller plungers
- Roller plunger with central fixing
- Twist levers

The contact block is designed with snap-action contacts 1 NO + 1 NC. The NC contact complies with the requirements for positive opening acc. to IEC 60947-5-1.

Use in safety circuits up to Category 4 according to EN ISO 13849-1.

Connection:

- With molded cable, 2 m or 5 m long
- With M12 connector socket

Benefits

- Very compact yet with the same rating as the 3SE51 standard switches, for notable space savings in confined installation conditions
- Various actuator versions available
- Actuator heads rotatable in increments of 90°
- Time is saved when mounting the fully assembled unit
- With metal enclosure of degree of protection IP67, ideal for use in rough industrial environments
- · Insensitive to electromagnetic interference

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SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures Compact design

Selection and ordering data

2 snap-action contacts 1 NO + 1 NC · Degree of protection IP67 · With connecting cable or M12 connector socket

	Operating mechanism	Enclosure width		DT	Configurator	E	PU (UNIT, SET, M)	PS*
		mm			Order No.	Price per PU	- , ,	
Complete units • I	Enclosure width 30 or 40 mm					10		
	Rounded plungers							
	Standard mounting							
ه ط	- With 2 m cable 5 x 0.75 mm ²	30	_	A	3SE5 413-0CC20-1EA2 3SE5 423-0CC20-1EA2		1	1 unit
	- With 5 m cable 5 x 0.75 mm ²	40 30	_	В	3SE5 423-0CC20-1EA5		1	1 unit 1 unit
AL C6	- With M12 connector socket	30		А	3SE5 413-0CC20-1EB1		1	1 unit
ounded plunger		40	\odot	Α	3SE5 423-0CC20-1EB1		1	1 unit
1	• With central fixing M12 x 1							
#	- With 2 m cable 5 x 0.75 mm ²	30	_	•	3SE5 413-0CC21-1EA2		1	1 unit
ر		40	→	Α	3SE5 423-0CC21-1EA2		1	1 unit
ith central fixing								
A	With external seal							
12	- With 2 m cable 5 x 0.75 mm ²	30		Α	3SE5 413-0CC22-1EA2		1	1 unit
C C		40	→	Α	3SE5 423-0CC22-1EA2		1	1 unit
. C6								
ith external seal	Roller plungers							
	Standard mounting							
ام	- With 2 m cable 5 x 0.75 mm ²	30	\odot	•	3SE5 413-0CD20-1EA2		1	1 unit
WINESS TO SERVICE STREET		40	\odot	•	3SE5 423-0CD20-1EA2		1	1 unit
	- With 5 m cable 5 x 0.75 mm ²	30	_	В	3SE5 413-0CD20-1EA5		1	1 unit
. C€	- With M12 connector socket	30		Α	3SE5 413-0CD20-1EB1		1	1 unit
ller plunger	a With appear fixing M40 x 4	40	€	Α	3SE5 423-0CD20-1EB1		1	1 unit
[4]	 With central fixing M12 x 1 With 2 m cable 5 x 0.75 mm² 	30	→	Α	3SE5 413-0CD21-1EA2		1	1 unit
را ا	- Will 2 III cable 3 x 0.73 IIIII	40	_	Α	3SE5 423-0CD21-1EA2		1	1 unit
Mary Mary	 Actuator head rotated 90° 		_				•	
	- With 2 m cable 5 x 0.75 mm ²	30	\odot	Α	3SE5 413-0CD23-1EA2		1	1 unit
The state of the s								
th plug								
8								
/ith plug, enclosure								
10(11 40 11) 11	Twist levers							
	Standard mounting							
Men	- With 2 m cable 5 x 0.75 mm ²	30	\odot	•	3SE5 413-0CN20-1EA2		1	1 unit
		40	→	Α	3SE5 423-0CN20-1EA2		1	1 unit
e d	- With 5 m cable 5 x 0.75 mm ²	30	_	Α	3SE5 413-0CN20-1EA5		1	1 unit
in the	- With M12 connector socket	30	_	A	3SE5 413-0CN20-1EB1		1	1 unit
0. C C		40	€	Α	3SE5 423-0CN20-1EB1		1	1 unit

[©] For online configurator see www.siemens.com/sirius/configurators .

[→] Positive opening according to IEC 60947-5-1, Appendix K.

Limit Switches SIRIUS 3SE5 International Limit Switches

3SE5, open-type design

Overview



Their compact design makes these switches particularly suitable for use in confined conditions. The fixing dimensions and operating points are according to EN 50047.

The switches are equipped with two or three contacts in slow-action or snap-action versions. The stroke is 6 mm.

The empty enclosure can be equipped with all switch block versions (see page 13/49).

Open-type design

Selection and ordering data

2 or 3 contacts · Degree of protection IP20 (2 contacts), IP10 (3 contacts)

2 01 0 001114010	Begree of proteotion in 20 (2 contacts), ii 10 (0 00iiiaoi	.0)						
	Version	Contacts		DT	Configurator	PU (UNIT, SET, M)	PS*		
					Order No. Price per				
Plastic enclosu	ures • Enclosure width 30 mm								
	With teflon plunger, Ø 6 mm								
	Slow-action contacts	1 NO + 1 NC	\odot	•	3SE5 250-0BC05	1	1 unit		
0,,0	Snap-action contacts	1 NO + 1 NC	→	•	3SE5 250-0CC05	1	1 unit		
2 contacts	Slow-action contacts	1 NO + 2 NC	→	•	3SE5 250-0KC05	1	1 unit		
Я	Snap-action contacts Snap-action contacts	1 NO + 2 NC	_		3SE5 250-0KC05 3SE5 250-0LC05	1	1 unit		
	Slow-action contacts with make-before-break	1 NO + 2 NC	⊕	Α	3SE5 250-0LC05 3SE5 250-0MC05	1	1 unit		
(a) (b)	Slow-action contacts	2 NO + 1 NC	→	>	3SE5 250-0PC05	1	1 unit		
3 contacts									
	Empty enclosures without contact block	_	→	В	3SE5 250-0AC05	1	1 unit		
Empty enclosures									
B	Contact blocks with 2 contacts for open-type design ¹⁾								
	Slow-action contacts	1 NO + 1 NC	\odot	В	3SE5 050-0BA00	1	1 unit		
0 0	Snap-action contacts	1 NO + 1 NC	_						
2 contacts	- Standard		→	В	3SE5 050-0CA00	1	1 unit		
2 001114010	 2 × 2 mm switching interval 		€	В	3SE5 050-0GA00	1	1 unit		
	- Short stroke		\odot	В	3SE5 050-0NA00	1	1 unit		

 $\ensuremath{\mathfrak{D}}$ For online configurator see www.siemens.com/sirius/configurators .

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[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Contact blocks with 3 contacts see page 13/49.

SIRIUS 3SE5 International Limit Switches

Accessories

Selection and ordering data

Selection ar	nd ordering data								
		Version	DT	Order No.	List Price \$ per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Diversion com	masticus for MOO	. 4 E connection threads							kg
Plug-in con	nections for W20	× 1.5 connecting threads Connector sockets (6-pole+PE), for M20×1.5	. D	3SY3 131		1	1 unit	102	0.030
		For max. 250 V, 10 A With 0.75 mm² connecting cable, plastic, degree of protection IP65, ambient temperature –40 to +90 °C	ь	3313 131		'	i uriit	102	0.030
		Cable boxes (6-pole + PE) ¹⁾	Α	3SY3 136		1	1 unit	102	0.065
	3SY3 136	With terminal compartment, can be pre- assembled, plastic, degree of protection IP65	5						
3SY3 131		Connector sockets (4-pole), M12, for M20 x 1.5, fixed For max 250 V, 4 A, $U_{\rm imp}$ = 2500 V With four 0.25 mm ² connecting cables, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 127		1	1 unit	102	0.010
		Cable boxes (4-pole), M12, with terminal compartment, can be pre-assembled	Α	3RX8 000-0CB45		1	1 unit	574	0.015
		Angular cable boxes (4-pole), M12, with terminal compartment, can be pre-assembled	A	3RX8 000-0CC45		1	1 unit	574	0.015
3SY3 127	3RX8 000	Connector sockets (5-pole), M12, for M20 × 1.5, fixed For max 125 V, 4 A, U _{imp} = 1500 V With five 0.25 mm ² connecting cables, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 128		1	1 unit	102	0.010
W		Cable boxes (5-pole), M12, with terminal compartment, can be pre-assembled	Α	3RX8 000-0CB55		1	1 unit	574	0.016
A		Angular cable boxes (5-pole), M12, with terminal compartment, can be pre-assembled	A	3RX8 000-0CC55		1	1 unit	574	0.016
3SY3 134		Connector sockets (8-pole), M12, for M20 x 1.5, fixed, metal version For max 30 V, 2 A, U _{imp} = 800 V With eight 0.25 mm ² connecting cables, metal, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 134		1	1 unit	102	0.025
		Cable boxes (8-pole), M12 With 5 m PUR cable, 8×0.25 mm ² , IP67	Α	3RX8 000-0CB81- 1GF0		1	1 unit	574	0.335
Adaptors fo	r 3SE. (with M 16)								
3SX19	997	metal M16 x 1.5 to 1/2" NPT	•	3SX1997		1	1 unit		0.022
Adaptors fo	r 3SE2 (with M 20								
-		plastic M20 x 1.5 wire gland		3SB3901-0CK		1	1 unit		0.011
3SX9918	3	metal M20 x 1.5 to 1/2" NPT	•	3SX1998		1	1 unit		0.022
3SX19		plastic M20 x 1.5 to 1/2" NPT		3SX9918		1	1 unit		0.012
3SX9926	6	plastic cable gland, M20 x 1.5		3SX9926		1	1 unit		0.010
Adaptors fo	r 3SE. (with M 25)								
		metal M 25 x 1.5 to 1/2" NPT	>	3SX1999		1	1 unit		0.022

³SX1999

For wiring, a crimping tool is necessary, max. conductor cross-section 1 mm².

Limit Switches SIRIUS 3SE5 International Limit Switches

Accessories and spare parts

	Version	Color/ contacts		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*
Optional accessories	for 3SE52							
	Protective caps, rubber, for rounded plungers acc. to EN 50047, 3SE5C05	Black		Α	3SE5 000-0AC30		1	1 unit
Spare parts for 3SE51	1, 3SE52							_
, silve	Empty enclosures, plastic	Turquoise						
	Enclosure width 31 mm			В	3SE5 232-0AC05		1	1 unit
Estate I	 With increased corrosion protection 			В	3SE5 232-0AC05-1CA0		1	1 unit
	Enclosure width 50 mm			В	3SE5 242-0AC05		1	1 unit
	 With increased corrosion protection 			В	3SE5 242-0AC05-1CA0		1	1 unit
Enclosure width 31 mm								
	Empty enclosures, metal	Turquoise						
0.0	Enclosure width 31 mm			В	3SE5 212-0AC05		1	1 unit
BUSINESS TO STATE OF THE PARTY	 With increased corrosion protection 			В	3SE5 212-0AC05-1CA0		1	1 unit
	Enclosure width 40 mm			В	3SE5 112-0AA00		1	1 unit
	 With increased corrosion protection 			В	3SE5 112-0AA00-1CA0		1	1 unit
	Enclosure width 56 mm			В	3SE5 122-0AA00		1	1 unit
Enclosure width 40 mm	 With increased corrosion protection 			В	3SE5 122-0AA00-1CA0		1	1 unit
	Enclosure width 56 mm, XL ¹⁾			В	3SE5 162-0AA00		1	1 unit
	Contact blocks with 2 contacts ²⁾							
(a) (c)	 Slow-action contacts 	1 NO + 1 NC	\odot		3SE5 000-0BA00		1	1 unit
	 Snap-action contacts 	1 NO + 1 NC						
0 0	- Standard		€	В	3SE5 000-0CA00		1	1 unit
2 contacts	- Gold-plated contacts		\odot	В	3SE5 000-0CA00-1AC1		1	1 unit
	 2 x 2 mm switching interval 		→	В	3SE5 000-0GA00		1	1 unit
	- Short stroke		€	В	3SE5 000-0NA00		1	1 unit
AN USA	Contact blocks with 3 contacts			_				
9	Slow-action contacts	1 NO + 2 NC	→	В	3SE5 000-0KA00		1	1 unit
	Snap-action contacts	1 NO + 2 NC	→	В	3SE5 000-0LA00		1	1 unit
9	 Slow-action contacts with make-before- break 	1 NO + 2 NC	→	Α	3SE5 000-0MA00		1	1 unit
3 contacts	Slow-action contacts	2 NO + 1 NC		Α	3SE5 000-0PA00		1	1 unit
	Contact blocks for enclosure XL ¹⁾							
(a) (e)	 Slow-action contacts 	1 NO + 1 NC	\odot	В	3SE5 060-0BA00		1	1 unit
	 Snap-action contacts 	1 NO + 1 NC	\odot	В	3SE5 060-0CA00		1	1 unit
2 contacts	Slow-action contacts with make-before- break	1 NO + 2 NC	→	В	3SE5 060-0MA00		1	1 unit

→ Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Equip XL enclosures only with contact combinations according to pages 12/11, 12/42 and 12/43.

²⁾ Unsuitable for open-type position switches; see page 13/47.

SIRIUS 3SE5 International Limit Switches

Accessories and spare parts

		5	DT	0 1 11	5.1	511	D0+
	Version	Rated voltage LED	DT	Order No.	Price per	PU (UNIT,	PS*
		CCD			10	SET, M)	
		V					
Spare parts for 3SE51	, 3SE52						
	Covers for plastic enclosu	res, width 31 mm					
Emiliar II	 Turquoise with LED 	24 DC	В	3SE5 230-1AA00		1	1 unit
***		230 AC	В	3SE5 230-3AA00		1	1 unit
	 Yellow 	_	В	3SE5 230-0AA00-1AG0		1	1 unit
04	Yellow with LED	24 DC	В	3SE5 230-1AA00-1AG0		1	1 unit
31 mm, turquoise with LED)	230 AC	В	3SE5 230-3AA00-1AG0		1	1 unit
	Covers for plastic enclosu	res, width 40 mm					
	 Turquoise with LED 	24 DC	В	3SE5 130-1AA00		1	1 unit
1022		230 AC	В	3SE5 130-3AA00		1	1 unit
	 Yellow 	_	В	3SE5 130-0AA00-1AG0		1	1 unit
	 Yellow with LED 	24 DC	В	3SE5 130-1AA00-1AG0		1	1 unit
40 mm, yellow with LED		230 AC	В	3SE5 130-3AA00-1AG0		1	1 unit
	Covers for plastic enclosu	res, width 50 mm					
8	Turquoise with LED	24 DC	В	3SE5 240-1AA00		1	1 unit
NAME .		230 AC	В	3SE5 240-3AA00		1	1 unit
	• Yellow	_	В	3SE5 240-0AA00-1AG0		1	1 unit
50 mm, turquoise with LED	Yellow with LED	24 DC	В	3SE5 240-1AA00-1AG0		1	1 unit
	TOHOW WILL ELD	230 AC	В	3SE5 240-3AA00-1AG0		1	1 unit
in the second	Covers for metal enclosure			OOLO LIO OAROO IRGO		· ·	- 1 01110
	Turquoise with LED	24 DC	В	3SE5 210-1AA00		1	1 unit
and a second	raiquoise wiii EEB	230 AC	В	3SE5 210-3AA00		1	1 unit
	• Yellow	250 AC	В	3SE5 210-0AA00-1AG0		1	1 unit
	Yellow with LED	24 DC	В	3SE5 210-1AA00-1AG0		1	1 unit
31 mm, turquoise with LED) Tellow With LLD	230 AC	В	3SE5 210-1AA00-1AG0		1	1 unit
	Covers for metal enclosure		D	33E3 210-3AA00-1AG0		- 1	1 unit
	Turquoise with LED	24 DC	В	3SE5 110-1AA00		1	1 unit
San San San San San San San San San San	▼ Turquoise with LED	230 AC	В	3SE5 110-3AA00		1	1 unit
****	• Valley	230 AC				1	
	Yellow Yellow with LED		В	3SE5 110-0AA00-1AG0		•	1 unit
10 11 150	Yellow with LED	24 DC	В	3SE5 110-1AA00-1AG0		1	1 unit
40 mm, yellow with LED	O f	230 AC	В	3SE5 110-3AA00-1AG0		1	1 unit
	Covers for metal enclosure	*	Б	0055 400 44 400			4
(Married)	Turquoise with LED	24 DC	В	3SE5 120-1AA00		1	1 unit
	N. II	230 AC	В	3SE5 120-3AA00		1	1 unit
	• Yellow	_	В	3SE5 120-0AA00-1AG0		1	1 unit
EC many wallers with 1 ED	Yellow with LED	24 DC	В	3SE5 120-1AA00-1AG0		1	1 unit
56 mm, yellow with LED		230 AC	В	3SE5 120-3AA00-1AG0		1	1 unit
	Covers for XL metal enclo	sures, width 56 mm					
	Yellow	_	В	3SE5 160-0AA00-1AG0		1	1 unit

Limit Switches SIRIUS 3SE5 International Limit Switches

Technical data

Туре		3SE5 1, 3S	E5 2	3SE5 41.	3SE5 42.
General data					
Standards		IEC 60947-5	-1, EN 60947-5-1		
Rated insulation voltage <i>U</i> _i	V	400		400	
Pollution degree acc. to IEC 60664-1		Class 3		Class 3	
Rated impulse withstand voltage <i>U</i> _{imp}	kV	6		4	
Rated operational voltage U _e	V	400 V AC, over 300 V A only for equa		300 AC	
Conventional thermal current Ith	А	10	6	10	
Rated operational current I _e		2-pole	3-pole	2-pole	
With alternating current 50/60 Hz		I _e /AC-15	I _o /AC-15	I _e /AC-15	
- At 24 V - At 120 V - At 240 V	A A A	6 6 3	6 3 1.5	6 6 3	
For direct current		$I_{\rm e}/{\rm DC}\text{-}13$	I _e /DC-13	I _e /DC-13	
- At 24 V - At 125 V - At 250 V	A A A	3 0.55 0.27	3 0.55 0.27	3 0.55 0.27	
Short-circuit protection ²⁾					
With DIAZED fuse links, gG operational class	А	6			
With miniature circuit breaker, Char. C	Α	1	2	1	
Mechanical endurance					
Basic switches			rating cycles	30 ×10 ⁶ operating cycles	30 ×10 ⁶ operating cycles
• With spring rod, 3SE5R			rating cycles	-	
With fork lever 3SE5 1T		1 ×10 ⁶ opera	ating cycles	_	-
With 3RH.1, 3RT contactors in size S00, S0 For utilization category AC-15 when switching off I _e /AC-15 at 240 V			rating cycles erating cycles	10 ×10 ⁶ operating cycles —	5 ×10 ⁶ operating cycles —
With utilization category DC-12/DC-13		For direct cu	rrent depending	on the loading of the switch	
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operati	ing cycles/h	1800 operating cycles/h	
Switching accuracy For repeated switching, measured at the plunger of the contact block	mm	0.05			
With twist actuators		1°			
Rated data acc. to @, @ and \$1. Rated voltage Uninterrupted current	V A	300 6			
Switching capacity		Heavy duty, A 300 / B 30	0 / Q 300	A 300 / Q 300	

¹⁾ For slow-action contacts 1 NO + 2 NC with make-before-break and 2 NO + 1 NC the following applies: over 250 V AC only equal potential

²⁾ Without any welds according to IEC 60947-5-1.

Туре		3SE5 23.	3SE5 13	3SE5 24.	3SE5 21.	3SE5 11.	3SE5 12., 3SE5 16.	3SE5 4	3SE5 25.
Enclosure									
Enclosure									
Material		Ultramid A	3X2G7		Zinc diecas	sting GD Zn	Al4 Cu1		_
Width	mm	31	40	50	31	40	56	30 / 40	30
Degree of protection acc. to IEC 60529		IP65	IP66/IP67 ¹)				IP67	IP20, IP10
Ambient temperature									
During operation	°C	-25 +85						-25 +85	-25 +85
In operation, switch with LEDs	°C	-25 +7 0						_	_
Storage, transport	°C	-40 +90						-40 +90	-40 + 90
Mounting position		Any							
Connection									
Cable entry		1 × (M20 ×	: 1.5)	2 × (M20 × 1.5)	1 × (M20 ×	1.5)	3 × (M20 × 1.5)	_	_
Conductor cross-sections ²⁾									
• Solid	mm ²	2 x (0.5	0.75), 1 × (0.	.5 1.5)					
 Finely stranded with end sleeve 	mm ²	2 × (0.5	1.5)						
Tightening torque, contact block	Nm	0.8 1.0							
Protective conductor connection inside end	losure	_			M3.5			_	_

¹⁾ For twist actuators with spring rod and rod actuators: IP65/IP67.

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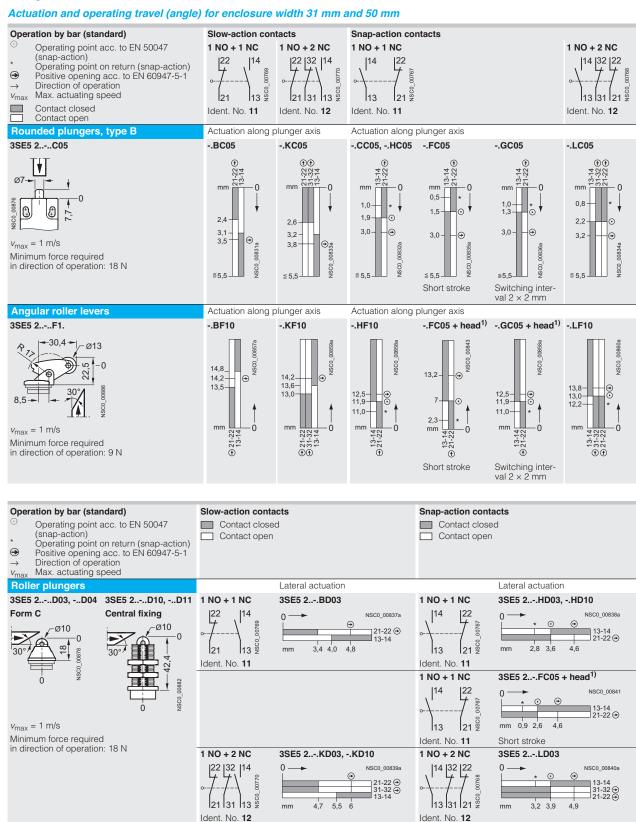
12

²⁾ For the maximum number of connectable conductors for the respective contact block see operating instructions.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures
Enclosure widths 31 mm and 50 mm

Configuration



¹⁾ The basic switch and actuator headactuator head must be ordered separately.

SIRIUS 3SE5 International Limit Switches

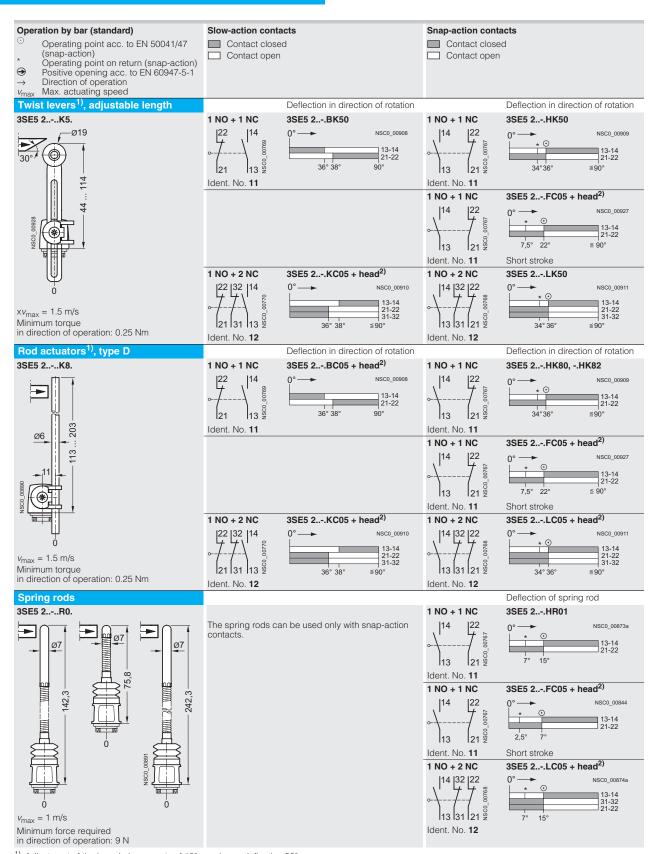
3SE5, plastic enclosures Enclosure widths 31 mm and 50 mm

¹⁾ Adjustment of the lever in increments of 10°, maximum deflection 90°.

²⁾ The basic switch and actuator head must be ordered separately.

SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures
Enclosure widths 31 mm and 50 mm



¹⁾ Adjustment of the lever in increments of 10°, maximum deflection 90°.

²⁾ The basic switch and actuator head must be ordered separately.

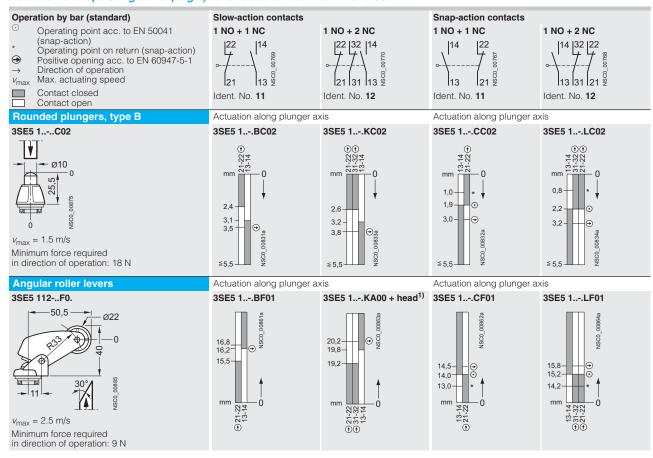
SIRIUS 3SE5 International Limit Switches

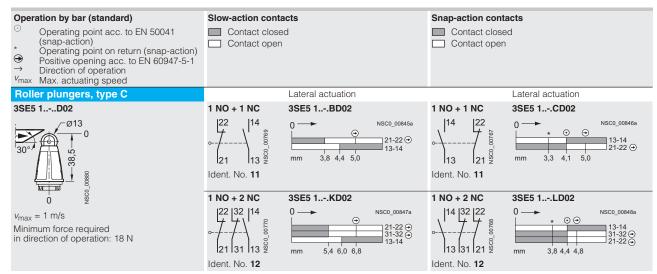
3SE5, metal enclosures Enclosure widths 40 mm and 56 mm

closure widths 4

Actuation and operating travel (angle) for enclosure width 40 mm and 56 mm

Configuration





¹⁾ The basic switch and actuator head must be ordered separately.

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SIRIUS 3SE5 International Limit Switches

3SE5, plastic enclosures Enclosure widths 31 mm and 50 mm

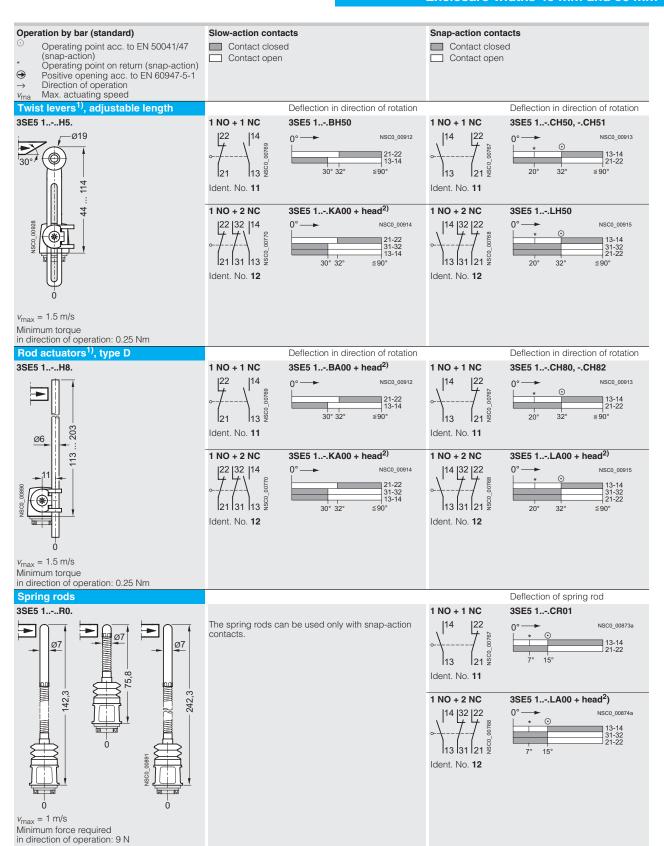
Configuration Actuation and operating travel (angle) for enclosure width 40 mm and 56 mm Operation by bar (standard) Slow-action contacts **Snap-action contacts** Operating point acc. to EN 50041 Contact closed Contact closed (snap-action) Contact open Contact open Operating point on return (snap-action) Positive opening acc. to EN 60947-5-1 Direction of operation V_{max} Max. actuating speed Roller levers Lateral actuation Lateral actuation 3SE5 1..-..E0. 1 NO + 1 NC 3SE5 1..-.BE01 1 NO + 1 NC 3SE5 1 .. - . CE01 NSC0_00853a NSC0_00854a * ⊙ ⊙ 19,8 13-14 21-22 ⊕ 13 \$ 10,2 10,8 11,2 mm 8,1 8,7 9,4 13 mm Ident. No. 11 Ident. No. 11 1 NO + 2 NC 3SE5 1 ..- . KE01 1 NO + 2 NC 3SE5 1..-.LE01 22 32 14 14 32 22 NSC0 00855a NSC0 00856a .0 0 $v_{\text{max}} = 2.5 \text{ m/s}$ 13-14 31-32 ⊕ 21-22 ⊕ Minimum force required 11,1 11,9 12.4 mm 9.1 9.7 10.6 in direction of operation: 9 N Ident. No. 12 Ident. No. 12 Twist levers¹⁾, type A Deflection in direction of rotation Deflection in direction of rotation 3SE5 1..-..H0. 1 NO + 1 NC 1 NO + 1 NC 3SE5 1 .. - . BH01 3SE5 1 .. - . CH01 22 NSC0_00869a NSC0_00870a 13 8 30° 32° 34° 21 113 Ident. No. 11 Ident. No. 11 1 NO + 2 NC 3SE5 1..-.KH01 1 NO + 2 NC 3SE5 1 ... - LH01 22 32 14 NSC0_00871a 14 |32 |22 NSC0_00872a $v_{\text{max}} = 1.5 \text{ m/s}$ 30° 32° 34° Minimum torque ≦90° in direction of operation: 0.25 Nm Ident. No. 12 Ident. No. 12 Twist levers¹⁾, adjustable length Deflection in direction of rotation Deflection in direction of rotation 3SE5 1..-..H6. 1 NO + 1 NC 3SE5 1..-.BH60 1 NO + 1 NC 3SE5 1..-.CH60 NSC0_00869a NSC0 00870a 30° 32° 34° ≤90° Ident. No. 11 Ident. No. 11 1 NO + 2 NC 3SE5 1..-.KA00 + head²⁾ 1 NO + 2 NC 3SE5 1..-LH60 22 | 32 | 14 NSC0 00871a NSC0 00872a 21-22 ⊕ 31-32 ⊕ 13-14 31-32 ⊕ 21-22 ⊕ 30° 32° 34° ≦90° 40° Ident. No. 12 Ident. No. 12 $v_{\text{max}} = 1.5 \text{ m/s}$ Minimum torque in direction of operation: 0.25 Nm Fork levers¹⁾ Deflection in direction of rotation 3SE5 1..-..T1. 1 NO + 1 NC 3SE5 1..-.CT11 The fork levers can be used only with snap-action NSC0_00916 113 Ident. No. 11 1 NO + 2 NC 3SE5 1..-.LA00 + head2) NSC0 00917 21-22 31-32 $v_{\text{max}} = 1.5 \text{ m/s}$ 55° 60° ≤90° Minimum torque Ident. No. 12 in direction of operation: 0.25 Nm

¹⁾ Adjustment of the lever in increments of 10°, maximum deflection 90°.

²⁾ The basic switch and actuator head must be ordered separately.

SIRIUS 3SE5 International Limit Switches

3SE5, metal enclosures
Enclosure widths 40 mm and 56 mm



 $^{^{1)}\,}$ Adjustment of the lever in increments of 10°, maximum deflection 90°.

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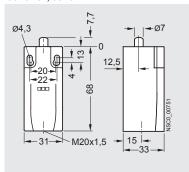
²⁾ The basic switch and actuator head must be ordered separately.

SIRIUS 3SE5 International Limit Switches

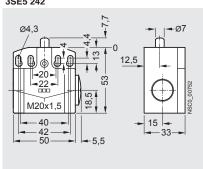
Dimensional drawings

Dimensions of the basic switches

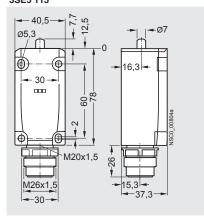
Enclosure width 31 mm, EN 50047, with M20 × 1.5 connecting thread 3SE5 232, 3SE5 212



Enclosure width 50 mm, with M20 x 1.5 connecting thread 3SE5 242

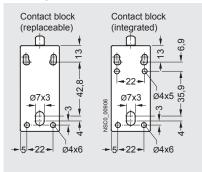


Enclosure width 40 mm, EN 50041, with 6-pole connector socket 3SE5 115

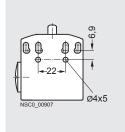


Operating mechanisms for basic switches, see pages 13/59 and 13/60.

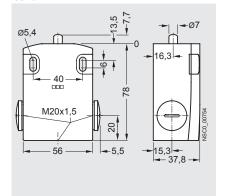
Enclosure width 31 mm, EN 50047, rear with fixing holes 3SE5 232, 3SE5 212



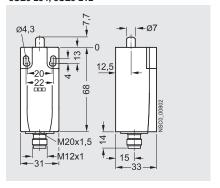
Enclosure width 50 mm, rear with fixing holes 3SE5 242



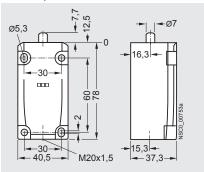
Enclosure width 56 mm, with M20 × 1.5 connecting thread 3SE5 122



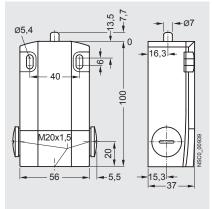
Enclosure width 31 mm, EN 50047, with M12 connector socket 3SE5 234, 3SE5 212



Enclosure width 40 mm, EN 50041, with M20 × 1.5 connecting thread 3SE5 112, 3SE5 132



XL enclosure, width 56 mm, with M20 × 1.5 connecting thread 3SE5 162

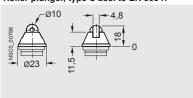


Limit Switches SIRIUS 3SE5 International Limit Switches

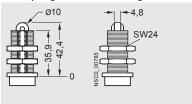
3SE5, open-type design

Operating mechanisms for enclosure width 31 mm and 50 mm

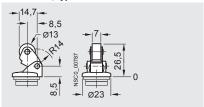
Roller plunger, type C acc. to EN 50047



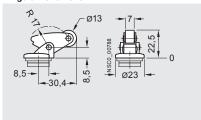
Roller plunger with central fixing



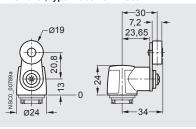
Roller lever, type E acc. to EN 50047



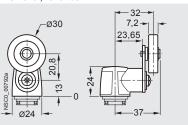
Angular roller lever



Twist lever, type A acc. to EN 50047



Twist lever, roller 30 mm

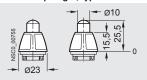


Operating mechanism for enclosure width 40 mm and 56 mm

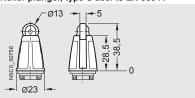
Plain plunger



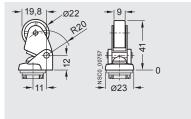
Rounded plunger, type B acc. to EN 50041



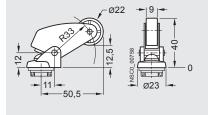
Roller plunger, type C acc. to EN 50041



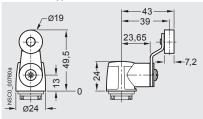
Roller lever



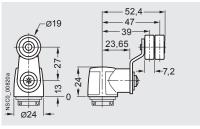
Angular roller lever



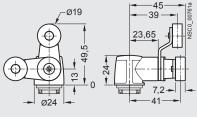
Twist lever, type A acc. to EN 50041

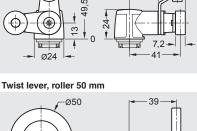


Twist lever, 2 rollers 19 mm

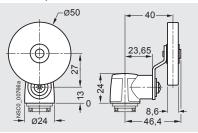


Fork lever, roller 19 mm

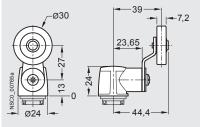


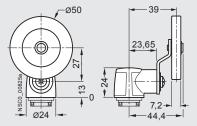


Twist lever, rubber roller 50 mm



Twist lever, roller 30 mm



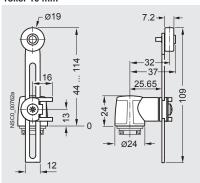


SIRIUS 3SE5 International Limit Switches

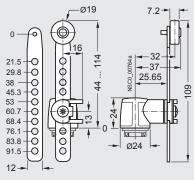
Dimensional drawings

Operating mechanisms for all enclosure widths

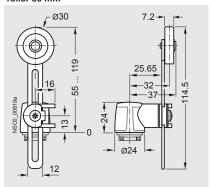
Twist lever, adjustable length, roller 19 mm



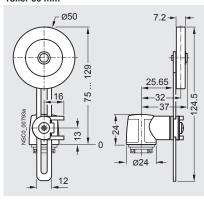
Twist lever, adjustable length, with grid hole, roller 19 mm



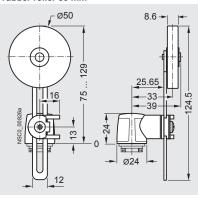
Twist lever, adjustable length, roller 30 mm



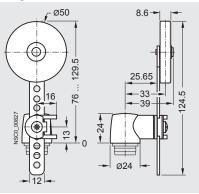
Twist lever, adjustable length, roller 50 mm



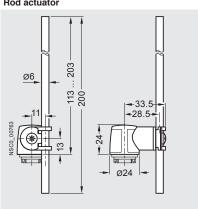
Twist lever, adjustable length, rubber roller 50 mm



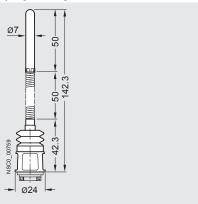
Twist lever, adjustable length, with grid hole, rubber roller 50 mm



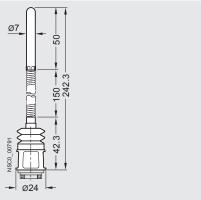
Rod actuator



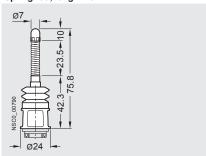
Spring rod, length 142.5 mm



Spring rod, length 242.5 mm



Spring rod, length 76 mm



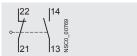
Limit Switches SIRIUS 3SE5 International Limit Switches

Dimensional drawings

Circuit diagrams

Enclosure widths 31, 40, 50 and 56 mm

Slow-action contacts 1 NO + 1 NC 3SE5 ...-.B..., -.R...



Slow-action contacts 2 NO + 1 NC 3SE5 ...-.P...



break, 3SE5 ...-.M...

22 36 18

Snap-action contacts 1 NO + 1 NC 3SE5 ...-.C..., -.F..., -.G..., -.H..., -.N...

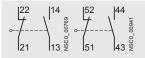
Snap-action contacts 1 NO + 2 NC 3SE5 ...-.L...

Slow-action contacts 1 NO + 2 NC 3SE5 ...-.K..., -.Q...



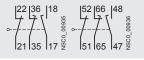
XL enclosures, width 56 mm

Slow-action contacts 2 x (1 NO + 1 NC) 3SE5 162-0B...



Slow-action contacts 2 x (1 NO + 2 NC) with makebefore-break, 3SE5 162-0D...

Slow-action contacts
1 NO + 2 NC with make-before-



For slow-action contacts 1 NO + 2 NC with make-beforebreak, 1 NO + 1 NC, 3SE5 162-0E...



Snap-action contacts 2 x (1 NO + 1 NC) 3SE5 162-0C...



3SE5 connector assignment

M12 connector socket, 4-pole 3SY3 127



M12 connector socket, 5-pole 3SY3 128



M12 connector socket, 8-pole 3SY3 134



Connector sockets, 6-pole + PE 3SY3 131



Order No.	Connector sockets	Contacts	LEDs	Connect	ions							
	Туре	Version	Version	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PE
M12 connector s	ockets (4-, 5-	or 8-pole)										
3SE54-01AC4	3SY3 127	1 NO + 1 NC	_	21	22	13	14	_	_	_	_	_
3SE54-01AC5	3SY3 128	1 NO + 1 NC	_	21	22	13	14	PE	_	_	_	_
3SE54-01AE0	3SY3 127	2 NC	_	21	22	31	32	_	_	_	_	_
3SE54-01AE1	3SY3 128	2 NC	—	21	22	31	32	PE	_	_	_	_
3SE54-1C1AF3	3SY3 128	1 NO + 1 NC snap action	2 LEDs	21	22	13 / LED gn	14 / LED ye	Ground LED	_	_	_	_
3SE54-1B1AF3	3SY3 128	1 NO + 1 NC slow-action	2 LEDs	21	22	14 / LED gn	13/ LED ye	Ground LED	_	_	_	_
3SE54-1L1AD4	3SY3 134	1 NO + 2 NC snap action	2 LEDs	21	22	13 / LED gn	14 / LED ye	31	32	Ground LED	PE	_
3SE54-1K1AD4	3SY3 134	1 NO + 2 NC slow-action	2 LEDs	21	22	14 / LED gn	13/ LED ye	31	32	Ground LED	PE	_
Connector sock	ets, 6-pole + l	PE										
3SE55-01AD0	3SY3 131	1 NO + 1 NC	—	21	22	13	14	_	_	_	_	1
3SE55-01AD1	3SY3 131	1 NO + 2 NC	_	21	22	13	14	31	32	_	_	1
3SE55C1AF2	3SY3 131	1 NO + 1 NC snap action	2 LEDs	21	22	13 / LED gn	14 / LED ye	_	Ground LED	_	_	1
3SE55B1AF2	3SY3 131	1 NO + 1 NC slow-action	2 LEDs	21	22	14 / LED gn	13 / LED ye	_	Ground LED	_	_	1
3SE55L1AD2	3SY3 131	2 NC snap-action	2 LEDs	21	22	31	32	13 / LED gn	Ground LED	_	_	1
3SE55K1AD2	3SY3 131	2 NC slow-action	2 LEDs	21	22	31	32	14 / LED gn	Ground LED	_	_	1

gn Green

ye Yellow

✓ Connected

— Not available

3SE03 North American Limit Switches

General Information

Features

Modular plug-in



Prewired receptacle with pin connector



Prewired cable



Features

- UL Listed, CSA Certified.
- UL File: E47512
- All Metal Captive Screws.
- Keyed, Four-Directional Head.
- Steel-Reinforced Diaphragm Seal Between Operational Head And Switch Body.
- Permanent Instructions for Adjusting Operational Head.
- Modular, Plug-In Housing
 1.Heavy-Duty, Bifurcated, Plug-In Prongs.
 - 2.Ample Receptacle Wiring Space with 1/2 - NPT threaded conduit opening.
 - 3.Stepped Terminals On Single Pole; Deep Center Trough On Double Pole.
- NEMA Type 6P Submersible
 - 1.Completely Sealed With Epoxy.
 - 2.SOOW-A Cable or Prewired Receptacle With Pin Connector.
 - Factory wired cable features a 350 pound pullput capacity.
- Rotary heads are field convertible CW, CCW, or both without special tools.

Design

Modular Plug-In Housing

These heavy duty plug-in limit switches may be provided as complete devices using a composite catalog number; or, separately as components; operating head, plug-in module and base receptacle.

Example:

Complete Switch:

3SE03-AR1

Single Pole, Double Throw contacts with Side Rotary, Momentary Head

Components

3SE03-SA ①

Single Pole, Double Throw Plug-in Module

3SE03-DR1

Side Rotary Head, Momentary

3SE03-RA ①

Standard, Single Pole Receptacle, 1 NO + 1 NC

Since components may be interchanged, operating heads, plug-in modules and receptacles may be combined to satisfy most of your everyday limit switch requirements. This leads to less inventory with greater flexibility.

Operating heads include side rotary; plain and roller plunger; and, wobble. A variety of levers are available.

The zinc die-cast housing has an epoxy finish to protect against corrosion. All screws on the module and head are captive.

NEMA Type 6P Submersible

These heavy duty prewired, factory sealed switches meet the demanding enclosure requirements of UL (NEMA) Type 3, 4, 4X, 6P, 12, and 13. They are intended for wet environments where the integrity of the threaded conduit and switch body seals must be assured.

The switch body cavity including threaded conduit entry is completely sealed with epoxy. An 8 foot, 5 or 9 conductor SOOW-A cable; or 5 or 9 pin prewired receptacle with pin connector is provided as standard.

Switches are provided as complete devices using composite catalog numbers; or, separately as components; operating head and switch body.

UL (NEMA) Type 6P switches are designed to provide a degree of protection against the entry of water during prolonged submersion at limited depths (tested with a 6 foot head of water for 24 hours).

Both the Modular Plug-in and the (NEMA) Type 6P Submersible styles provide 60 Amp make and 6 Amp break—120V AC and 10 Amp continuous current for 120, 240, 480 and 600V AC. The circuit contact configuration depends on the device selected and the application criteria.

Switches are available with momentary or maintained operating heads; and, single pole, double pole or center neutral (modular, plug-in only) contact configurations.

3SE03 limit switches offer a new standard of reliability and quality in automatic control circuits under heavy duty applications.

 Plug-in module and receptacle are keyed.

Modular, plug-in and NEMA type 6P submersible

Technical data

Туре	Modular, Pl	ug-in and NEMA	Type 6P Subme	rsible							
Mechanical life Electrical life	All others: 10 Single Pole:	Side rotary: 13 x 10 ⁶ make-break operations minimum All others: 10 x 10 ⁶ make-break operations minimum Single Pole: 1 x 10 ⁶ operations typical at full load Double Pole: 1 x 10 ⁵ operations typical at full load									
Switching frequency Operating point accuracy Cable entry	Side operate Side rotary:	8 x 10 ³ make-break operations per hour (maximum) Side operated: 0.0012 in. (modular, plug-in housing) Side rotary: 0.0014 in. (modular plug-in). Top operated: 0.0003 in. (modular, plug-in housing) 1/2 inNPT, Prewired Cable or Prewired Receptacle with Pin Connector									
Ambient temperature Degree of protection	With Cable:	Without Cable: -10° to +121°C, 14° to 250°F With Cable: -10° to +105°C, 14° to 221°F NEMA Type 1, 3, 3S, 4, 4X, 6, 6P, 13; IP67									
Conductor size Mounting Tightening Torque	5 or 9 condo 5 or 9 pin, 0 Any position Switch body	22–12 AWG (modular, plug-in housing), single or stranded wire 5 or 9 conductor, 16 AWG yellow jacketed type SOOW-A cable (prewired cable) 5 or 9 pin, 0.87 in. (22 mm) diameter receptacle (prewired receptacle with pin connector) Any position Switch body screws: 25–30 lb-in. Operating head screws: 14–18 lb-in.									
NEMA rating	DC, NEMA R300		AC, NEMA A600)							
Maximum current at	125V	250V	120V	240V	480V	600V					
Make Break	0.22A 0.22A	0.11A 0.11A	60A 6A	30A 3A	15A 1.5A	12A 1.2A					
Max. volt-ampere Make Break	28VA 28VA	28VA 28VA	7200VA 720VA	7200VA 720VA	7200VA 720VA	7200VA 720VA					

Operating temperature 1) 2)

	Operation		Temperature range	
Temperature rating	Туре	Return	Without cable	With cable
1	Side rotary ³)	Momentary CW only or CCW only	10°F to 200°F -12°C to 94°C	10°F to 200°F -12°C to 94°C
2	Center neutral Side rotary Side plunger Two-sided plunger Roller side plunger ⁴)	Momentary CW or CCW Maintained Momentary Maintained Momentary	14°F to 200°F -10°C to 94°C	14°F to 200°F -10°C to 94°C
3	Top plunger Top roller plunger ⁴) Wobble head	Momentary Momentary Momentary	14°F to 250°F -10°C to 121°C	14°F to 221°F -10°C to 105°C

- 1) Temperature ranges below +32°F (0°C) are based on absence of freezing moisture or water.
- 2) For temperature rating of specific switch, refer to page 13/70, Operating Heads.
- 3) For CW only or CCW only operation, upper temperature limit increases to 250°F (121°C) without cable, and 221°F (105°C) with pre-wired cable.
- 4) Roller direction can be converted in the field.

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3SE03 North American Limit Switches

Modular, plug-in metal housing

Complete switches without lever - threaded cable entry:

	Plug-in module type		Standard single pole 1 NO + 1 NC (3SE03-SA)				Standard double pole 2 NO + 2 NC (3SE03-SB)		
	Receptacle type surface mount			Single pole (3SE03-RA) Double pole (3SE03-RB) 2 0 0 0 3 4 0 0 8					
			Comp	osite catalog module and re	number cons	sisting	g of		
Operati	ng head type		DT	Catalog Number	List Price \$ 1 unit	DT	Catalog Number	List Price \$ 1 unit	
		Standard momentary (3SE03-DR1)	•	3SE03-AR1®		•	3SE03-BR1®		
Pa	Side rotary CW and CCW operation convertible to CW only	Standard maintained (3SE03-DM1)	•	3SE03-AM1		•	3SE03-BM1		
	or CCW only	Low torqued momentary (3SE03-DL1)	•	3SE03-AL1 ②			3SE03-BL1@		
6	Plain side plunger	Momentary (3SE03-DS1)	•	3SE03-AS1		•	3SE03-BS1		
(Ca)	Roller side plunger	Momentary (3SE03-DS3)	•	3SE03-AS3			3SE03-BS3		
6	Two-sided plunger	Maintained (3SE03-DH1)		3SE03-AH1			3SE03-BH1		
	Plain top plunger	Momentary (3SE03-DT1)	•	3SE03-AT1			3SE03-BT1		
	Roller top plunger	Momentary (3SE03-DT3)		3SE03-AT3		•	3SE03-BT3		
	Wobble head (without lever)	Momentary (3SE03-DW1)	•	3SE03-AW1		•	3SE03-BW1		

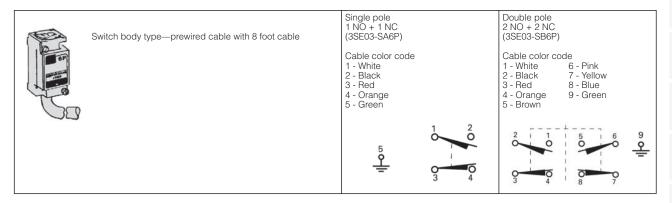
	Plug-In module type			Double 2 NO +	iter neutral ble pole O + 2 NC E03-SN)
	Receptacle type surface mount				ter neutral EO3-RB) 2 1 5 CW 0 4 8 7
				Comp	mposite catalog number nsisting of head, module and receptacle
Operat	ing head type			DT	List Price \$ 1 unit
T	Side rotary (momentary)	Center Neutral	(3SE03-DN1) (3SE03-DN2)	•	3SE03-NN1 [®] 3SE03-NN2 [®]

 $[\]odot$ 5° pretravel to operate contacts.

② 15° pretravel to operate contacts.

NEMA type 6P submersible, prewired cable

Complete switches without lever - prewired cable:



			Comp	osite catalog nui	mber consisti	ng of head and	switch body
Operating he	ead type		DT	Catalog Number	List Price \$ 1 unit	Catalog Number	List Price \$ 1 unit
		Standard momentary (3SE03-DR1)	•	3SE03-AR16P		3SE03-BR16P	
Ta	Side rotary CW and CCW operation convertible to CW only or CCW	Standard maintained (3SE03-DM1)		3SE03-AM16P		3SE03-BM16P	
	only	Low torqued momentary (3SE03-DL1)		3SE03-AL16P		3SE03-BL16P	
	Plain side plunger	Momentary (3SE03-DS1)		3SE03-AS16P		3SE03-BS16P	
	Roller side plunger	Momentary (3SE03-DS3)		3SE03-AS36P		3SE03-BS36P	
	Two-sided plunger	Maintained (3SE03-DH1)		3SE03-AH16P		Not available	
	Plain top plunger	Momentary (3SE03-DT1)		3SE03-AT16P		3SE03-BT16P	
	Roller top plunger	Momentary (3SE03-DT3)		3SE03-AT36P		3SE03-BT36P	
	Wobble head (without lever)	Momentary (3SE03-DW1)		3SE03-AW16P		3SE03-BW16P	

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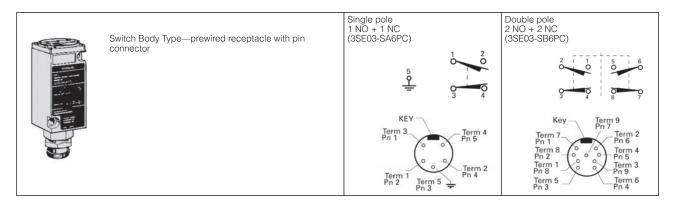
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3SE03 North American Limit Switches

NEMA type 6P submersible, prewired receptacle

Complete switches without lever - prewired receptacle with pin connector:



			Composite catalog number consisting of head and switch body							
Operating h	nead type		DT	Catalog Number	List Price \$ 1 unit	Catalog Number	List Price \$ 1 unit			
		Standard momentary (3SE03-DR1)	•	3SE03-AR16PC		3SE03-BR16PC				
Fa	Side rotary CW and CCW operation convertible to CW only or CCW	Standard maintained (3SE03-DM1)		3SE03-AM16PC		3SE03-BM16PC				
	only	Low torqued momentary (3SE03-DL1)		3SE03-AL16PC		3SE03-BL16PC				
F	Plain side plunger	Momentary (3SE03-DS1)		3SE03-AS16PC		3SE03-BS16PC				
To a	Roller side plunger	Momentary (3SE03-DS3)		3SE03-AS36PC		3SE03-BS36PC				
5	Two-sided plunger	Maintained (3SE03-DH1)		3SE03-AH16PC		Not available				
*	Plain top plunger	Momentary (3SE03-DT1)		3SE03-AT16PC		3SE03-BT16PC				
	Roller top plunger	Momentary (3SE03-DT3)		3SE03-AT36PC		3SE03-BT36PC				
	Wobble head (without lever)	Momentary (3SE03-DW1)		3SE03-AW16PC		3SE03-BW16PC				

Modular, plug-in and **NEMA type 6P submersible**

Components:

	Plug-in module	DT	Catalog Number	List Price \$ 1 unit
I min	Standard single pole 1 NO + 1 NC	•	3SE03-SA	
Plug-in module	Standard double pole 2 NO + 2 NC	•	3SE03-SB	
6	Center neutral 2 NO + 2 NC ^①	•	3SE03-SN	

3 21		Receptacle for plug-in module		Catalog Number	List Price \$ 1 unit
\$ 200	Receptacle	Single pole 1 NO + 1 NC (5 terminals)	•	3SE03-RA	
		Single pole 2 NO + 2 NC (9 terminals)		3SE03-RB	

Switch body-NEMA type 6P submersible:

-	Prewired		Prewi	red cable 8 foot len	gth	Prewired receptacle with pin connector			
The Part of the Pa		Switch body	DT	Catalog Number	List Price \$ 1 unit	DT	Catalog Number	List Price \$ 1 unit	
	cable	Single pole 1 NO + 1 NC	•	3SE03-SA6P			_	-	
		Single pole 2 NO + 2 NC	•	3SE03-SB6P			-	-	
		Single pole 1 NO + 1 NC		-	-	•	3SE03-SA6PC		
	Prewired receptacle	Single pole 2 NO + 2 NC		-	_	•	3SE03-SB6PC		

Operating heads^②:





			Nomin	al operatin	g data						
Operati	ing head type		Total travel	Pretravel	Operating force	Release position	Minimum return force	Operating temp range ⁴	DT	Catalog Number	List Price \$ 1 unit
		Standard momentary®	90°	5°	3 lb-in.	2°	4.5 oz-in.	1	•	3SE03-DR1	
Ca	Side rotary ^⑤	Low torqued momentary®	90°	15°	1.5 lb-in.	6°	2.5 oz-in.	1	•	3SE03-DL1	
		Standard maintained	90°	50°	3 lb-in.	50°	-	2	•	3SE03-DM1	
6	Plain side plunger	Momentary	0.25 in.	0.065 in.	4 lbs	0.03 in.	8 oz.	2	•	3SE03-DS1	
6	Roller side plunger	Momentary [®]	0.25 in.	0.065 in.	4 lbs	0.03 in.	8 oz.	2	•	3SE03-DS3	
	Two-sided plunger	Maintained	0.32 in.	0.2 in.	5 lbs	0.13 in.	5 lbs	2	•	3SE03-DH1	
6	Plain top plunger	Momentary	0.28 in.	0.04 in.	4 lbs	0.02 in.	8 oz.	3	•	3SE03-DT1	
	Roller top plunger	Momentary	0.28 in.	0.04 in.	4 lbs	0.02 in.	8 oz.	3	•	3SE03-DT3	
	Wobble head ^⑤ ®	Momentary	15°	10°	2 lb-in.	6°	2.4 oz-in.	3	•	3SE03-DW1	
(Pa)	Center neutral ^⑤	Momentary	90°	5° 15°	1.8 lb-in. 1.8 lb-in.	2° 2°	2.5 oz-in. 2.5 oz-in.	2	>	3SE03-DN1 3SE03-DN2	

For use with 3SE03-DN1, -DN2 operating heads and 3SE03-RB receptacle only.
 For use with modular, Plug-in and NEMA Type 6P.

Refer to "Operating Temperature", Catalog page 13/118 for Temperature Ranges.
 Without Operating Levers.
 CW and CCW operation. Convertible to CW or CCW operation only.

Convertible—Horizontal to Vertical.
 Requires Lever.
 For use with **3SE03-SN** plug-in module only.

Modular, plug-in metal housing

Levers for plug-in and non-plug-in versions—most widely used

Description		Length ^①	Roller mounted on side of lever	Roller material	Roller diameter	Roller face width	Max required ^② return torque (oz-in.)	DT	Catalog Number	List Price \$ 1 unit
		1.5 (38)	Front	Nylatron	0.75 (19)	0.31 (8)	0.53	•	3SX03-KL200	
	Roller crank lever [®]	1.5 (38)	Front	Cast aluminum	0.75 (19)	0.31 (8)	1.10	•	3SX03-KL355	
	lever≝	1.5 (38)	Back	Cast aluminum	0.75 (19)	0.31 (8)	1.10		3SX03-KL579	
	Fork lever	1.5 (38)	Back / back	Nylatron	0.75 (19)	0.31	_	•	3\$X03-KL204	
^	Adjustable	1–3.5 (25–89)	Front	Nylatron	0.75 (19)	0.31 (8)	1.90 ^⑤		3SX03-KL201	
	radius lever@	1–3.5 (25–89)		Metal	0.75 (19)	0.31 (8)	3.40 ^⑤	•	3SX03-KL538	
	Rod lever	9 (229)	-	Stainless steel	-	-	7.00 ^⑤	•	3SX03-KL220	
	Adjustable spring rod	12.125 (308)	-	Nylon	-	-	3.50 ^⑤	•	3SX03-KL556	
	Flexible loop lever	6 (152)	-	Nylatron	-	-	0.40	•	3SX03-KL142	
	Levers									
	Rod	-	-	Nylon	-	-	-	•	3SX03-KW2	
	Coil spring	-	_	Coil spring	-	-	_	•	3SX03-KW4	
	For plunger actuated switches wobble actuators	(6)								

Levers for plug-in and non-plug-in versions:

		Roller			Max required ²	Catalog Numl	oer		List
Operator	Length ^①	Туре	Diameter	Face (width)	return torque	Stainless steel	DT	Cast aluminum	Price \$ 1 unit
	0.87 (22)	Metal	0.75 (19)	0.31 (8)	0.62	-		3SX03-KL39	
	1.37 (35)	Metal	0.75 (19)	0.31 (8)	0.95	-	•	3SX03-KL40	
	1.50 (38)	Nylatron	0.75 (19)	1.00 (25)	0.92 0.77	-	•	3SX03-KL337 3SX03-KL531	
Standard lever	1.50 (56)	Ball bearing Without roller	0.69 (17)	0.25 (6)	0.77	-		3SX03-KL331 3SX03-KL32	
	2.00 (51)	Nylatron Nylatron Metal Ball bearing	0.75 (19) 0.75 (19) 0.75 (19) 0.69 (17)	0.31 (8) 1.00 (25) 0.31 (8) 0.25 (6)	0.71 1.45 1.5 1.1	- - -	>	3SX03-KL546 3SX03-KL572 3SX03-KL549 3SX03-KL552	
	250 (64)	Nylatron Nylatron Nylatron Metal Ball bearing	0.75 (19) 0.75 (19) 1.5 (38) 0.75 (19) 0.69 (17)	0.31 (8) 1.00 (25) 0.28 (7) 0.31 (8) 0.25 (6)	1.0 1.8 1.4 2.0 1.5	- - - -	•	3SX03-KL547 3SX03-KL573 3SX03-KL575 3SX03-KL550 3SX03-KL553	
Cast aluminum	3.00 (76)	Nylatron Nylatron Nylatron Metal Ball bearing	0.75 (19) 0.75 (19) 1.5 (38) 0.75 (19) 0.69 (17)	0.31 (8) 1.00 (25) 0.28 (7) 0.31 (8) 0.25 (6)	1.3 2.3 1.8 2.5 1.8	- - - -	* * * *	3SX03-KL548 3SX03-KL574 3SX03-KL576 3SX03-KL551 3SX03-KL554	

All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

① Roller lever: Length from the operating shaft axis to the roller axis.

- - All other: Length from the operating shaft axis to the tip.
- ② Caution—When selecting lever, required return torque should not exceed minimum return torque in operating head.
- 3 Cap screw accommodates 3/64 inch Allen wrench.
 By re-assembling lever minimum can be reduced another 0.50 (13).
- (3) Applies when lever extended to maximum dimension.
- See dimensions page 13/76.

Modular, plug-in and **NEMA type 6P submersible**

Levers for plug-in and non-plug-in versions—most widely used

			Roller			Min.	Cata	alog Number		
Operator		Length ^① Inches (mm)	Туре	Diameter In. (mm)	Face width in. (mm)	required return torque oz-in ^⑤	DT	Stainless steel	Cast aluminum	List Price \$ 1 unit
Roller levers										
Cast aluminum	Roller on	1.50 (38)	Nylatron	0.75 (19)	0.31 (8)	0.53	•	_	3SX03-KL310	
	reverse side		Nylatron	1.5 (38)	0.28 (7)	0.96		_	3SX03-KL536	
			Ball bearing	0.69 (17)	0.25 (6)	0.77		_	3SX03-KL580	
Stainless steel	Offset lever	1.50 (38)	Nylatron	0.75 (19)	0.31 (8)	0.65	•	3SX03-KL24	_	
AL-S	(Inboard roller	Inboard roller	Metal	0.75 (19)	0.31 (8)	1.20	•	3SX03-KL25	_	
OFF	shown)		Ball bearing	0.69 (17)	0.25 (6)	0.90		3SX03-KL26	_	
		1.50 (38)	Nylatron	0.75 (19)	0.31 (8)	0.65		3SX03-KL27	_	
		outboard roller	Metal	0.75 (19)	0.31 (8)	1.20	•	3SX03-KL28		
			Ball bearing	0.69 (17)	0.25 (6)	0.90		3SX03-KL29	_	
			Nylatron	0.75 (19)	1 (25)	1.10		3SX03-KL30		
	Bantam lever	0.69 (18)	Metal	0.88 (22)	0.19 (5)	0.45	•	3SX03-	-KL532	
• •				,						
	Precision	1.50 (38) ^②	Nylatron	0.75 (19)	0.31 (8)	0.65		3SX03-	-KL340	
100	adjustment		Metal	0.75 (19)	0.31 (8)	1.20		3SX03-	-KL465	
			Ball bearing	0.69 (17)	0.25 (6)	0.90	•	3SX03-	-KL535	
	Adjustable	1-3.75 (25-95)3	Nylatron	0.75 (19)	0.5 (13)	1.90 ⁴		3SX03-	-KL599	
0	roller	1-3.75 (25-95) ³	Nylatron	0.75 (19)	1 (25)	3.10 ⁴		3SX03-	-KL537	
Par les		1.62-3.75 (41-95)3	Nylatron	1.5 (38)	0.28 (7)	2.50 ⁴	•	3SX03-	-KL443	
de		0.50-3.75 (13-95)	Large nylatron	4 (102)	0.11 (3)	4.50 ^④	•	3SX03-	-KL598	
		1-3.75 (25-95) ^③	Ball bearing	0.69 (17)	0.25 (6)	2.50 ^④		3SX03-	-KL539	
		0.50-3.75 (13-95)	Without roller	_	_	1.20 ⁴		3SX03	-KL31	
	Fork lever _	1.50 (38)	Nylatron	0.75 (19)	1 (25)	_	•	3SX03-	-KL543	
Q 9	both rollers		Metal	0.75 (19)	0.31 (8)	_		3SX03-	-KL544	
	one side		Ball bearing	0.69 (17)	0.25 (6)	_	•	3SX03	-KL545	
	Fork lever _	1.50 (38)	Nylatron	0.75 (19)	0.31 (8)	_	•	3SX03-	-KL203	
0 0	both rollers	' '	Metal	0.75 (19)	0.31 (8)	_		3SX03-	-KL541	
	outside, one side		Ball bearing	0.69 (17)	0.25 (6)	_		3SX03	-KL542	
12	1			. ,						

Levers for plug-in and non-plug-in versions:

Operator		Length ^① Inches (mm)	Description Inches (mm)	Min. required return force oz-in. ^⑤	DT	Catalog Number	List Price \$ 1 unit
	Adjustable rod	5.50 (140) Max.	Nylon Rod—0.19 (5) Dia.	0.404	•	3SX03-KL399	
FINE P		5.50 (140) Max.	Metal Rod-0.12 (3) Dia.	0.92 ⁴	>	3SX03-KL202	
		8.75 (222) Max	Metal Rod (Square)—0.12 (3) Max.	2.20 ⁴	>	3SX03-KL581	
		12 (305) Max.	Steel (Formable) Rod—0.12 (3) Dia.	5.00 ⁴	>	3SX03-KL226	
		_	Clamp Only-0.19 (5) Hole	_	>	3SX03-KL35	
		_	Clamp Only—0.12 (3) Hole	_		3SX03-KL36	
	Spring rod	11.62 (295)	Metal rod	2.80		3SX03-KL421	
	Adjustable wire	12.12 (308) max.	Nylon covered wire	1.50 ⁴	•	3SX03-KL533	
	Adjustable wide roller	3.9 (99)	0.75 (19) Dia. Nylatron Roller	4.50 ⁴	•	3SX03-KL37	
	lever		0.19 (30) Dia. Rod				
Wobble head operators			'				
See dimensions page 13/76	Stainless steel rod	_	Rod diameter - 0.06 (2)	_	•	3SX03-KW3	

① Length from operating shaft axis to the roller axis. ② Maximum dimensions, precision adjustable to lesser

dimensions.

3 By re-assembling lever minimum can be reduced by 1/2 in.

⁽⁴⁾ Applies when lever extended to maximum dimension.

[©] Caution—When selecting lever, required return torque should not exceed minimum return force in operating head.

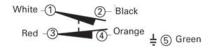
All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

3SE03 North American Limit Switches

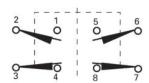
Modular, plug-in and **NEMA type 6P submersible**

Wiring diagrams

Single Pole 1 NO - 1 NC



Double Pole 1 NO - 1 NC



Cable color code

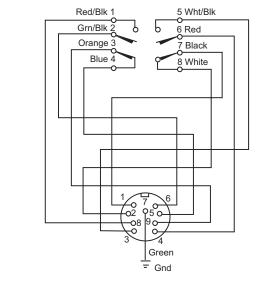
1 - White 6 - Pink 2 - Black 7 - Yellow 3 - Red 8 - Blue

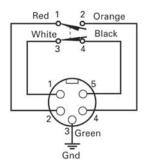
4 - Orange 9 - Green 5 - Brown

Pre-wired cable



Modular, plug-in and prewired cable





Prewired receptacle with pin connector

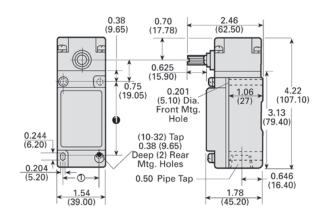
Typical connector cable (supplied by user)

	Manufacturers part num	nber		
Cable length ft.	Daniel Woodhead Brad Harrison	Cooper Crouse-Hinds	Molex (Industrial Interface)	Lumberg USA
5 Pin connector cable				
3 6 12	105000A01F030 105000A01F060 105000A01F120	5000111-3_ 5000111-4_ 5000111-5_	14541 14542 14544	RK50-77/1M RK50-77/2M RK50-77/4M
9 Pin connector cable				
3 6 12	309000A01F030 309000A01F060 309000A01F120	X8990-3 X8990-4 X8990-5	- - -	

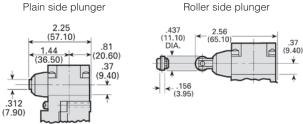
3SE03 North American Limit Switches

Modular, plug-in and **NEMA type 6P submersible**

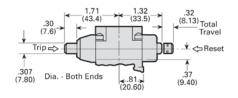
Dimension drawings



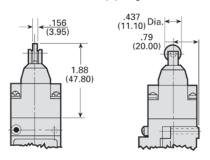
Plain side plunger



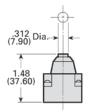
Two side plungers



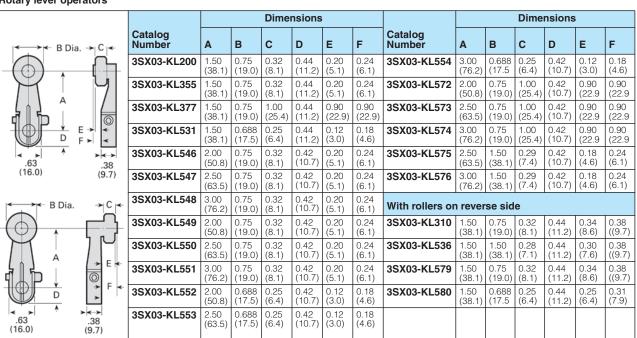
Roller top plunger



Plain top plunger



Rotary lever operators



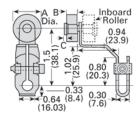
All dimensions shown in inches and (millimeters). For reference purpose only. Not to be used for design or construction purposes

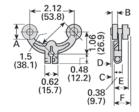
Can accommodate both U.S. 1.16 (29.4) x 2.34 (59.5) and DIN 1.18 (30.0) x 2.36 (60.0) mounting dimensions.

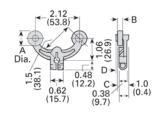
3SE03 North American Limit Switches

Modular, plug-in and NEMA type 6P submersible

Dimension drawings







Offset roller levers

Catalog	Dimension	s	
Number	Α	В	С
Outboard roll	er		
3SX03-KL27	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL28	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL29	0.69 (18)	0.25 (6)	0.04 (1)
3SX03-KL30	0.75 (19)	1.0 (25)	_
Inboard roller			
3SX03-KL24	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL25	0.75 (19)	0.32 (8)	0.03 (1)
3SX03-KL26	0.69 (18)	0.25 (6)	0.04 (1)

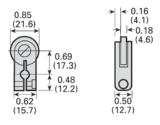
Fork lever, one roller inside, one roller outside

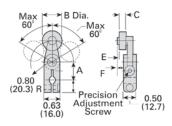
Catalog	Dimensions							
Number	Α	В	С	D	Е	F		
3SX03-KL203	0.75	0.32	0.16	0.20	0.73	0.77		
	(19)	(8)	(4)	(5)	(19)	(20)		
3SX03-KL541	0.75	0.32	0.16	0.20	0.73	0.77		
	(19)	(8)	(4)	(5)	(19)	(20)		
3SX03-KL542	0.69	0.25	0.08	0.14	0.64	0.70		
	(18)	(6)	(2)	(4)	(16)	(18)		

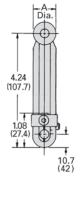
Fork lever - Both rollers on one side

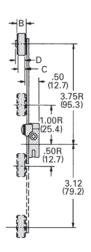
Catalog	Dimensions							
Number	Α	В	С	D				
3SX03-KL204	0.75 (19)	0.32 (8)	0.16 (4)	0.20 (5)				
3SX03-KL543	0.75 (19)	1.0 (25)	0.86 (22)	0.86 (22)				
3SX03-KL544	0.75 (19)	0.32 (8)	0.16 (4)	0.20 (5)				
3SX03-KL545	0.69 (18)	0.25 (6)	0.08 (2)	0.1 (3)				

Bantam roller lever









Precision adjustment roller lever

	Dimensi	Dimensions								
Catalog Number	Α	В	С	D	E	F				
3SX03-KL340	0.69 (18)	0.75 (19)	0.32 (8)	0.48 (12)	0.24 (6)	0.28 (7)				
3SX03-KL465	0.69 (18)	0.75 (19)	0.32 (8)	0.48 (12)	0.24 (6)	0.28 (7)				
3SX03-KL535	0.69 (18)	0.69 (18)	0.25 (6)	0.48 (12)	0.16 (4)	0.22 (6)				

Adjustable roller lever

	Dimensions	Dimensions							
Catalog Number	Α	В	С	D					
3SX03-KL201	0.75 (19)	0.32 (8)	0.29 (7)	0.33 (8)					
3SX03-KL443	1.5 (38)	0.29 (7)	0.26 (7)	0.32 (8)					
3SX03-KL537	0.75 (19)	0.32 (8)	0.29 (7)	0.33 (8)					
3SX03-KL538	0.69 (18)	0.25 (6)	0.21 (5)	0.27 (7)					
3SX03-KL539	0.69 (18)	0.25 (6)	0.21 (5)	0.27 (7)					
3SX03-KL598	0.39 (10)	0.11 (3)	0.11 (3)	0.19 (5)					
3SX03-KL599	0.75 (19)	0.5 (13)	0.46 (12)	0.47 (12)					

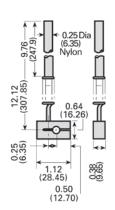
All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

3SE03 North American Limit Switches

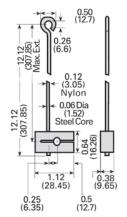
Modular, plug-in and NEMA type 6P submersible

Dimension drawings

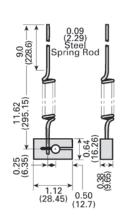
Nylon Spring Rod Actuator 3SX03-KL556



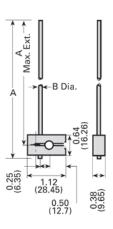
Nylon Covered Wire Actuator 3SX03-KL533



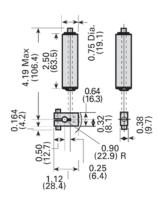
Stainless Steel Spring Actuator 3SX03-KL421



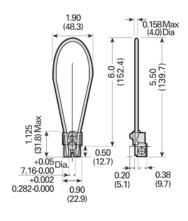
Adjustable Rod Actuator



Adjustable Wire Roller Actuator 3SX03-KL37



Nylatron Loop Actuator 3SX03-KL142

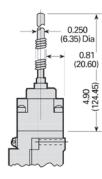


Adjustable rod actuators

Catalog		Dimens	Dimensions			
Number	Material	Α	В			
3SX03-KL202	Steel-Round	5.50 (140)	0.120 (3)			
3SX03-KL581	Steel-Square	8.75 (222)	0.125 (3)			
3SX03-KL399	Nylon	5.50 (140)	0.190 (5)			
3SX03-KL220	Stainless Steel	9.00 (229)	0.190 (5)			
3SX03-KL226	Plated Steel	12.0 (305))0.120 (3)			

Wobble head with nylon head

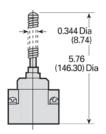
3SE03-DW1 3SX03-KW2



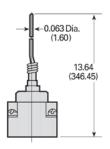
All dimensions shown in inches and (millimeters). For reference purposes only. Not to be used for design or construction purposes.

Wobble head with coil spring

3SE03-DW1 3SX03-KW4



Wobble head with stainless steel rod



3SE03-DW1

3SX03-KW3

13/73

3SE03 North American Limit Switches

3SE03 Metal enclosure

Description

Features

- NEMA 1 Enclosed Aluminum Die Cast Housing
- Screw Terminals
- Booted versions for added protection
- 1/2" Conduit Entrance
- NEMA A600, R300 Contacts
- UL Recognized
- CSA Certified
- INO/INC Snap-action contacts (form c)

Application

These switches are designed for accurate repeatability. Their compact size makes them ideal for use in space-restricted areas.

Typical applications include overhead, folding and elevator doors, sliding gates and other automated equipment.

contacts (form c	')			
Overall dimensions	Specifications ①	DT	Catalog Number	List Price \$ 1 unit
Plunger actuator 0.67 1.0	OF Max 8.82 - 12.3 oz. (250 - 350 g) RF Min. 4.02 oz. (114 g) PT Max 0.016 in. (0.4 mm) OT Min 0.217 in. (5.5 mm) MD Max 0.002 in. (0.05 mm) OP - 1.504 in. (38.2 mm)	•	3SE03 - EB05	
Booted plunger				
0.67 [17]	OF Max 28.22 oz. (800 g) RF Min. 8.46 oz. (240 g) PT Max 0.079 in. (2.0 mm) OT Min 0.197 in. (5.0 mm) MD Max 0.004 in. (0.1 mm) OP - 1.803 in. (45.8 mm)	•	3SE03 - EB06	
Roller lever				
0.9 (23) 0.67 (17) 0.75 x 0.31 (19 x 8) 0.76 (19)	OF Max 20.1 oz. (570 g) RF Min. 6.0 oz. (170 g) PT Max 0.157 in. (4.0 mm) OT Min 0.236 in. (6.0 mm) MD Max 0.016 in. (0.4 mm)		3SE03 - EB32	
Booted roller lever				
1.56 [40] 0.75 x 0.31 [19 x 8] 0.67 [17] 0.76 [19]	OF Max 22.57 oz. (640 g) RF Min. 8.11 oz. (230 g) PT Max 0.197 in. (5.0 mm) OT Min 0.236 in. (6.0 mm) MD Max 0.016 in. (0.4 mm)	•	3SE03 - EB33	
① OF = Operating Force				

OF = Operating Force
 RF = Return Force
 PT = Pretravel
 OT = Operating Travel

MD = Movement Differential OP = Operating Position

3SE03 Metal enclosure

Overall dimensions	Specifications	DT	Catalog Number	List Price \$ 1 unit
Roller plunger $PF = \underbrace{0.02}_{[0.5]} \underbrace{0.67}_{[17]} \underbrace{0.5 \times 0.18}_{[13 \times 5]} \underbrace{0.95}_{[2]} \underbrace{0.95}_{[25.4]$	OF Max 9.92 - 12.3 oz. (250 - 350 g) RF Min. 4.02 oz. (114 g) PT Max 0.02 in. (0.5 mm) OT Min 0.142 in. (3.6 mm) MD Max 0.002 in. (0.05 mm) OP - 1.957 in. (49.7 mm)	•	3SE03 - EB07	
Booted roller plunger PT 0.5 x 0.18 [13 x 5]	OF Max 17.64 oz. (500 g) RF Min. 3.53 oz. (100 g) PT Max 0.039 in. (1.0 mm) OT Min 0.138 in. (3.5 mm) MD Max 0.006 in. (0.12 mm) OP - 1.957 in. (49.7 mm)	•	3SE03 - EB08	

Technical data										
Mechanical Life	3,000,000 opera	ations maxir	num							
Electrical Life	500,000 operati	0,000 operations minimum								
Operating Speed	0.01 m/second	01 m/second to 1m/second								
Cable Entry	1/2" NPT	PT NPT								
Temperature Range	-15° to 80° (5° t	5° to 80° (5° to 176°F)								
Degree of Protection	NEMA 1									
Mounting	Any Position	ny Position								
NEMA Rating	A600, R300	600, R300								
4)0)	Non-Inductive L	lon-Inductive Load (A)			(A)		Inrush curren	+ (A)		
Rated Voltage (V) ¹⁾²⁾	Resistive load	Lamp load		Inductive load	Motor load		Illiusii cuiteii (A)			
	NC-NO	NO	NC	NC-NO	NO	NC	NO	NC		
125 VAC	15	3	1.5	15	5	2.5				
250 VAC	15	2.5	1.25	15	3	1.5				
500 VAC	3	1.5	0.75	2.5	1.5	0.75				
8 VDC	15	3	1.5	15	5	2.5	00	45		
14 VDC	15	3	1.5	10	5	2.5	30 maximum	15 maximum		
30 VDC	6 (2)	3	1.5	5	5	2.5				
125 VDC	0.4	0.4	0.4	0.05	0.05	0.05				
250 VDC	0.2	0.2	0.2	0.03	0.03	0.03				

¹⁾ Inductive load has power factor of 0.04 minimum (AC) and a time of 7m/second (DC)

²⁾ Lamp load has an inrush current of 6 times steady-state current.

Mechanical Safety

3SE7 Cable-Operated Switches

General Information

Application

Cable-operated switches are used for monitoring or for EMER-GENCY-STOP facilities on particularly endangered system sections. They are available with metal enclosures.

As the effective range of a cableoperated switch is limited by the length of the pull-wire, large systems can also be protected.

Cable-operated switches (requiring pulling at both ends) and conveyor belt unbalance trackers are used primarily for monitoring very long belt sys-

Specifications

Switches with latching for implementation in EMERGENCY-STOP equipment correspond to the EN 418 standard.

Principle of operation

The switch contacts of the cableoperated switches and the conveyor belt unbalance protection devices are positive opening.

Cable-operated switches with one-side operation are held in free position by the pre-tension force on the turnbuckle.

• In the 3SE7 140, -150 and -160 cable-operated switches, both switching contacts are available for cable-break/cable pull signaling. The NO contact is used, for example, for signaling purposes.

For switches with latching, with a pretensioned cable, the locking must be deactivated beforehand in order to return the switch to its free position.

Technical data

Туре	3SE7 120	3SE7 150	3SE7 140	3SE7 141	3SE7 160	3SE7 310			
Standards	IEC 60947-5-1, EN 6		I-1, EN 60204-1; EN IS	SO 13850					
Certifications	UL / CSA								
Electrical design	Contacts electrically	isolated from each ot	ther						
Electrical loading									
• at AC-15	AC 400 V, 6A			AC 250 V, 2A	AC 400 V, 6A				
minimum	AC/DC 24 V, 10 mA	.C/DC 24 V, 10 mA							
Short circuit protection	6 A (Slow acting)								
Mechanical endurance	> 1 x 10 ⁶ operating cycles								
Contact material	Fine silver								
Actuation	By pulling or breaking	g of a rope (cable)							
Rope length, maximum	10 m	25 m	50 m	75 m ¹)	2 x 50 m	_			
Spacing between rope supports, maximum	0.5	3 m	5 m	5 m	5 m				
., ,	2.5 m	1	1	3111	o m	-			
Enclosure	- "	color), dark black RA	L 9005						
Cover	Shock-resistant then	noplastic		T	T				
Degree of protection acc. To IEC 60529	IP65			IP67	1P65				
Ambient temperature	-25C to +70C								
Mounting	Designed for M 5								
Mounting space	30 mm and 40 mm								
Cable entry	2x(M20x1.5)	2x(M20x1.5)	1x(M16x1.5)	3x(M20x1.5)	2x(M25x1.5)				
Type of connection	M3.5 screw connecti	on; Self-lifting pressu	re plate terminals						

Travel diagrams

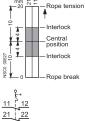
3SE7 120-2DD01





Central position

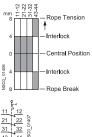
3SE7 140-1.F00





Central position

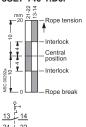
3SE7 141-1EG10





Central position

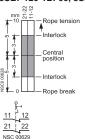
3SE7 140-1.D0.



21 22

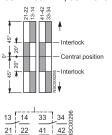
Central position

3SE7 120-1BF00, 3SE7 150-1BF00

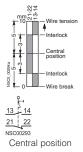


Central position

3SE7 160-1AE, 3SE7 310-1AE



3SE7 150-1.D00, 3SE7 150-2DD00



^{1) 75} m cable length possible provided the ambient temperature range is strictly observed, otherwise, 50 m.

Central position

Mechanical Safety SIRIUS 3SE7 Cable-Operated Switches

Selection

Selection and orderi	ng data							
	Version	Wire length	Contacts	cts DT		Order No. Pri		
		m						
Cable-operated switch								
	Metal enclosures, IP65 (cover made of molded plastic)	10						
	Without latching, only cable pull monitoring		1 NO + 1 NC	→	Α	3SE7 120-2DD01	1	1 unit
	 With latching and button reset 		2 NC	→	Α	3SE7 120-1BF00	1	1 unit
	- With yellow lid		1 NO + 2 NC	→	Α	3SE7 120-1BH00	1	1 unit
3SE7 120-1BH00								
	Metal enclosures, IP65 (cover made of molded plastic), with alignment window	25						
	Without latching		1 NO + 1 NC	→	Α	3SE7 150-2DD00	1	1 unit
	 With latching and button reset 		1 NO + 1 NC	→		3SE7 150-1BD00	1	1 unit
	W/Me He Rel		2 NC	→		3SE7 150-1BF00	1	1 unit
Tank to	With yellow lidWith latching and key unlatching		1 NO + 2 NC 1 NO + 1 NC	→	В	3SE7 150-1BH00 3SE7 150-1CD00	1	1 unit 1 unit
3SE7 150-1BD00 3SE7 150-1BH00	- With laterning and key unlaterning		TNOTTNO	O	Ь	3327 130-10000	'	T GIIII
3327 130-181100	Metal enclosures, IP65 (cover made of molded plastic), with alignment window, with LED, red, 24 V DC	25						
	Without latching		1 NO + 1 NC	\odot	В	3SE7 150-2DD04	1	1 unit
3SE7 150-1BD04	With latching and button reset		1 NO + 1 NC	→	•	3SE7 150-1BD04	1	1 unit
	Metal enclosures, IP65	50						
3	(cover made of molded plastic)							
	With latching and button reset		1 NO + 1 NC	→	A	3SE7 140-1BD00	1	1 unit
	 In addition with LED, red, 24 V DC 		2 NC 1 NO + 1 NC	⊕	В	3SE7 140-1BF00 3SE7 140-1BD04	1	1 unit 1 unit
5 03	With latching and key unlatching		1 NO + 1 NC	→	В	3SE7 140-1CD00	1	
3SE7 140-1B.00								
	Metal enclosures, IP67 (cover made of molded plastic), with EMERGENCY-STOP mushroom, with rotate-to-unlatch mechanism	75	1 NO + 3 NC	→		3SE7 141-1EG10	1	1 unit
3SE7 141-1EG10								
	Metal enclosures, IP65	2 × 75						
9 9	with actuation on both sides		0.110			0057 100 14555		4
	With latching and button reset		2 NO + 2 NC 1 NO + 1 NC	→	A B	3SE7 160-1AE00 3SE7 160-1BD00	1	1 unit 1 unit
	• In addition with LED, red, 24 V DC		2 NO + 2 NC	⊕	В	3SE7 160-1AE04	1	1 unit
3SE7 160-1AE00								
→ Positive opening accord	ding to IEC 60947-5-1, Appendix K.							

Siemens Industry, Inc. Industrial Controls Catalog

Mechanical Safety SIRIUS 3SE7 Cable-Operated Switches

Selection

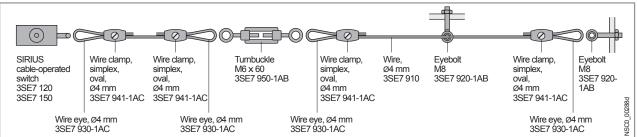


Product Category: SFTY

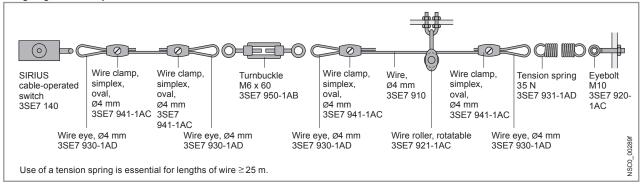
Accessories

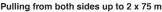
Configuration of the cable-operated switches

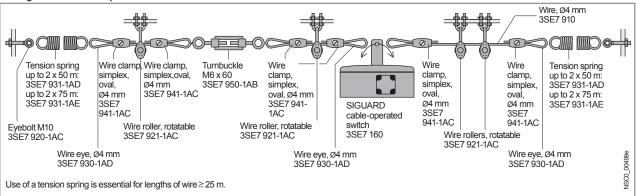
Short lengths of wire up to 25 m



Long lengths of wire up to 50 m







Note

Large temperature fluctuations require corresponding compensation springs. For reliable connection the PVC sheath must be

removed from the clamping area of the steel trip-wire. Wire supports must be used at the recommended intervals.

Mechanical Safety SIRIUS 3SE7 Cable-Operated Switches

Accessories

Version	Wire length/ diameter	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*
fixing						
Steel wires, with red plastic sheath,	10 m	Α	3SE7 910-3AA		1	1 unit
Ø 4 mm ¹⁾	15 m	Α	3SE7 910-3AB		1	1 unit
	20 m	>	3SE7 910-3AC		1	1 unit
	50 m	Α	3SE7 910-3AH		1	1 unit
Wire clamps, galvanized white						
• Oval	2 × Ø 4 mm	Α	3SE7 941-1AC		1	1 unit
• Simplex (1 set = 4 units)	2 × Ø 4 mm	•	3SE7 943-1AC		1	4 units
• Duplex (1 set = 4 units)	2 × Ø 4 mm	А	3SE7 944-1AC		1	4 units
• Single (1 set = 4 units)	2 × Ø 4 mm	А	3SE7 942-1AA		1	4 units
Tension springs (zinc-plated) to maintain the counter tension 13 N 35 N, for trip-wires up to 50 m > 35 N, for trip-wires up to 2 × 75 m Wire rollers for changing the direction of	of the wire 20.4 mm	A	3SE7 931-1AB 3SE7 931-1AD 3SE7 931-1AE 3SE7 921-1AC		1 1 1	1 unit 1 unit 1 unit
rotatable	or the wife, \$2.4 min	A				i unit
Fixtures for the wire rollers (incl. fixing nuts)		•	3SE7 921-1AA		1	1 unit
Wire eyes for changes in wire direction improved power transmission at the fixir (1 set = 4 units)		•	3SE7 930-1AD		1	4 units
Eyebolts for fixing the wire						
 Including M8 nut 		Α	3SE7 920-1AB		1	1 unit
 Including M10 nut 			3SE7 920-1AC		1	1 unit
Turnbuckles for precise adjustment of t	he pretension					
• M6 x 60		Α	3SE7 950-1AB		1	1 unit
• M6 x 110		Α	3SE7 950-1AD		1	1 unit
LED lamps, red 24 V DC 25 mm diameter; for M20 x 1.5 connection		D	3SX3 235		1	1 unit

 $^{^{\}rm 1)}$ Diameter including casing; the diameter of the steel wire is 3.2 mm.

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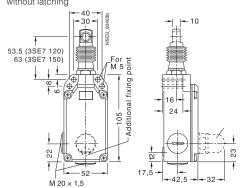
3SE Mechanical Safety

Cable-Operated Switches

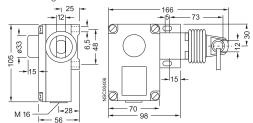
3SE7, metal enclosures

Dimension drawings

Metal enclosure 3SE7 120-2DD.., 3SE7 150-2DD.. without latching

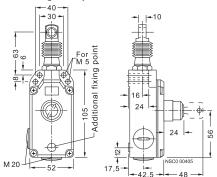


Metal enclosure 3SE7 140-1B... with latching and button reset



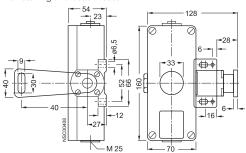
Metal enclosure 3SE7 150-1CD..

with latching and key reset

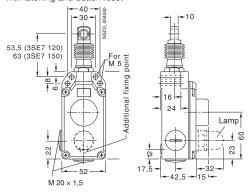


3SE7 160-1AE..

with latching and button reset

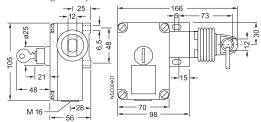


3SE7 120-1B..., 3SE7 150-1B... with latching and button reset

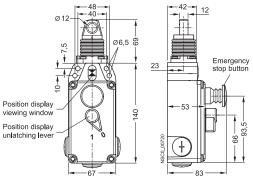


3SE7 140-1ECD.

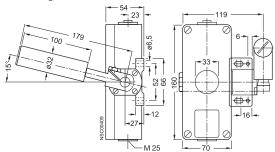
with latching and key reset



3SE7 141-1EG10. with EMERGENCY STOP and Lockout release



3SE7 310-1AE.. conveyor belt unbalance protection device with latching and button reset



General data

Overview

Position switches with separate actuator are used where the position of doors, covers or protective grills must be monitored for safety reasons.

3SE5 position switches with separate actuator have the same enclosures as the standard switches (modular system).



Position switches with head for separate actuator

Design

Enclosure sizes

The 3SE5 switches are available in various enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries

Also available is a switch in the 3SE2 series which has arisen in this form according to general market requirements:

 Molded-plastic enclosures outside of the standards, enclosure width 52 mm, IP67

Enclosure versions

Various basic versions can be selected for the enclosures of the 3SE5 series:

- Available with two- or three-pole contact blocks designed as slow-action contacts
- Optional LED status display
- With mounted four- or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- Similarly with a combination of connector socket and LED indicators
- Metal enclosures for explosion protection (ATEX) (see online)
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see online)

For a description of the basic switches, see page 13/6.

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through $4 \times 90^{\circ}$. The switches can also be approached from above.

The twist actuators of the 3SE2 243 and 3SE2 257 switches with special enclosures cannot be changed. The switches can be approached from the two broad sides and from above.

The actuators are not included in the scope of supply of the position switch and must be ordered separately from various versions to suit the application (see page 13/86).

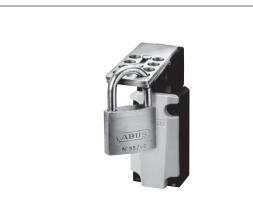
The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The position switches with radius actuators are particularly suitable for rotatable protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety (see page 13/86).



Blocking insert with padlock

Dust protection

A rubber cap to protect the twist actuator from contamination is available for operation in dusty environments (see page 13/86).

Contact reliability

The new contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

Positive opening

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

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SIRIUS 3SE5 Interlock Switches

3SE5, plastic enclosures with separate actuator

Selection and ordering data

Complete units

2 or 3 contacts \cdot 5 directions of approach \cdot Degree of protection IP65 or IP66/IP67 \cdot Cable entry M20 \times 1.5

Enclosure wid	5 directions of approach Slow-action contacts Slow-action contacts With increased minimus Slow-action contacts	1 NO + 1 NC 1 NO + 2 NC		_	>	Order No. 3SE5 232-0RV40	List Price \$ per PU	1	1 unit	102	kg
Enclosure wid	5 directions of approact Slow-action contacts Slow-action contacts With increased minimum	th 1 NO + 1 NC 1 NO + 2 NC 1 NO + 2 NC		_			ροιτο	1	1 unit	102	.,8
	5 directions of approact Slow-action contacts Slow-action contacts With increased minimum	th 1 NO + 1 NC 1 NO + 2 NC 1 NO + 2 NC		_				1	1 unit	102	
	Slow-action contacts Slow-action contacts With increased minimum	1 NO + 1 NC 1 NO + 2 NC um pull-out for		_				1	1 unit	100	
	With increased minimu	ım pull-out for		→	•					102	0.15
1. 6			ce 30 N			3SE5 232-0QV40		1	1 unit	102	0.15
SHARLEY III			ce 30 N								
	Slow-action contacts	1 NO + 1 NC									
				\odot	В	3SE5 232-0QV40-1AA1		1	1 unit	102	0.15
Vith separate											
ctuator			=======================================								
1	With M12 connector so				_						
	Slow-action contacts	1 NO + 1 NC		→		3SE5 234-0RV40-1AC4		1	1 unit	102	0.16
100	Slow-action contacts	1 NO + 2 NC	-	→	В	3SE5 234-0QV40-1AE0		1	1 unit	102	0.17
/ith M12 socket	With 2 LEDs, yellow/gr	roon.									
150/1	Slow-action contacts	1 NO + 1 NC	24 V DC	→	В	3SE5 232-1RV40		1	1 unit	102	0.15
	Slow-action contacts	1 NO + 1 NO		⊕	_	3SE5 232-3RV40		1	1 unit	102	0.11
	With M12 connector so and 2 LEDs					0020 202-0114-0			T GITIE	102	0.1
	Slow-action contacts	1 NO + 1 NC	24 V DC	→	С	3SE5 234-1RV40-1AF3		1	1 unit	102	0.17
ith 2 LEDs											
Enclosure wid	dth 50 mm										
	5 directions of approach	ch									
	Slow-action contacts	1 NO + 2 NC		→	В	3SE5 242-0QV40		1	1 unit	102	0.1
8 00	With increased minimu	ım pull-out for	ce 30 N								
	Slow-action contacts	1 NO + 1 NC		\odot	В	3SE5 242-0RV40-1AA1		1	1 unit	102	0.11
lith separate ctuator											
	With 2 LEDs, yellow/gr	een									
	Slow-action contacts	1 NO + 2 NC	24 V DC	€	В	3SE5 242-1QV40		1	1 unit	102	0.12
	Slow-action contacts	1 NO + 2 NO			С	3SE5 242-3QV40		1	1 unit	102	0.12
1 2 A A	2.2. dois. contacto				J			٠	· drift	102	0.12
Vith 2 LEDs											

[→] Positive opening according to IEC 6094751, Appendix K.

1) Supplied without actuator. Please order separately (see page 13/86).

For 1/2" NPT adaptors and cable glands, see page 13/48.

Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5, plastic enclosures Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts \cdot 5 directions of approach \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version ¹⁾	Contacts	LEDs	DT	Complete units		PU (UNIT, SET, M)	PS*
					Configurator	ĘĊ;	SET, M)	
					Order No.	Price per PU		
Enclosure wid	dth 40 mm acc. to EN 50041							
With experts	5 directions of approach Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 132-0QV20		1	1 unit
With separate actuator								
	With 2 LEDs, yellow/green							
-1	Slow-action contacts	1 NO + 2 NC		⊕ C	3SE5 132-1QV20		1	1 unit
With 2 LEDs	Slow-action contacts	1 NO + 2 NC	230 V AC	⊕ C	3SE5 132-3QV20		1	1 unit

For online configurator see www.siemens.com/sirius/configurators .

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[→] Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Supplied without actuator. Please order separately (see page 13/86).

SIRIUS 3SE5 Interlock Switches

3SE5, metal enclosures Enclosure width 31 mm acc. to EN 50047

Selection and ordering data

Complete units

2 or 3 contacts \cdot 5 directions of approach \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version ¹⁾	Contacts	LEDs	DT	Complete units		PU (UNIT,	PS*
					Configurator		SÉT, M)	
					Order No.	Price per PU		
Enclosure wi	dth 31 mm acc. to EN 50047							
	5 directions of approach							
-1	Slow-action contacts	1 NO + 1 NC	_	→ A	3SE5 212-0RV40		1	1 unit
Secondary .	Slow-action contacts	1 NO + 2 NC	_	→ B	3SE5 212-0QV40		1	1 unit
With separate actuator								
	With 2 LEDs, yellow/green							
	Slow-action contacts	1 NO + 1 NC		→ B	3SE5 212-1RV40		1	1 unit
With 2 LEDs	Slow-action contacts	1 NO + 1 NC	230 V AC	→ B	3SE5 212-3RV40		1	1 unit

 $[\]ensuremath{\mathfrak{Q}}$ For online configurator see www.siemens.com/sirius/configurators .

 $[\]begin{tabular}{l} \begin{tabular}{l} \begin{tabu$

¹⁾ Supplied without actuator. Please order separately (see page 13/86).

Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5, metal enclosures with separate actuator

Selection and ordering data

Complete units

2 or 3 contacts \cdot 5 directions of approach \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version ¹⁾	Contacts	LEDs		DT	Complete units		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
						Order No.	List Price \$ per PU				kg
Enclosure wic	ith 40 mm to EN 500	41					perio				Rg
	5 directions of approa										
	Slow-action contacts	1 NO + 2 N	C	→	•	3SE5 112-0QV10		1	1 unit	102	0.360
	With increased minim	um pull-out fo	rce 30 N								
	Slow-action contacts	1 NO + 2 N		→	В	3SE5 112-0QV10-1AA7		1	1 unit	102	0.360
Vith separate ctuator											
	With M12 connector s	ocket, 5-pole	125 V, 4 A)								
	Slow-action contacts	1 NO + 1 N	C	€	С	3SE5 114-0RV10-1AC5		1	1 unit	102	0.360
	Slow-action contacts	2 NC		\odot	С	3SE5 114-0QV10-1AE1		1	1 unit	102	0.360
	With connector socke	t, 6-pole + PE	(250 V, 10 A)								
	Slow-action contacts	1 NO + 2 N	C	\odot	С	3SE5 115-0QV10-1AD1		1	1 unit	102	0.380
Vith M12 socket											
The state of	With 2 LEDs, yellow/g										
	Slow-action contacts	1 NO + 2 N		→	В	3SE5 112-1QV10		1	1 unit	102	0.370
00	Slow-action contacts		C 230 V AC	→	С	3SE5 112-3QV10		1	1 unit	102	0.370
na ₂	With M12 connector seand 2 LEDs	ocket, 5-pole	125 V, 4 A)								
	Slow-action contacts	1 NO + 1 N	C 24 V DC	\odot	С	3SE5 114-1RV10-1AF3		1	1 unit	102	0.360
Vith 2 LEDs	With connector socke and 2 LEDs	t, 6-pole + PE	(10 A)								
	Slow-action contacts	1 NO + 1 N	C 24 V DC	€	С	3SE5 115-1RV10-1AF2		1	1 unit	102	0.380
Enclosure wic	Ith 56 mm										
	5 directions of approa			_							
	Slow-action contacts	1 NO + 2 N	C	€		3SE5 122-0QV10		1	1 unit	102	0.360
0	With increased minim		20 N								
Tamasa Co	With increased minim Slow-action contacts	um puii-out 10 1 NO + 2 N		→	В	3SE5 122-0QV10-1AA7		1	1 unit	102	0.360
	Jiow-action contacts	1110 + 211	0	G	D	33L3 122-0QV 10-1AA7		· '	1 unit	102	0.500
With separate											
actuator	With 2 LEDs, yellow/g	roon									
DRI 1	Slow-action contacts	1 NO + 2 N	C 24 V DC	→	•	3SE5 122-1QV10		1	1 unit	102	0.370
	Slow-action contacts		C 230 V AC	⊕		3SE5 122-1QV10		1	1 unit	102	0.370
	olow action contacts	1110 1 211	0 200 V 710	O	0	00L0 122 0QV 10		· '	1 Gint	102	0.07
Secretary Co.											
0											
With 2 LEDs											

 $[\]ensuremath{\bigodot}$ Positive opening according to IEC 6094751, Appendix K.

1) Supplied without actuator. Please order separately (see page 13/86).

For 1/2" NPT adaptors and cable glands, see page 13/48.

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SIRIUS 3SE5 Interlock Switches

3SE5, metal and plastic enclosures Accessories

Selection and ordering data

Selection and ordern								
	Version	DT	Pi	ist Price \$	PU (UNIT,	PS*	PG	Weight per PU
			pe	er PU	SET, M)			approx.
Actuators for 3SE5								kg
Actuators for 3323	Standard actuators, length 75.6 mm	Α	3SE5 000-0AV01		1	1 unit	102	0.040
39E5 000 0AV01	5 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. - 1. 1. 1. 1. 1. 1. 1. 1.							
3SE5 000-0AV01	With vertical fixing,		3SE5 000-0AV02		1	1 unit	102	0.070
	length 53 mm		35E5 000-0AV02		I	i unii	102	0.070
3SE5 000-0AV02	With transcrape fixing		2000 00000		4	dis	100	0.070
-6-1	With transverse fixing, length 47 mm		3SE5 000-0AV03		1	1 unit	102	0.070
3SE5 000-0AV03								
1	Radius actuators, length 51 mm							
	Direction of approach from the left	•	3SE5 000-0AV04		1	1 unit	102	0.070
3SE5 000-0AV06	Direction of approach from the right	Α	3SE5 000-0AV06		1	1 unit	102	0.070
33L3 000-0AV00	Universal radius actuators,		3SE5 000-0AV05		1	1 unit	102	0.090
3SE5 000-0AV05	length 77 mm		3020 000 0000		·	, and	102	0.000
The Marie	Universal radius actuators, heavy-duty							
	• Length 67 mm	Α	3SE5 000-0AV07-1AK2		1	1 unit	102	0.120
	Length 77 mm	Α	3SE5 000-0AV07		1	1 unit	102	0.090
3SE5 000-0AV07								
Optional accessories								
	Protective caps made of black rubber for the actuator head, to protect the actuator openings from contamination	В	3SE5 000-0AV08-1AA2		1	1 unit	102	0.010
3SE5 000-0AV08-1AA2	Not to be used for 3SE5 2 plastic enclosures.							
0000	Blocking inserts , high-grade steel, for actuator head, for up to 8 padlocks	В	3SE5 000-0AV08-1AA3		1	1 unit	102	0.065
3SE5 000-0AV08-1AA3								
Connections for 3SE		Г	20V2 407			4	400	0.010
	Connector sockets (4-pole), M12, fixed for M20 x 1.5 For max. 250 V, 4 A With 0.25 mm ² connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 127		1	1 unit	102	0.010
	Cable boxes (4-pole), M12 With terminal compartment, can be pre- assembled	Α	3RX8 000-0CB45		1	1 unit	574	0.015
	Angular cable boxes (4-pole), M12 With terminal compartment, can be pre- assembled	А	3RX8 000-0CC45		1	1 unit	574	0.015
3SY3 127 3RX8 000	Connector sockets (5-pole), M12, fixed for M20 x 1.5 For max. 125 V, 4 A With 0.25 mm ² connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 128		1	1 unit	102	0.010
	Cable boxes (5-pole), M12 With terminal compartm., can be pre-assembled	Α	3RX8 000-0CB55		1	1 unit	574	0.016
3SX9 926	Angular cable boxes (5-pole), M12 With terminal compartm., can be pre-assembled	Α	3RX8 000-0CC55		1	1 unit	574	0.016
	Cable glands M20 x 1.5 Plastic	А	3SX9 926		1	1 unit	102	0.010

Mechanical Safety 3SE2 Interlock Switches

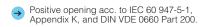
3SE2, plastic enclosures with separate actuator

Selection and ordering data

1 contact · 3 contacts · Moving double-break contacts 1)2)

	Actuation		Length of ac-	DT	3SE. position switches			3SE. position switches	Wght.
		sure width	tuator		with 3 slow-action contact	cts		with 1 slow-action contact	appr ox.
					13 21 31 	oke		6 mm stroke	<i>57</i>
					Ident. No. 12 acc. to EN 50 013		Wght. appro	Ident. No. 01 acc. to EN 50 013	
					Order No.	List Price \$	Х.	Order No. List Price \$	
		mm	mm			1 unit	kg	1 unit	kg
Molded plas	stic enclosure IP 67						<u> </u>		9
	Top and side entry ¹)								
/	M20 x 1.5 connecting threa	ad							
STEMENS	 Extraction force 5 N 	52			→ 3SE2 243-0XX40		0.140		0.120
	Extraction force 30 N	52			→ 3SE2 243-0XX		0.140		0.120
	With automatic ejection	52			→ 3SE2 243-0XX30		0.140	→ 3SE2 257-6XX30	0.120
10	M16 x 1.5 connecting three Extraction force 5 N	52			→ 3SE2 243-0XX48		0.140	→ 3SE2 257-6XX48	0.140
	Extraction force 3 N	52			→ 3SE2 243-0XX18		0.140		0.140
	With automatic ejection	52			→ 3SE2 243-0XX38		0.140		0.140
	Actuators								
	• Standard actuator ($r_{min.} = 150 \text{ mm}$)		28		3SX3 218		0.020		
	 Radius actuator (universal) (r_{min.} = 45 mm) 		33	•	3SX3 228		0.025		
	Ball catch		28		3SX3 217		0.035		
	(up to 100 N)		20		33.02		0.000		
	Actuator with dust protector and slit cover (1 set)		34	•	3SX3 234		0.035		
	7								
	Radius actuator		82		3SX3 256		0.020		
	Accessories								
	Slit cover only for 3SX3234	4			3SX3 233		0.005		
	(1 set = 3 units)								

For operation, operating speed and travel, see Page 13/92.



¹⁾ Supplied without actuator.

²⁾ For conduit thread adaptors, see page 13/48.

SIRIUS 3SE5 Interlock Switches

Technical data

Benefits

The 3SE5 position switches with separate actuator differ from the previous series through the following new characteristics:

- All enclosure sizes with increased corrosion protection
- All enclosure sizes are optionally available with a LED signaling indicator.
- The three-pole contact block 1 NO + 2 NC is available for all enclosure sizes.
- The plastic enclosure has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting.
- The ASIsafe electric component is integrated for the versions with the AS-Interface connection (see online); an adapter is not required.

Application

Position switches with separate actuator are used where the position of doors, covers or protective grills must be monitored for safety reasons.

The position switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions, fixing points of the enclosure are in

accordance with EN 50041 or EN 50047 standards. The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screwglands

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to the IEC standard 60947-5-1 with the symbol \oplus .

Category 3 according to ISO 13849-1 (EN 954-1) can be attained with a position switch with a separate actuator if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional position switch.

Technical specifications

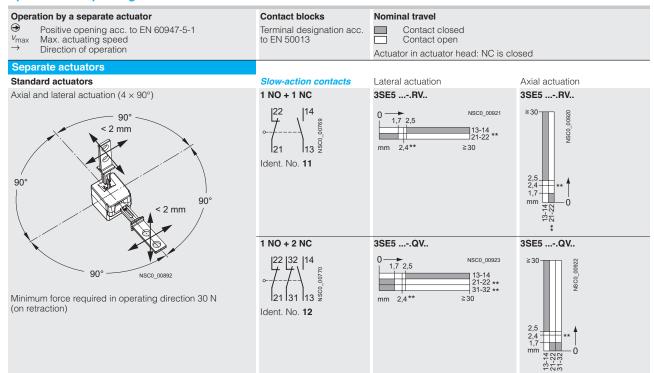
Туре		3SE5 1V	, 3SE5 2V	3SE2 257X	X	3SE2 243X	X
General data							
Standards		IEC 60947-5-	-1, EN 60947-5-1				
Rated insulation voltage U _i	V	400		500			
Pollution degree acc. to IEC 60664-1		Class 3		Class 3			
Rated impulse withstand voltage <i>U</i> _{imp}	kV	6					
Rated operational voltage <i>U</i> _e	V	400 AC; over 300 V A only equal po		500 AC; over 380 V AC only equal potential			
Conventional thermal current I_{th}	Α	6		10			
Rated operational current I _e		2-pole	3-pole	1-pole		3-pole	
 With alternating current 50/60 Hz At 24 V At 120 V At 240 V At 400 V At 500 V 	A A A A	I _e /AC-15 6 6 3 —	I _e /AC-15 6 3 1.5	I _e /AC-12 10 10 10 10 10	I _e /AC-15 10 10 6 4 3	I _e /AC-12 10 10 10 10	I _e /AC-15 10 10 4 4 3
For direct current At 24 V At 125 V At 250 V	A A A	I _e /DC-13 3 0.55 0.27	I _e /DC-13 3 0.55 0.27	I _e /DC-12 10 —	I _e /DC-13 10 —	I _e /DC-12 10 —	I _e /DC-13 10 —
- At 110 V - At 220 V - At 440 V	A A A	_ _ _	_ _ _	4 1 0.5	1 0.4 0.2	4 1 0.5	1 0.4 0.2
Short-circuit protection ¹⁾							
 With DIAZED fuse links, gG operational class 	Α	6		6			
With fuse links, quick		_		10			
With miniature circuit breaker, Char. C	Α	1	2	_			
Mechanical endurance		1×10 ⁶ opera	ating cycles				
Electrical endurance							
With 3RH.1, 3RT contactors in size S00, S0 For utilization category AC-15 when switching off <i>I_a</i> /AC-15 at 240 V			rating cycles erating cycles	$> 1 \times 10^6 \text{ op}$ $0.5 \times 10^6 \text{ ope}$	erating cycles erating cycles		
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operati	ng cycles/h				
Minimum pull-out force for positive opening	Ν	20		10		30	

Mechanical Safety SIRIUS 3SE5 Interlock Switches

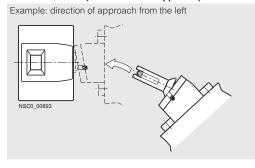
3SE5 with separate actuator Metal and plastic enclosures

Configuration

Operation and operating travel of actuators



Radius actuators (all directions of approach)



For connector assignment, see page 13/61.

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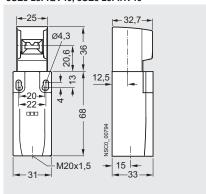
SIRIUS 3SE5 Interlock Switches

3SE5 with separate actuator Metal and plastic enclosures

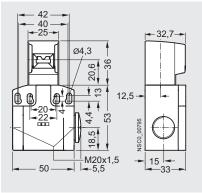
Dimensional drawings

Complete units

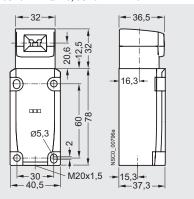
Enclosure width 31 mm 3SE5 23.-.QV40, 3SE5 23.-.RV40



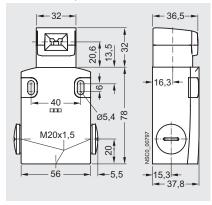
Enclosure width 50 mm 3SE5 24.-.QV40, 3SE5 24.-.RV40



Enclosure width 40 mm 3SE5 11.--.QV10, 3SE5 11.--.RV10

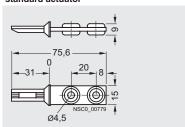


Enclosure width 56 mm 3SE5 12.-.QV10, 3SE5 12.-.RV10

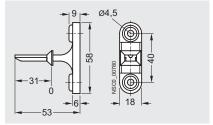


Actuators

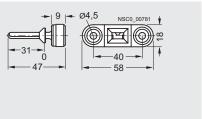
3SE5 000-0AV01 standard actuator



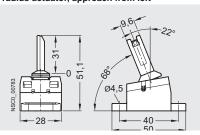
3SE5 000-0AV02 actuator with vertical fixing



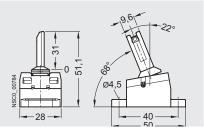
3SE5 000-0AV03 actuator with horizontal fixing



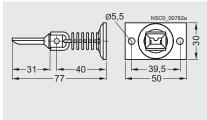
3SE5 000-0AV04 radius actuator, approach from left



3SE5 000-0AV06 radius actuator approach from right



3SE5 000-0AV05 universal radius actuator

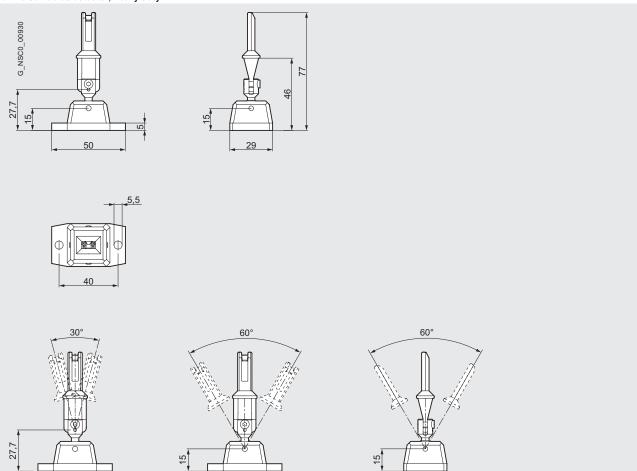


Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5 with separate actuator Metal and plastic enclosures

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3SE5 000-0AV07 universal radius actuator, heavy duty



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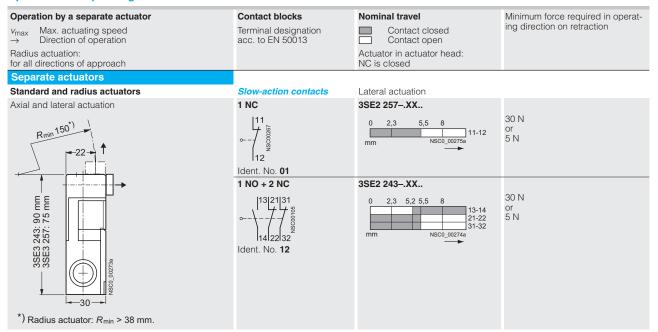
G_NSC0_00931

SIRIUS 3SE5 Interlock Switches

3SE2 with separate actuator Plastic enclosures

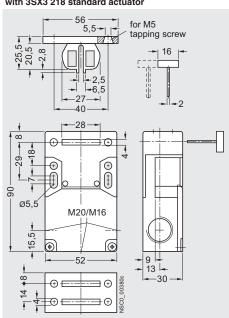
Configuration

Operation and operating travel of actuators

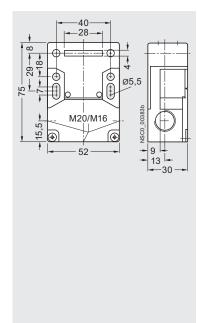


Dimensional drawings

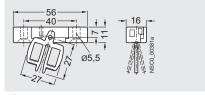
3SE2 243, lateral and front-end actuation, with 3SX3 218 standard actuator



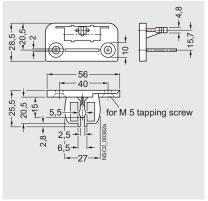
3SE2 257, lateral and front-end actuation



3SX3 228 universal radius actuator



3SX3 217 actuator with ball locating



Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5 / 3SE2 with solenoid locking General data

Overview

The position switches with solenoid interlocking are exceptional, technically safe devices which restrict and prevent an unfore-seen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i. e. follow-on motion of the shutdown machine).



The safety position switches with solenoid interlocking are comprised of a switch part with electromechanical interlock and a mechanical actuator which has to be ordered separately.

They are rugged protective devices that enable the greatest possible safety for man and machine.

The position switches with solenoid interlocking are offered in plastic or metal enclosures. Dimensions (W \times H \times D):

- 3SE5 3: 54 mm × 185 mm × 43.5 mm,
- 3SE2 8: 90 mm \times 100 mm (+ head 41.3 mm) \times 45 mm.

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through $4\times90^\circ$. The 3SE5 3 switches can also be approached from above.

The actuators are not included in the scope of supply of the position switch and must be ordered separately from a choice of six versions to suit the application (see page 13/97).

Actuation data:

- Maximum actuating speed $v_{max} = 1.5 \text{ m/s}$
- Minimum actuating speed v_{min} = 0.4 mm/s
- Minimum force in the direction of actuation $F_{min} = 30 \text{ N}$

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The position switches with radius actuators are particularly suitable for rotatable protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel locking device for attaching up to eight padlocks is available for even more safety (see page 13/97).

Dust protection

A rubber cap to protect the actuator head from contamination is available for operation in dusty environments (see page 13/97).

Solenoid interlocking

There are two versions for locking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Magnetic field lock (open-circuit principle)

The spring-actuated switch is equipped with an auxiliary release for emergency situations or setup mode. Available as options:

- Escape release or
- Emergency release

Contact blocks

The position switches with solenoid interlocking have one contact block each for:

- Monitoring the actuator or the position of the protective door
- · Monitoring the position of the solenoid

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Optical signaling equipment

The position switches with solenoid interlocking are available with an optional optical signaling device.

The signaling device indicates the switch position of the lock and the protective device optically by means of 2 LEDs on the front

Protective device	Interlock	Display	Meaning
Closed	Released	1) 2)	Actuator free to be pulled
Closed	Closed		Actuator locked
Open	Open	- 	Actuator pulled

Note:

The voltage of the LEDs at the monitored contacts must be the same as the operational voltage of the solenoid (same potential).

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¹⁾ Yellow LED

²⁾ Green LED.

SIRIUS 3SE5 Interlock Switches

3SE5 / 3SE2 with solenoid locking General data

Benefits

The new generation of 3SE5 3 position switches offers:

- · More safety through higher locking forces:
- 1300 N with plastic enclosure
- 2600 N with metal enclosure
- Various release mechanisms: lock release, escape release and emergency release
- Two contact blocks each with three contacts as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure variants: Plastic, metal or with integrated ASIsafe
- · An extensive range of actuators
- An optional LED status display 24 V DC, 115 V AC or 230 V AC for all switch variants

Application

The position switches with solenoid interlocking are exceptional, technically safe devices which restrict and prevent an unfore-seen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the shutdown machine).

The safety position switches with solenoid interlocking have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and solenoid

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Devices).

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Approvals

The switches are approved for use with locking devices according to EN 1088 and EN 292, Parts 1 and 2.

3SE5 3 position switches with solenoid interlocking bear the VDE test mark for tested according to GS-ET19 (Test Principles of the German Trade Association for Locking Devices with Electromagnetic Interlocks).

The 3SE2 8 metal-enclosed position switches with solenoid interlocking have been awarded a test certificate from the BIA (Berufsgenossenschaftliches Institut für Arbeitssicherheit).

Category 3 according to ISO 13849-1 (EN 954-1) can be attained with a position switch with solenoid interlocking if the corresponding failsafe evaluation units are selected and correctly installed, e. g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional position switch.

They are approved according to UL 508, UL 50 and UL 746-C.

Solenoid interlocking

The separate actuator operates in a similar way to the coding of a key and protects against manipulation. It transmits the locking force to the protective device and helps to monitor its position.

There are two versions of locking:

Spring-actuated lock (closed-circuit principle)

- In the standard version, the position switch locks by means of spring force and releases by means of electromagnetic force.
 In the case of voltage failure, it reliably prevents the protective device from opening when machine parts are still moving.
- The switch is equipped with an auxiliary release for emergency situations or setup mode.
- An auxiliary release which can be secured with a lock to prevent misuse is available as a version.





Auxiliary release

Auxiliary release with lock

The new 3SE5 3 position switches are also available with an escape release or an emergency release.

- Personnel working inside the hazard zone can use the escape release feature to manually release the interlock without tools from the escape side (hazardous area side) so that they can exit the hazard area. An intentional act (in this case pulling the gray actuator) is required to release the locking mechanism and restore the normal operating state.
- The emergency release enables someone in an emergency situation to manually release the interlock without tools from the access side (outside the hazardous area). Releasing the lock and restoring the normal operating state must require effort which is comparable to repair activity, in this case disassembly of the red actuator and resetting the mechanical lock.





Escape release from the front

Emergency release from the back

Magnetic field lock (open-circuit principle)

The second version offers locking by means of electromagnetic force and release by means of spring force. This version has an advantage when it is necessary to quickly access the machine after a power failure occurs, or in the case of very short overtravel times.

Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5, plastic enclosures with locking force up to 1200 N

6 slow-action contacts \cdot 5 directions of approach \cdot Cable entry 3 \times M20 \times 1.5 \cdot Degree of protection IP66/IP67 Locking force 1300 N (1000 N according to GS-ET 19)

3	Interlock ¹⁾	LEDs	Solenoid Rated opera- tional voltage		DT	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			V			Order No. Price \$				ka
1300 N locking	force · Enclosure width	54 mm	V			per PU				kg
1500 It locking	Spring-actuated locks	3-4 Hilli								
	With auxiliary release		24 DC	→	Α	3SE5 322-0SD21	1	1 unit	102	0.590
	That darmary rolledge		115 AC	_	В	3SE5 322-0SD22	1	1 unit	102	0.590
			230 AC		В	3SE5 322-0SD23	1	1 unit	102	0.590
		Yellow/Green	24 DC	→	Α	3SE5 322-1SD21	1	1 unit	102	0.590
		Yellow/Green	115 AC	\odot	В	3SE5 322-2SD22	1	1 unit	102	0.590
3SE5 312-0SD2.		Yellow/Green	230 AC	\odot	В	3SE5 322-3SD23	1	1 unit	102	0.590
33E3 312-03D2.	With auxiliary release		24 DC	→	<u> </u>	3SE5 322-0SE21	1	1 unit	102	0.745
	With lock		115 AC	_	В	3SE5 322-0SE22	1	1 unit	102	0.745
			230 AC		В	3SE5 322-0SE23	1	1 unit	102	0.745
		Yellow/Green	24 DC		В	3SE5 322-1SE21	1	1 unit	102	0.745
100 ·		Yellow/Green	115 AC	_	В	3SE5 322-2SE22	1	1 unit	102	0.745
		Yellow/Green	230 AC	_	В	3SE5 322-3SE23	1	1 unit	102	0.745
3SE5 312-0SE2.										
33E3 312-03E2.	With escape release		24 DC	→	В	3SE5 322-0SF21	1	1 unit	102	0.590
	from the front		115 AC		В	3SE5 322-0SF22	1	1 unit	102	0.590
D - C			230 AC	_	В	3SE5 322-0SF23	1	1 unit	102	0.590
		Yellow/Green	24 DC		В	3SE5 322-1SF21	1	1 unit	102	0.590
3.		Yellow/Green	115 AC	_	В	3SE5 322-2SF22	1	1 unit	102	0.590
		Yellow/Green			В	3SE5 322-3SF23	1	1 unit	102	0.590
3SE5 312-0SF2.	With escape release from the front and emergeny release from be	 pack	24 DC	→	В	3SE5 322-0SL21	1	1 unit	102	0.590
	• For ambiant temperature up to to –40 °C		24 DC	→	В	3SE5 322-0SL21-1AJ0	1	1 unit	102	0.590
	With escape release		24 DC	→	В	3SE5 322-0SG21	1	1 unit	102	0.590
	from the back and auxiliary release		115 AC	\odot	В	3SE5 322-0SG22	1	1 unit	102	0.590
	from the front		230 AC	€	В	3SE5 322-0SG23	1	1 unit	102	0.590
		Yellow/Green	24 DC	_	•	3SE5 322-1SG21	1	1 unit	102	0.590
		Yellow/Green	115 AC	_	В	3SE5 322-2SG22				
3SE5 312-0SG2.		Yellow/Green	230 AC	€	В	3SE5 322-3SG23	1	1 unit	102	0.590
	With escape release from the back and auxiliary release with lock from the front		24 DC	→	В	3SE5 322-0SH21	1	1 unit	102	0.745
	With emergency release		24 DC	→	В	3SE5 322-0SJ21	1	1 unit	102	0.745
3	from the back		115 AC	_	В	3SE5 322-0SJ22	1	1 unit	102	0.745
	and auxiliary release from the front		230 AC	_	В	3SE5 322-0SJ23	1	1 unit	102	0.745
20EE 210 20 10		Yellow/Green	24 DC	→	В	3SE5 322-1SJ21	1	1 unit	102	0.745
3SE5 312-0SJ2.		Yellow/Green	115 AC		В	3SE5 322-2SJ22	1	1 unit	102	0.745
		Yellow/Green	230 AC	\odot	В	3SE5 322-3SJ23	1	1 unit	102	0.745
	Magnetic field locks		24 DC	→		3SE5 322-0SB21	1	1 unit	102	0.590
Harris II			115 AC	\odot	В	3SE5 322-0SB22	1	1 unit	102	0.590
•)•			230 AC		В	3SE5 322-0SB23	1	1 unit	102	0.590
		Yellow/Green	24 DC		Α	3SE5 322-1SB21	1	1 unit	102	0 590
		Yellow/Green	115 AC	_	В	3SE5 322-2SB22				
3SE5 312-0SB2.		Yellow/Green	230 AC	€	В	3SE5 322-3SB23	1	1 unit	102	0.590

 $[\]ensuremath{\bigodot}$ Positive opening according to IEC 6094751, Appendix K.

Selection and ordering data

For 1/2" NPT adaptors and cable glands, see page 13/48.

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¹⁾ Supplied without actuator. Please order separately (see page 13/97).

SIRIUS 3SE5 Interlock Switches

3SE5, metal enclosures with locking force up to 2000 N

Selection and ordering data

6 slow-action contacts \cdot 5 directions of approach \cdot Cable entry 3 \times M20 \times 1.5 \cdot Degree of protection IP66/IP67 Locking force 2600 N (2000 N according to GS-ET 19)

Inter	lock ¹⁾	LEDs	Solenoid Rated opera- tional voltage		DT	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx
			V			Order No.	Price \$ per PU				kg
cking force	· Enclosure width	54 mm					p				9
Spri	ng-actuated locks										
• Wi	th auxiliary release		24 DC	\odot	•	3SE5 312-0SD11		1	1 unit	102	1.03
			115 AC	\odot	•	3SE5 312-0SD12		1	1 unit	102	1.03
			230 AC		В	3SE5 312-0SD13		1	1 unit	102	1.03
		Yellow/Green	24 DC	_	В	3SE5 312-1SD11		1	1 unit	102	1.04
		Yellow/Green	115 AC	_		3SE5 312-2SD12		1	1 unit	102	1.04
SD1.		Yellow/Green	230 AC	\odot	В	3SE5 312-3SD13		1	1 unit	102	1.04
	th auxiliary release		24 DC	→	В	3SE5 312-0SE11		1	1 unit	102	1.18
Wi	th lock		115 AC	\odot	В	3SE5 312-0SE12		1	1 unit	102	1.18
			230 AC	\odot	В	3SE5 312-0SE13		1	1 unit	102	1.18
			48 AC/DC	\odot	С	3SE5 312-0SE14		1	1 unit	102	1.18
		Yellow/Green	24 DC	→	В	3SE5 312-1SE11		1	1 unit	102	1.18
		Yellow/Green	115 AC	\odot	В	3SE5 312-2SE12		1	1 unit	102	1.18
E1.		Yellow/Green	230 AC	\odot	В	3SE5 312-3SE13		1	1 unit	102	1.18
	th escape release		24 DC	→	В	3SE5 312-0SF11		1	1 unit	102	1.18
fro	m the front		115 AC	_	В	3SE5 312-0SF12		1	1 unit	102	1.18
			230 AC	\odot	В	3SE5 312-0SF13		1	1 unit	102	1.18
		Yellow/Green	24 DC	→	В	3SE5 312-1SF11		1	1 unit	102	1.18
		Yellow/Green	115 AC	\odot	В	3SE5 312-2SF12		1	1 unit	102	1.18
		Yellow/Green	230 AC	\odot	В	3SE5 312-3SF13		1	1 unit	102	1.18
·1.											
	th escape release		24 DC	→	В	3SE5 312-0SG11		1	1 unit	102	1.17
fro	m the back		115 AC	_	В	3SE5 312-0SG12		1	1 unit	102	1.17
	d auxiliary release m the front		230 AC	_	В	3SE5 312-0SG13		1	1 unit	102	1.17
110	in the none	Yellow/Green	24 DC	_		3SE5 312-1SG11		1	1 unit	102	1.18
		Yellow/Green	115 AC	→	В	3SE5 312-2SG12		1	1 unit	102	1.18
10		Yellow/Green	230 AC	\odot	В	3SE5 312-3SG13		1	1 unit	102	1.18
3 1.											
	th escape release		24 DC	→	В	3SE5 312-0SH11		1	1 unit	102	1.18
fro an	m the back d auxiliary release h lock from the front		2.50		_				. Gilic	.02	
• Wi	th emergency release		24 DC	→	В	3SE5 312-0SJ11		1	1 unit	102	1.18
	m the back		115 AC	\odot	В	3SE5 312-0SJ12		1	1 unit	102	1.18
fro	d auxiliary release m the front		230 AC	\odot	В	3SE5 312-0SJ13		1	1 unit	102	1.1
		Yellow/Green	24 DC	→	В	3SE5 312-1SJ11		1	1 unit	102	1.18
		Yellow/Green	115 AC	\odot	В	3SE5 312-2SJ12		1	1 unit	102	1.18
10		Yellow/Green	230 AC	\odot	В	3SE5 312-3SJ13		1	1 unit	102	1.18
SJ1.											
	netic field locks		24 DC	→	>	3SE5 312-0SB11		1	1 unit	102	1.03
			115 AC	→		3SE5 312-0SB12		1	1 unit	102	1.03
			230 AC	→		3SE5 312-0SB13		1	1 unit	102	1.03
		Yellow/Green		→		3SE5 312-1SB11		1	1 unit	102	1.0
		Yellow/Green	115 AC	_	В	3SE5 312-2SB12		1	1 unit	102	1.0
		Yellow/Green	000 40	_	В	3SE5 312-3SB13		1	1 unit	102	1.0

 $[\]begin{tabular}{l} \begin{tabular}{l} \begin{tabu$

For 1/2" NPT adaptors and cable glands, see page 13/48.

¹⁾ Supplied without actuator. Please order separately (see page 13/97).

Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5, metal and plastic enclosures Accessories

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	ring data							
	Version	DT	Order No.	List Price \$ per PU	PU (UNIT, SET, M)	PS*	PG	Weigh per Pl appro
Actuators for 3SE5	1)							9
- lee	Standard actuators, length 75.6 mm	Α	3SE5 000-0AV01		1	1 unit	102	0.0
SSE5 000-0AV01	With vertical fixing, length 53 mm	Α	3SE5 000-0AV02		1	1 unit	102	0.0
SSE5 000-0AV02	With transverse fixing, length 47 mm	А	3SE5 000-0AV03		1	1 unit	102	0.0
3SE5 000-0AV03	Radius actuators, length 51 mm • Direction of approach from the left	А	3SE5 000-0AV04		1	1 unit	102	0.0
SE5 000-0AV04	 Direction of approach from the right Universal radius actuators, 	A	3SE5 000-0AV06		1	1 unit	102	
SSE5 000-0AV05	 Length 77 mm Length 77 mm, tab rotated 90° 	A A	3SE5 000-0AV05 3SE5 000-0AV05-1AA6		1	1 unit 1 unit	102 102	
	Universal radius actuators, heavy-duty • Length 67 mm • Length 77 mm	A A	3SE5 000-0AV07-1AK2 3SE5 000-0AV07		1	1 unit 1 unit	102 102	
SE5 000-0AV07 <mark>Optional accessori</mark> e	es for 3SE5							
SE5 000-0AV08-1AA2	Protective caps made of black rubber for the actuator head, to protect the actuator openings from contamination	В	3SE5 000-0AV08-1AA2		1	1 unit	102	0.
5555	Blocking inserts, high-grade steel, for actuator head, for up to 8 padlocks	В	3SE5 000-0AV08-1AA3		1	1 unit	102	0.
SE5 000-0AV08-1AA3 Connections for 3S	E5 3SE2							
	Connector sockets (4-pole), M12, fixed for M20 x 1.5 For max. 250 V, 4 A With 0.25 mm ² connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 127		1	1 unit	102	0.
	Cable boxes (4-pole), M12, non-adjustable With terminal compartment, can be pre-assembled	Α	3RX8 000-0CB45		1	1 unit	574	0.
	Angular cable boxes (4-pole), M12 With terminal compartment, can be pre-assembled	Α	3RX8 000-0CC45		1	1 unit	574	0.
SY3 127 3RX8 000	Connector sockets (5-pole), M12 for M20 × 1.5 For max. 125 V, 4 A With 0.25 mm ² connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	В	3SY3 128		1	1 unit	102	0.
	Cable boxes (5-pole), M12 With terminal compartm., can be pre-assembled	Α	3RX8 000-0CB55		1	1 unit	574	0.
SX9 926	Angular cable boxes (5-pole), M12 With terminal compartm., can be pre-assembled	Α	3RX8 000-0CC55		1	1 unit	574	0.
0,10 020								

¹⁾ See page 13/90 for dimensions drawings.

SIRIUS 3SE5 Interlock Switches

3SE5 / 3SE2 with solenoid locking

Technical specifications

Туре		3SE5 322	3SE5 312	3SE2 83, 3SE2 84
General data				
Standards		IEC 60947-5-	1, EN 60947-5-1	
Rated insulation voltage U _i	V	250		
Degree of pollution acc. to EN 60664-1		Class 3		
Rated impulse withstand voltage U _{imp}	kV	4		6
Rated operational voltage <i>U</i> _e				
• DC	V	24		24
• AC 50/60 Hz	V	230		110 130 230
Conventional thermal current I _{th}	Α	6		10
Rated operational current I _e				
 With alternating current 50/60 Hz At 24 V At 120 V At 230 V 	A A A	I _e /AC-15 or E 6 3 1.5	3300	$I_{\rm e}$ /AC-12 $I_{\rm e}$ /AC-15 10 4 10 4 10 4
• For direct current - At 24 V - At 60 V - At 110 V	А	I _e /DC-13 or (3)	Q300	$\begin{array}{cccc} I_{\rm e}/{\rm DC}\text{-}12 & & I_{\rm e}/{\rm DC}\text{-}13 \\ 10 & & 3 \\ 5 & & & 1.5 \\ 2.5 & & 0.7 \end{array}$
- At 125 V - At 220 V - At 250 V	A A	0.55 0.27		 1 0.3
Magnet				
• Locking force, max.	Ν	1300	2600	1820
 Locking force acc. to GS-ET 19 	Ν	1000	2000	1400
$ullet$ Power consumption at $U_{ m c}$	W	3.5		5.2
Short-circuit protection ¹⁾				
 With DIAZED fuse links, operational class gG 	Α	6		6
Characteristic quick				10
With miniature circuit breaker, Char. C	Α	0.5		
Mechanical endurance		1 ×10 ⁶ operat	ting cycles	1 ×10 ⁶ operating cycles
Electrical endurance				
• With 3RH11, 3RT10 16 to 3RT10 26 contactor	rs	1 ×10 ⁶ operat	ting cycles	1 ×10 ⁶ operating cycles
• For AC-15 utilization category		1 ×10 ⁵ operation when interrup	ting cycles, ting $I_{\rm e}$ /AC-15 at 230 $^{\circ}$	0.5 \times 10 ⁶ operating cycles, when interrupting $I_{\rm e}$ /AC-15 at 230 V
For DC-13 utilization category		voltage, the c		ance depends not only on the breaking current but also on the I the speed of switching. be given.
Switching frequency With 3RH11, 3RT10 16 to 3RT10 26 contactors		6 ×10 ³ operation	ting cycles/h	
Shock resistance acc. to IEC 60068-2-27		30 <i>g</i> /11 ms		

Туре	3SE5 322	3SE5 312	3SE2 83, 3SE2 84
Enclosure			
Enclosure material	Ultramid A3X2G7	Zinc diecasting GD Zn Al4 Cu1	Aluminum (GD - AlSi 12)
Degree of protection acc. to EN 60529	IP66/IP67		IP67
Ambient temperature			
• During operation °C	–25 + 60		–30 + 70
• During storage, transport °C	-40 +80		
Mounting position	Any		
Connection			
Cable entry	M 20 × 1.5		M 20 × 1.5
Conductor cross-sections			
• Solid mn	1 × (0.5 1.5)		2 × 2.5
• Finely stranded with end sleeve mn	² 2 × (0.5 0.75)		2 × 1.5
Protective conductor connection Inside enclosure		M3.5	

¹⁾ Without any welds according to IEC 60947-5-1.

Mechanical Safety SIRIUS 3SE5 Interlock Switches

3SE5 with solenoid locking Metal and plastic enclosures

Schematics

3SE5

Monitoring the actuator:

Slow-action contacts 1 NO + 2 NC



Monitoring the solenoid:

Slow-action contacts 1 NO + 2 NC



Configuration

Operation and operating travel of actuators

Operation by a separate actuator

→ Positive opening acc. to EN 60947-5-1
 Max. actuating speed
 Direction of operation

Contact blocks
Terminal designation acc. to EN 50013

Nominal travel

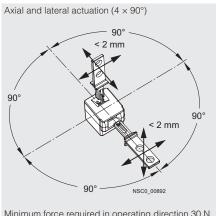
Contact closed

Actuator in actuator head: NC is closed

Contact open

Separate actuators with solenoid interlocking

Standard actuators

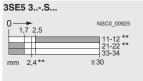


Minimum force required in operating direction 30 N (on retraction)

Slow-action contacts



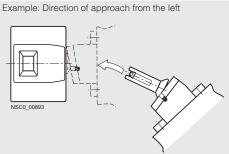






Axial actuation

Radius actuators (all directions of approach)



For connector socket assignment, see page 13/61.

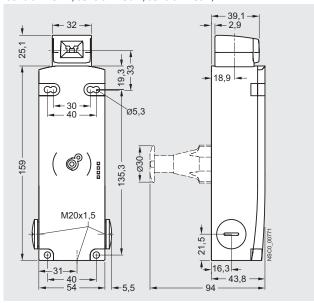
13/99

SIRIUS 3SE5 Interlock Switches

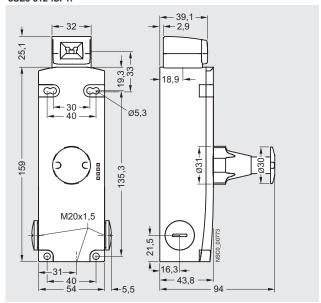
3SE5 with solenoid locking Metal and plastic enclosures

Dimensional drawings

Spring-actuated lock, with auxiliary release 3SE5 322-.SD2., 3SE5 322-.SG2., 3SE5 322-.SJ2., 3SE5 312-.SD1., 3SE5 312-.SG1., 3SE5 312-.SJ1.,



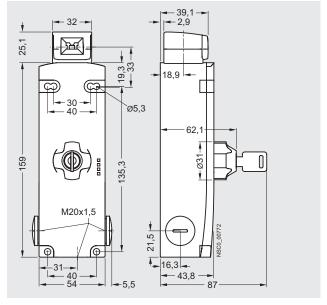
Spring-actuated lock, with escape release 3SE5 322-.SF2., 3SE5 312-.SF1.



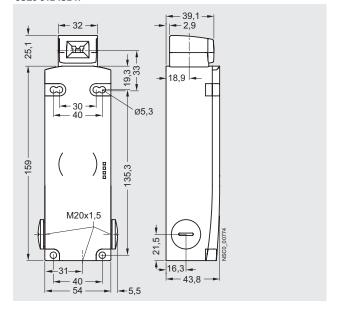
The plastic enclosures have knock-out openings behind the connecting thread; they are delivered therefore without protective caps.

For actuators see page 13/90.

Spring-actuated lock, with auxiliary release with lock 3SE5 322-.SE2., 3SE5 312-.SE1.



Magnetic field lock 3SE5 322-.SB2., 3SE5 312-.SB1.



Mechanical Safety SIRIUS 3SE5 Hinge Switches

General data

Overview

3SE5 hinge switches have the same enclosures as the standard switches (modular system).



Hinge switches

Design

Enclosure sizes

The 3SE5 switches are available as complete units in two enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry

Enclosure versions

Various basic versions can be selected for the enclosures:

- Available with two or three-pole contact blocks designed as snap-action contacts
- Metal enclosures for explosion protection (ATEX) (see online)
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see online)

For a description of the basic switches, see page 13/6.

Operating mechanism

The hinge switches are provided for mounting on hinges. The actuator head is included in the scope of supply. There are two versions:

- Operating mechanism with hollow shaft, inner diameter 8 mm, outer 12 mm
- Operating mechanism with solid shaft, diameter 10 mm

Benefits

The 3SE5 hinge switches differ from the previous series through the following new characteristics:

- All actuators can be turned around the axis in increments of 22.5° (see picture on page 13/6).
- The new three-pole contact block 1 NO + 2 NC is available for all enclosure sizes (see picture on page 13/7).
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting (see picture on page 13/7).
- The ASIsafe electric component is integrated for the versions with the AS-Interface connection (see online); an additional adapter is not required.

Application

The hinge switches are used in those areas where the position of swiveling protective devices such as doors or flaps must be monitored. With these switches, the position of the doors and hinge switches is converted into electric signals. The switches allow shutdown and signaling without delay in the event of a small opening angle through the snap-action contacts with an operating angle of 10°.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions and fixing points of the enclosures are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screwalands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol $\widehat{\oplus}$.

Category 4 according to EN 954-1 can be attained with the 3SE5 hinge switches with ⊕ if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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SIRIUS 3SE5 Hinge Switches 3SE5, plastic enclosures

Enclosure width 31 mm / 40 mm

Selection and ordering data

Complete units

2 or 3 contacts \cdot Degree of protection IP65 (31 mm) or IP67/IP68 (40 mm) \cdot Cable entry M20 \times 1.5

	Version	Snap-action contacts	D ⁻	Complete units		PU (UNIT,	PS*
				Configurator	ĘŢ.	SET, M)	
				Order No.	Price per PU		
Plastic enclosures	· Enclosure width 31 mm acc.	to EN 50047			PU		
	With hollow shaft						
a l	Operating angle 10°	1 NO + 1 NC	Э В	3SE5 232-0HU21		1	1 unit
Santanaya	Operating angle 10°	1 NO + 2 NC	⊕ В	3SE5 232-0LU21		1	1 unit
With hollow shaft							
	With solid shaft						
5	Operating angle 10°	1 NO + 1 NC	Э В	3SE5 232-0HU22		1	1 unit
	Operating angle 10°	1 NO + 2 NC	Э В	3SE5 232-0LU22		1	1 unit
With solid shaft Plastic enclosures	· Enclosure width 40 mm acc.	to EN 50041					
	With hollow shaft						
	Operating angle 10°	1 NO + 2 NC	⊕ В	3SE5 132-0LU21		1	1 unit
With hollow shaft							
	With solid shaft		_				
Timeses	Operating angle 10°	1 NO + 2 NC	● B	3SE5 132-0LU22		1	1 unit

Spare parts						
	Version	DT	Order No.	Price per PU	(UNIT,	PS*
					SET, M)	
Actuator heads						
	With hollow shaft Operating angle 10°	В	3SE5 000-0AU21		1	1 unit
With hollow shaft	West P. L. C.					
	With solid shaft Operating angle 10°	В	3SE5 000-0AU22		1	1 unit

With solid shaft

The respective actuators are included in the scope of supply for the complete units.

Mechanical Safety SIRIUS 3SE5 Hinge Switches 3SE5, metal enclosures

Enclosure width 31 mm / 40 mm

Selection and ordering data

Complete units

3 contacts \cdot Degree of protection IP66/IP67 \cdot Cable entry M20 \times 1.5

	Version	Snap-action contacts	DT	Complete units	PU (UNIT, SET, M)
				Configurator	
				Order No. Price per PU	
Metal enclosures ·	Enclosure width 31 mm acc. to EN 50047				
	With hollow shaft				
Salata Sa	Operating angle 10°	1 NO + 2 NC	→ B	3SE5 212-0LU21	1
With hollow shaft					
	With solid shaft				
ESSENCY.	Operating angle 10°	1 NO + 2 NC	→ B	3SE5 212-0LU22	1
With solid shaft					
Metal enclosures · I	Enclosure width 40 mm acc. to EN 50041				
F	With hollow shaft				
Sincate Sincat	Operating angle 10°	1 NO + 2 NC	→ B	3SE5 112-0LU21	1
With hollow shaft					
	With solid shaft	1 NO . 0 NO	⊕ □	2005 440 01 1100	4
With solid shaft	Operating angle 10°	1 NO + 2 NC	→ B	3SE5 112-0LU22	1
For online configurato	r see www.siemens.com/sirius/configurators .	→Positive o	pening acc	cording to IEC 60947-5-1, Appendix K.	
Spare parts			. 0		

c	na	ro	pa	rtc
9	μa	<i>1</i> C	μai	ιs

Spare parts						
	Version	DT	Order No.	Price per PU	PU (UNIT,	PS*
					SET, M)	
Actuator heads						
	With hollow shaft					
	Operating angle 10°	В	3SE5 000-0AU21		1	1 unit
With hollow shaft						
	With solid shaft					
	Operating angle 10°	В	3SE5 000-0AU22		1	1 unit
With solid shaft						

The respective actuators are included in the scope of supply for the complete units.

3SE2 Hinge Switches

3SE2, plastic enclosures with integrated hinge

Overview

The 3SE2 283 hinge switches are particularly suitable for use in doors and flaps of machines that must be closed to ensure the safety of operating personnel. Their thin profile and compact design allow them to be directly mounted on a hinged protective cover and the stable frame.

Benefits

- Easy mounting through use of versions with integrated hinge
- Versions with small operating angle of 4°
- Protection against personal injury provided by positively driven NC contacts according to IEC 60947-5-1
- Simultaneous shutdown and reporting by 1 NO + 2 NC contacts

Selection and ordering data

3 contacts \cdot Degree of protection IP65 \cdot Cable entry 2 \times (M20 \times 1.5)

	Version	Slow-action contacts		DT	Complete units		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
					Order No.	List Price \$ per PU				kg
Plastic enclosures v	vith integrated hinge									
	With mounted hinges (delivered with additional hinge and fixing accessories) • Aluminum hinge	Slow-action contacts								
P P P	- Operating angle 4°	1 NO + 2 NC	\odot	Α	3SE2 283-0GA43		1	1 unit	102	0.425
3SE2 283	- Operating angle 4°	3 NC	\odot	Α	3SE2 283-6GA43		1	1 unit	102	0.425
33L2 203	- Operating angle 8°	1 NO + 2 NC	\odot	D	3SE2 283-0GA53		1	1 unit	102	0.420
	 Operating angle 8° 	3 NC	\odot	С	3SE2 283-6GA53		1	1 unit	102	0.420
	High-grade steel hinge									
	 Operating angle 4° 	1 NO + 2 NC	\odot	Α	3SE2 283-0GA44		1	1 unit	102	0.800
	 Operating angle 4° 	3 NC	\odot	С	3SE2 283-6GA44		1	1 unit	102	0.800

[→] Positive opening according to IEC 60947-5-1, Appendix K.

Accessories/spare parts

, ,	Version	[DT	Order No.	List Price \$ per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Accessories 3SX3 225	Additional hinges (delivered with fixing accessories) Made of aluminum Made of high-grade steel			3SX3 225 3SX3 231		1 1	1 unit 1 unit	102 102	0.160 0.330

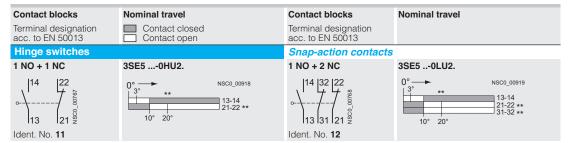
For 1/2" NPT adaptors and cable glands, see page 13/48.

Mechanical Safety SIRIUS 3SE5 Hinge Switches

3SE5, plastic and metal enclosures

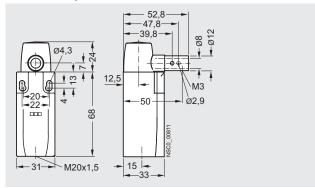
Configuration

Contact blocks and operating travel of actuators

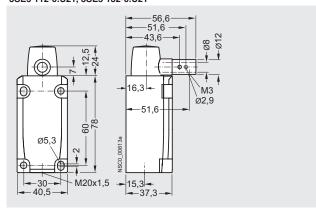


Dimensional drawings

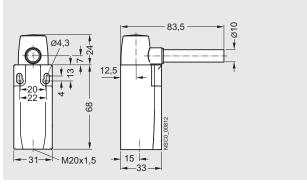
Enclosure width 31 mm with hollow shaft 3SE5 212-0.U21, 3SE5 232-0.U21



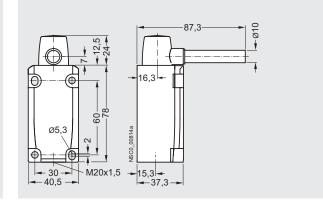
Enclosure width 40 mm with hollow shaft 3SE5 112-0.U21, 3SE5 132-0.U21



Enclosure width 31 mm with solid shaft 3SE5 212-0.U22, 3SE5 232-0.U22



Enclosure width 40 mm with solid shaft 3SE5 122-0.U22, 3SE5 132-0.U22



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3SE2 Hinge Switches

3SE2, plastic enclosures with integrated hinge

Overview

The hinge switches are used for monitoring and protecting hinged protective devices such as doors and flaps.

Characteristics

- \bullet Special design, with 2 \times M20 \times 1.5 connecting thread
- Degree of protection IP65
- 3 contacts
- Operating angle of 4° or 8°

Design

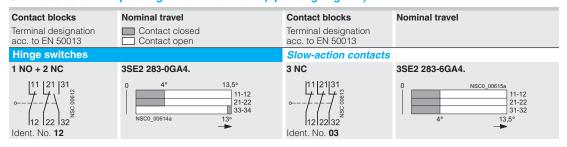
The 3SE2 283 hinge switch has an integrated electromechanical contact block that is actuated when the hinged protective cover is opened. If the cover is opened by 4° or 8°, the NC contact is positively opened by a direct (not spring-action) mechanism. These positively driven contacts guarantee interruption of the electric circuit and stopping of the machine. The NO contact is closed when the cover is moved by 13.5°.

Technical specifications

Туре		3SE2 283
Rated insulation voltage U _i	V	250
Conventional thermal current Ith	Α	2.5
Rated operational current I _e		
• At AC-15, 120 V	Α	4.2
• At AC-15, 250 V	Α	2
• At DC-13, 24 V	Α	1
Min. make-break capacity		> 5 V/1 mA
Short-circuit protection		
 Operational class gG 	Α	2
Mechanical endurance		$> 1 \times 10^6$ operating cycles
Switching frequency		1200 operating cycles/hour
Positive opening		2 mm after opening point
Enclosure material		Plastic
Degree of protection		IP65
Ambient temperature	°C	-25 + 65
Shock resistance		30 g/18 ms
Resistance to vibrations		20 <i>g</i> /10 200 Hz
Cable entry		2 × (M20 × 1.5)
Screw terminals		0.5 1.5 mm ² /AWG 15

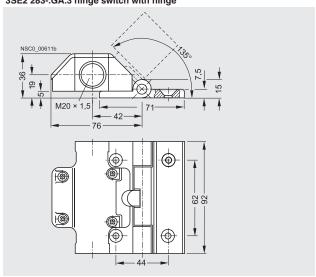
Configuration

Contact blocks and operating travel of actuators (operating angle 4°)

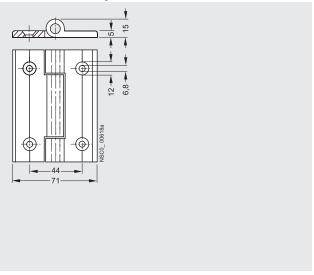


Dimensional drawings

3SE2 283-.GA.3 hinge switch with hinge



3SX3 225 additional hinge



SIRIUS 3SE6 RFID Non-Contact Safety Switches

General data

Overview



Non-contact RFID safety switches with maximum tamper resistance

3SE63 RFID contactless safety switches meet the highest safety requirements, SIL3 or Cat. 4, for monitoring the positions of movable protective devices.

An RFID safety switch consists of a coded RFID switch with an 8-pole M12 connector plug and an identical RFID actuator.

The switch is available in several versions:

- Family coded with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable once, with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable more than once (an unlimited number of times), with M12 plug or version with additional 18 N magnetic catch

The actuator is therefore available in two versions:

- Standard
- With 18 N magnetic catch

The magnetic catch keeps doors and hinge switches closed with permanent magnets.

Optional accessories

- Covers for sealing mounting holes, also suitable for tamperproofing screw fixings
- Spacers (approx. 3 mm high) to facilitate cleaning under the installation surface when using pressure washers, for example

Mounting and maintenance

Reduction in the number of versions, because

- switches can be mounted on right or left sides
- · the actuator can be mounted on all sides

Quick and easy mounting by thanks to universal mounting holes

- Standard gauge/holes for 3SE6 magnetically operated switch
- Fine adjustment thanks to slotted holes

Little adjustment or maintenance required

- Threshold indication by LED on the switch for quick and easy adjustment during installation and maintenance
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Note:

Keep metal parts and cuttings away from the vicinity of the switch

Minimum distance between two switches 100 mm

Codina

Family coded

These safety switches are delivered ready to use, i.e. no programming is necessary.

Individually coded, programmable once

The assignment of safety switch and actuator thus created is irreversible.

The actuator is programmed simply by routine during startup, thus permanently preventing any form of tampering by means of a replacement actuator.

Individually coded, programmable several times

The procedure for programming a new actuator can be repeated an unlimited number of times. When a new actuator is programmed the previous code becomes invalid. A protected coding process allows new actuators to be programmed for service purposes.

After this, a ten-minute lockout provides enhanced tamper protection. The green LED flashes until the lockout time has ended and the new actuator has been detected. If the operational voltage is interrupted during this time, the ten-minute guard time is restarted

Programming procedure for individual coding

- 1. Apply operational voltage to safety sensor
- 2. Move actuator into detecting range: red LED lights up, yellow LED flashes (1 Hz)
- 3. After 10 s it changes to a shorter flashing frequency (3 Hz). In this state switch off operational voltage.
- 4. After the next time the operational voltage is switched on, the actuator is detected again to activate the programmed actuator code. The activated code is thus stored permanently.

Diagnostics

The RFID safety switch indicates its operating state including faults by means of the LED indicator in the switch and the short-circuit resistant diagnostic output. The signals can then be used for central displays or non-safety-related control tasks.

There are two diagnostics functions:

- Crossover monitoring
- Open-circuit monitoring
- External voltage monitoring
- Ambient temperature too high
- Wrong or defective actuator
- Switching interval threshold identification with LED indication

The signal combination "diagnostics output switched off" and "safety outputs still switched on" can be used to move the machine into a controlled stop position.

Any crossover or a fault that is not currently compromising the safe operation of a safety switch results in the disconnection of the safety channels after a 30 minute delay. However, the diagnostics output switches off instantaneously.

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SIRIUS 3SE6 RFID Non-Contact Safety Switches

General data

Mode of operation of the diagnostics LEDs

The safety switch indicates not only its operating state, but also faults by means of LEDs in three colors at the ends of the RFID switch.

- The green LED indicates readiness for operation when the control supply voltage is connected.
- The yellow LED indicates that there is an actuator in detecting range. If the actuator is in the switching interval threshold, this is indicated by flashing. This flashing can be used to identify a change in the distance between sensor and actuator at an early stage (e.g. as a result of the sagging of a protective door). The installation should be tested before the distance increases further, the safety outputs switch off and the machine stops.
- The red LED indicates the individual causes of the fault by means of defined flashing frequencies.

Benefits

- Maximum tamper resistance by means of individual coding of switches and actuators at the highest safety level
- · Plastic enclosure with integrated connector
- 2 electronic short-circuit proof safety outputs, each 250 mA
- Integrated crossover, open circuit and external voltage monitoring, with series circuit as far as the control cabinet
- Safety and diagnostics signals can be connected in series
- Series connection of safety circuits in Cat. 4 / PL e / SIL 3
- LED status indication including switching interval threshold indication for quick and easy adjustment during installation and maintenance
- Short-circuit proof conventional diagnostics output
- Optional version with magnetic catch for interlocking hatches or small doors even when de-energized

- Highly rugged thanks to the use of tested enclosure materials, resistant to aggressive cleaning products, with a degree of protection of up to IP69K
- Fine adjustment thanks to slotted holes
- Little adjustment or maintenance required
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Application

RFID contactless safety switches are designed for use in safety circuits, and are used to monitor the positions of movable protective devices. They monitor the positions of rotating, laterally sliding or removable protective devices using the coded electronic actuator.

Their high degree of protection (IP69K) and the use of cleaning product-resistant materials means that these switches are optimized for use under extreme environmental conditions.

Their electronic operating principle makes these switches ideal for metalworking machinery.

The switches have a larger switching interval and switching displacement than mechanical switches, improve the mounting tolerance of the protective door, and offer a wide range of diagnostics options.

The RFID switches can be connected to all standard evaluation units, e. g. a PLC, 3TK28 safety evaluation units (in which the built-in crossover monitoring function can be deactivated), or the 3RK3 modular safety system.

The following safety categories can be achieved in safety circuits:

- Category 4 according to EN ISO 13849-1 (EN 954-1)
- PL e according to EN ISO 13849-1
- SIL 3 according to IEC 61508

Technical specifications

Туре		3SE6 3
General data		
Standards		IEC 60947-5-3, IEC 61508, EN ISO 13849-1
Enclosure material		Fiber-glass strengthened ther- moplast, self-extin- guishing
Degree of protection		IP69K
Ambient temperature		
During operation	°C	-25 +70
 During storage, transport 	°C	-25 +85
Shock resistance		30 g/11 ms
Vibration resistance		10 55 Hz amplitude 1 mm
Electrical specifications		
Rated insulation voltage U _i	V	32
Pollution degree acc. to IEC 60664-1		3
Rated impulse withstand voltage U_{imp}	V	800
Rated conditional short-circuit current	Α	100
Rated operational voltage U _e (PELV acc. to IEC 60204-1)	V DC	24 –15/+10 %
Protection class		II
Overvoltage category		III
Rated operational current I _e	А	0.6
Smallest operational current I _m	mA	0.5
No-load supply current I ₀	mA	35

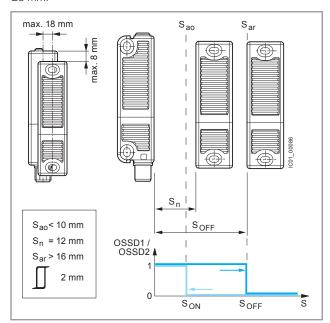
Туре		3SE6 3
Inputs/outputs		
Safety inputs X1/X2		
Input voltage	V DC	24 -15/+10 %
 Power consumption per input 	mΑ	5
Safety outputs OSSD1/OSSD2		p operation
 Max. rated operational current I_e 	Α	0.25
• Rated operational current $I_{\rm e}/{\rm DC}$ -12/DC-13 at $U_{\rm e}$	А	0.25
 Voltage drop U_e 	V	< 1
Switching frequency	Hz	1
 Response time, max. 	ms	100
 Risk time, max. 	ms	200
Recovery, max.	S	5
Diagnostics ouput		p operation
$ullet$ Max. rated operational current $I_{ m e2\ max}$	Α	0.05
Rated operational current $I_{\rm e}/{\rm DC}$ -12/DC-13 at $U_{\rm e}$	Α	0.05
 Voltage drop U_e 	V	< 2
Operational current	mΑ	150
Conductor capacity, max.	nF	50

SIRIUS 3SE6 RFID Non-Contact Safety Switches

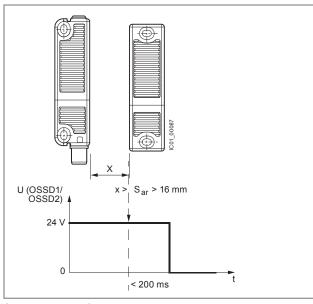
Technical data

Directions of approach and switching interval

The side area permits a maximum height offset of the switch and actuator of ± 8 mm (e.g. mounting tolerance or due to sagging of the protective door). The transverse offset also equals max.



Switching interval: output signal with hysteresis



Switching interval: Output signal

Connector assignment



Pin 1: A1 rated operational voltage 24 V DC Pin 2: X1 safety input 24 V DC Pin 3: A2 grounding

Pin 4: OSSD1 safety output

Pin 5: OUT conventional diagnostics output

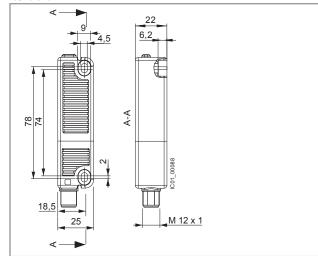
Pin 6: X2 safety input 24 V DC

Pin 7: OSSD2 safety output

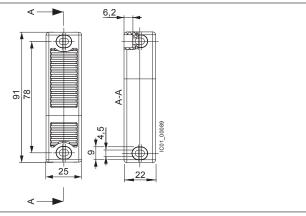
IC10_00090 Pin 8: Not used

Dimensional drawings

RFID switches 3SE6 315



RFID actuator 3SE6 310



13/109

Mechanical Safety SIRIUS 3SE6 RFID Non-Contact Safety Switches

Selection

Selection and ordering data With M12 connector, 8-pole Version/coding Latching / length DT Order No. Price per PU PU (UNIT, SET, M) PS* Rectangular safety switches 91 mm x 25 mm RFID safety switches • Family coded 3SE6 315-0BB01 None 1 unit With 18 N magnetic catch 3SE6 315-1BB01 1 unit Individually coded, programmable several times None 3SE6 315-0BB02 1 unit 3SE6 315-1BB02 With 18 N magnetic catch 1 unit · Individually coded, 3SE6 315-0BB03 1 unit programmable once With 18 N magnetic catch 3SE6 315-1BB03 1 unit 3SE6 315 **RFID** actuators Standard None 3SE6 310-0BC01 1 unit With 18 N magnetic catch 3SE6 310-1BC01 1 unit 3SE6 310 **Optional accessories** 3SX5 600-1G Covers and spacers 1 unit One pack (1 unit) contains 8 covers and 4 spacers 3SX5 601-2GA03 Connecting cables, 8-pole, Length 3 m 1 unit with 1 straight M12 socket 3SX5 601-2GA05 Length 5 m 1 unit Rated voltage 30 V Rated current 2 A Length 10 m 3SX5 601-2GA10

For monitoring units see Chapter 14, "Industrial Communication"

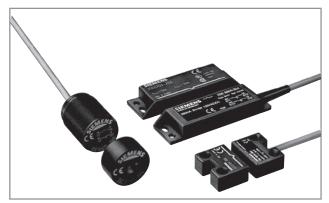
3SX5 601-2GA

1 unit

Mechanical Safety 3SE6 Magnetic Monitoring Systems

General data

Overview

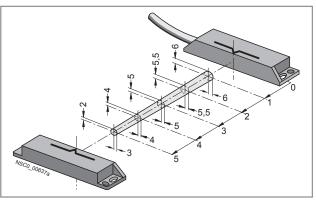


Switching magnets and contact blocks

A magnetically operated switch is comprised of a coded switching magnet and a contact block (sensor unit). Evaluation requires a safety relay or connection to a bus system.

3SE6 806 safety relays

Up to six protective devices (sensors) can be connected to the safety relay.



Enabling range (example)

The device has six current-sourcing semiconductor outputs (Y1 ... Y6) which signal the state of the connected protective devices.

The 3SE6 806 safety relay has two floating enabling circuits (safe circuits) as NO contact circuits and one floating signaling circuit as a NC circuit. The number of enabling circuits can be increased by adding one or more 3TK28 30 expansion modules.

Application

SIRIUS 3SE6 magnetically operated switches are designed for mounting on movable protective guards (hoods, hinge switches, doors, etc.). Evaluation can be performed by means of a safety relay or through connection to a bus system.

The 3SE6 6 non-contact, magnetically operated safety switches stand out due to their enclosed design with degree of protection IP67. They are particularly suitable therefore for areas exposed to contamination, cleaning or disinfecting.

A magnetic monitoring system comprises one or more magnetically operated switches and an evaluation unit, e.g. a safety relay. When contact blocks 1 NO + 1 NC are used the 3SE6 806 safety relay provides a high degree of protection against manipulation and can be installed in safety circuits up to Category 3 according to ISO 13849-1 (EN 954-1).

Combination of monitoring units and magnetically operated switches

Monitoring units		Magnetically of	perated switch	nes (contact blo	ock + switching	magnet)	Achievable category
	1 NO + 1 NC	1 NO + 2 NC	(EN 954-1)/ Performance level				
		3SE6 605-1BA	3SE6 605-2BA	3SE6 605-3BA	3SE6 604-2BA	3SE6 606-3BA	(EN ISO 13849-1)
					3SE6 704-2BA		(211.00 100.0 1)
Relay outputs							
SIRIUS safety relays, 6-fold	3SE6 806-2CD00						Cat. 3
SIRIUS safety relays	3TK28 20	_	_	_	1	_	Cat. 4/e
	3TK28 26	1	✓	1	1	✓	Cat. 4/e
Solid-state outputs							
SIRIUS safety relays	3TK28 40	_	_	_	✓	_	Cat. 3/d
, ,	3TK28 41, 3TK28 42, 3TK28 45	—	_	_	✓	—	Cat. 4/e
SIRIUS safety relays	3TK28 50, 3TK28 51, 3TK28 52	_	_	_	✓	_	Cat. 3/d
with contactor relay	3TK28 53	_	_	_	✓	_	Cat. 4/e
ASIsafe compact safety modules	3RK1 205, 3RK1 405	_	_	_	1	_	Cat. 4
SIMATIC S7-31xF-2 DP	SM 326 F, 24 DI, 24 V DC,	1	✓	1	1	1	Cat. 4
or SIMATIC ET 200M	SM 326 F, 8 DI, NAMUR						
SIMATIC ET 200S	4/8 F-DI / 3 F-DO, 24 V DC	✓	✓	✓	✓	1	Cat. 3
PROFIsafe	4/8 F DI, 24 V DC	✓	✓	✓	✓	✓	Cat. 4
SIMATIC ET 200eco	4/8 F DI, 24 V DC	✓	✓	1	✓	✓	Cat. 4
SIMATIC ET 200pro	8/16 F-DI, 24 V DC, 4/8 F-DI / 4 F-DO 2 A, 24 V DC, F-Switch	✓	1	1	1	✓	Cat. 4
Modular Safety System	3RK3	/	1	1	1	/	Cat. 4/e

✓ Suitable magnetically operated switch

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Mechanical Safety 3SE6 Magnetic Monitoring Systems

Selection

Selection and o	rdering data								
		Design	Size	San Sab	Contacts	DT	Order No.	List	Weigh
			mm	mm				Price \$ 1 unit	approx
Round sensor	unit ID67		mm	mm				i unii	kg
3SE6 704-1BA	3SE6 605-1BA	Cusitabina	M 30				2000 704 404		0.005
3SE6 704-1BA	32E0 002-1BA	Switching magnet (coded)	IVI 30				3SE6 704-1BA		0.035
		Switch block with 3 m cable	M 30	5 to 15	1 NO + 1 NC		3SE6 605-1BA		0.166
		Switch block with M12, 4-pole male receptacle ¹⁾	M 30	5 to 15	1 NO + 1 NC	•	3SE6 605-1BA02		0.130
	ensor unit. IP67								
3SE6 605-2BA, 3SE6 704-2BA	3SE6 605-3BA, 3SE6 704-3BA	Switching magnet (coded)	25 × 88			•	3SE6 704-2BA		0.027
		Switch block with 1 m cable	25 × 88	5 to 15	1 NO + 1 NC 2 NC	•	3SE6 605-2BA 3SE6 604-2BA		0.165 0.165
		Switch block with	25 × 88	5 to 15	1 NO + 1 NC		3SE6 605-2BA01		0.040
The second	1/	M8 male receptacle			2 NC		3SE6 604-2BA01		0.130
		Switching magnet (coded) Switch block	25 x 33				3SE6 704-3BA		0.014
		with 3 m cable	25 x 33	4 to 14	1 NO + 1 NC		3SE6 605-3BA		0.151
		with 3 m cable	25 x 33	4 to 14	1 NO + 2 NC		3SE6 606-3BA		0.151
Accessories									
3SX3 260	3SX3 261	Spacer for rectangular sensor unit	25 × 88				3SX3 260		0.015
	G.O.	Spacer for rectangular sensor unit	25 × 33				3SX3 261		0.010
		Rated control supply voltage	Width	Enable circuits/ signal. circuits	Max. number of connectable sensors		Order No.	List Price \$	Weigl
		DC V	mm					1 unit	kg
Monitoring uni	ts								
SSE6 806-2CD00		24		2 NO / 1 NC	6 1 NO + 1 NC		3SE6 806-2CD00		0.200

¹⁾ Pin 1 (S21) + Pin 2 (S22) = Normally Closed; Pin 3 (S13) + Pin 4 (S14) = Normally Open Typical 4-pole Female Plugs with black 5 meter cable include: 3RX1542 (right-angle) or 3RX1513 (straight plug).

Mechanical Safety 3SE6 Magnetic Monitoring Systems

General data

Technical specifications

Magnet Switches

Туре	3SE6 601BA 3SE6 602BA	3SE6 603BA			
Form	M30, 25 mm x 88 mm	25 mm x 33 mm			
Standards	DIN EN 50947-5-3 3)				
Sensing type	Magnetic				
Rated voltage	AC/DC 100 V, 120 V	DC 24 V			
Rated current	400 mA	100 mA			
Performance	10 VA/W	1 W			
Max. switching frequency	5 Hz				
Max. sensing distance San Sab	5 15 mm	4 14 mm			
Housing material	Fiber-glass strengthened with glass fiber				
Degree of protection acc. to IEC 60529	IP67				
Permissible ambient temperature					
Operating Storage	-25 to +70 °C -25 to +70 °C				
Shock resistance	10 g/11ms				
Vibration resistance	10 55 Hz, 1 mm amplitude				
Conductor	Cable LiYY 4 x 0.25 mm ² 3 m length				
Receptacle, male	M12, M8	-			
Cable length (max for connecting to monitoring unit)	1000 m	100 m			

Magnet Switch Monitoring Unit

Туре	3SE6 806-2CD00
Standards	EN ISO 13849-1, EN 1088
Rated control supply voltage U _c	DC 24 V
Rated control supply voltage tolerance	0.85 1.2 x U _s
Rated power (without signal outputs Y1 Y6)	3 W
Maximum load current	
Signaling circuit Y1 Y6Signaling circuit 31, 32	20 mA 2 A
Inputs	6 sensors (1 NO or 1 NC)
Outputs	6 signaling outputs 1 relay output 2 enabling circuits
Response time	
Automatic start Manual start	150 ms typical 25 ms typical
Release time	20 ms max.
Recovery time	350 ms
Degree of protection to IEC 60529	IP20
Switching capacity 1)	
Release circuits (13, 14 and 23, 24)	
Continuous current, Ith	6 A
Rated operational current, I _e ²)	
• AC-15 @ 203 V	6 A
• DC-13 - 24 V - 115 V - 230 V	6 A 0.2 A 0.1 A
Short circuit protection	
Fuse type Duty class gL(gC) Quick response	DIAZED 6 A 10 A
Permissible ambient temperature, T _u	
Operating Storage	−25 to +45 °C −25 to +70 °C

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¹⁾ Utilization category per DIN VDE 0660, Part 200, IEC 60947-5-1

²⁾ With all release circuits loaded

³⁾ In combination with monitoring unit or AS-Interface.

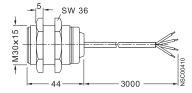
3SE6 Magnetic Monitoring Systems

Dimensional drawings

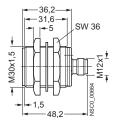
Dimension drawings

Round sensor units

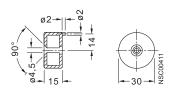
Switch block 3SE6 605-1BA



Switch block 3SE6 605-1BA02

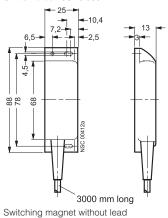


Coded switching magnet 3SE6 704-1BA

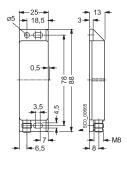


Rectangular sensor units

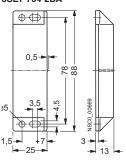
Switch block 3SE6 605-2BA



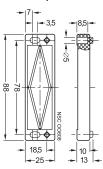
Switch block 3SE6 60.-2BA0.



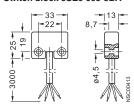
Switch block 3SE7 704-2BA



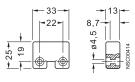
3SX3 260 spacer



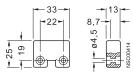
Switch block 3SE6 605-3BA



Coded switching magnet 3SE6 704-3BA

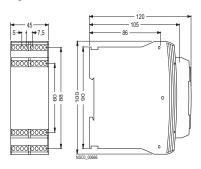


3SX3 261 spacer



Monitoring unit

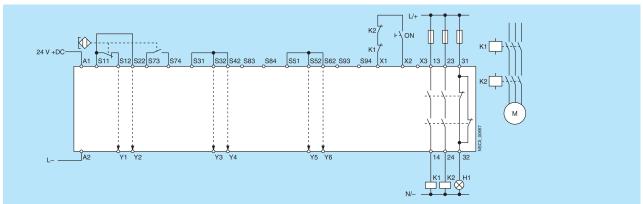
Magnet Switch Monitor 3SE6 806-2CD00



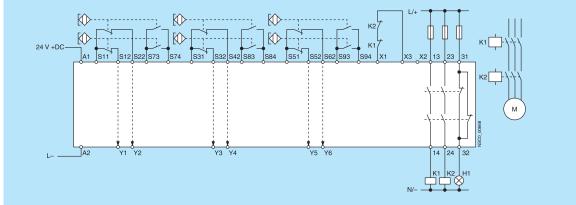
Circuit diagrams

Connection example

Single Channel Control, Manual Start, Category 3 to EN ISO 13849-1



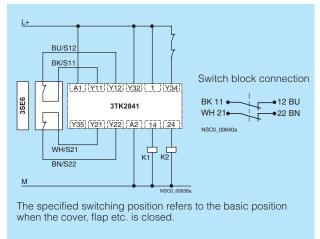
Six Channel Control. Automatic Start, Category 3 to EN ISO 13849-1



Terminal Assignments

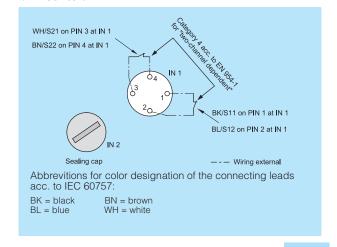
Power	A1+, L+	U _s
	A2-, L-	24 V DC
Sensors	S11, S12	Channel 1, NC contact
	S11, S22	Channel 2, NC contact
	S31, S32	Channel 3, NC contact
	S31, S42	Channel 4, NC contact
	S51, S52	Channel 5, NC contact
	S51, S62	Channel 6, NC contact

3SE6 604-2BA magnetically operated switch with 3TK28 safety relay, Category 4 to EN ISO 13849-1



Sensors	S73, S74	Channel 1+2, NO contact (parallel)
(Cont.)	S83, S84	Channel 3+4, NO contact (parallel)
	S93, S94	Channel 5+6, NO contact (parallel)
Outputs	13, 14	Release circuit 1 (safety NO contact)
	23, 24	Release circuit 2 (safety NO contact)
	31, 32	Floating signaling circuit
	Y1 to Y6	Status of Channels 1 through 6

3SE6 604-2BA magnetically operated switch on AS-Interface Safety at Work, safe K45F or K60F compact module, Category 4 to EN ISO 13849-1



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3SB3 Two-Hand Control

Selection

Application

Two-hand operation consoles are required for use with machines and systems that have hazardous areas, in order to direct both hands of the operator to one position.

Operation consoles are primarily used on presses, stamping machines, printing presses and paper converting machines, in the chemical industry and in the rubber and plastics industries.

Specifications

Two-hand operation consoles fulfill the requirements laid down in DIN 24 980 and EN 574.

Construction

Equipment

All consoles are pre-equipped with SIGNUM 3SB3 control devices. The metal version is also available as an unequipped empty enclosure.

The plastic version can be retrofitted with up to 8 command points, in line with the customer's requirements. The surface of the console has premachined breaking points for this purpose.

Installation

al holes for control

The two-hand operation consoles can be mounted either on the stand available or directly on the machine by means of the holes in the rear panel.

DT

Order No.

3SB38 63-4BB

3SB38 63-4BA

3SB39 01-0AQ3

Principle of operation

The control command is given by pressing the two operating elements simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

Selection and ordering data

0	

3SB38 63-4BB

3SB39 01-0AQ

SIGUARD two-hand operation console

Design

Degree of protection IP 65, acc. to DIN 24 980 (EN 574),

Standard equipment with 2 black operating elements (mushroom button 3SB30 00-1GA11, Ø 40 mm, 1 NO + 1 NC) and a red EMERGENCV-STOP mushroom button 3SB30 00-1HA20, latching Ø 40 mm, 2 NC

Metal version

-	with standard equipment
-	with standard equipment and 4 addition devices 22.5 mm

- empty enclosure, unequipped

Plastic version

-	with standard equipment and predeterminated breaking points for 8 further command points 22.5 mm
-	with cable inlet holes for metric screwed cable glands

Stand for SIGUARD two-hand operation consoles

3SB38 63-4BC	4.800
3SB38 63-1BB3	2.300

List Price \$

1 unit

Weight

approx.

kg

4.800

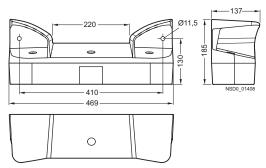
4.800

4.500

• with cable inlet holes for metric screwed cable glands

Dimension drawings

3SB38 63-4 operator panel with metal enclosure



3SB39 01-0AQ stand

Note:

Also available with AS-Interface connection, contact your local Siemens representative.

Safety Relays SIRIUS 3SK1

General Data

Overview



SIRIUS 3SK1 safety relays

SIRIUS 3SK1 safety relays are the key components of a consistent, cost-effective safety chain. Whether you need EMERGENCY-STOP, protective door monitoring, light arrays, laser scanners or the protection of presses or punches – with the 22.5 mm wide SIRIUS safety relays every safety application can be implemented to optimum effect in terms of engineering and price

The following safety-oriented functions are available:

- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring correct functioning of safety relays
- · Monitoring the actuators in the shutdown circuit
- Safety-oriented disconnection when dangers arise

SIRIUS 3SK1 safety relays satisfy the most stringent requirements of IEC 61508/IEC 62061 (SIL 3) and EN ISO 13849-1 (PL e).

SIRIUS 3SK1 safety relays stand out due to their flexibility in both parameterization and system configurations with several evaluation units. Optimized solutions when selecting components are facilitated by a clearly structured component range:

- · Standard basic units
- · Advanced basic units
- · Output expansions
- Input expansions
- Accessories

The 3SK1 Standard basic units are characterized by the following features:

- Compact design
- Simple operation
- Relay and semiconductor outputs
- Economical solution

However, the 3SK1 Advanced basic units also offer the following:

- Universal application options thanks to multi-functionality
- Time-delayed outputs
- Expansion of inputs and outputs

In the case of Advanced basic units, the 3ZY1 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.

The 3SK1 Standard and Advanced series are a high-quality replacement for the 3TK28 safety relays. In their slimmer design, and equipped with greater functionality, they can replace every 3TK28 device. The only exceptions are devices with special functions, such as 3TK28 26, 3TK28 45 and the 3TK28 10 devices. For a code conversion table from 3TK28 to 3SK1 see page 13/127

2

3

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11

12

Safety Relays SIRIUS 3SK1

General Data

Function overview of the 3SK1 series

Туре	Standard ba	asic units	Advanced basic units			
	Relay enabling circuits	Solid-state enabling circuits	Relay enabling circuits	Solid-state enabling circuits		
Sensors						
MechanicalNon-floatingAntivalentExpandable	✓ ✓ 	✓ ✓ ✓ by means of cascading	<i>y y y y</i>	V V V		
Parameters						
• Start (auto/monitored)	✓	✓	✓	✓		
 Sensor connection 2 x 1-channel/ 1 x 2-channel Cross-circuit 		√	<i>y</i>	<i>'</i>		
detection	by means of wiring	•	•	V		
 Start-up test ON/OFF Monitoring of two-hand operation consoles 		√ 	<i>\</i>	√ √		
Enabling circuits						
InstantaneousDelayedExpandable with relay enabling		✓ ✓ by means of	<i>y y</i>	√ √ √		
circuitsDevice connectors	wiring 	wiring 	/	1		
Rated control supply	voltage					
• 24 V DC • 115 240 V AC/DC	1	✓ 	√ 1)	✓ ✓ 1)		
/ Available						

[✓] Available

3SK1 12 and 3SK1 112 safety relays with DIP switch

The 3SK1 12 and 3SK1 112 safety relays are configurable safety relays. They are used as evaluation units for the typical safety chain (detecting, evaluating, disconnecting). DIP switches on the front can be used to set many different functions. Thus the 3SK1 12 and 3SK1 112 can be used universally.

OFF	Diagram		DIP switch No.	ON
Autostart sensor input	—→ ON		1	Monitored start sensor input
Without cross-circuit detection	1		2	With cross-circuit detection
2 x single-channel sensor connection	3	96	3	1 x two-channel sensor connection
With start-up test	4	C01_00196	4	Without start-up test

Number of safe outputs

	Relay enabl	ling	Solid-state of	enabling	3ZY1 device	
	Instanta- neous	Delayed	Instanta- neous	Delayed	connec- tors	
3SK1 Standard ba	sic units					
3SK1 111	3					
3SK1 112			2			
3SK1 Advanced b	asic units					
3SK1 120			1		✓	
3SK1 121AB40	3				✓	
3SK1 121CB4.	2	2			✓	
3SK1 122AB40			3		✓	
3SK1 122CB4.			2	2	✓	
3SK1 expansion u	ınits					
3SK1 211	4				✓	
3SK1 213	3				✓	

[✓] Available

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th		7th	_	8th	9th A		11th	12th	
Safety relays	3SK											
Generation												
Device version												
Device series												
Type of outputs												
Connection type												
Rated control supply voltage												
Type of rated control supply voltage												
Time delay												
Example	3SK	1	1	2	1	-	1	Α	В	4	0	

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the selection and ordering data.

⁻⁻ Not available

¹⁾ Possible using 3SK1 230 power supply via device connector.

⁻⁻ Not available

Safety Relays SIRIUS 3SK1

General Data

Benefits

General

- Suitable for all safety applications because of its compliance with the highest safety requirements (SIL 3 PL e)
- Universal use thanks to adjustable parameters
- Worldwide use thanks to globally valid certificates
- Compact SIRIUS design
- Device connectors with standard rail mounting for flexible interconnectability and expandability
- · Removable terminals for greater plant availability
- Yellow terminal covers clearly identify the device as a safety component.
- Sensor cable up to 2 000 m long allows it to be used in largescale plants.

Relay outputs

- Different voltages can be switched through the floating contacts
- Higher currents can be switched with relay contacts

Solid-state outputs

- Wear-free
- Suitable for operation in fast switching applications
- · Insensitive to vibrations and dirt
- Good electrical endurance

Power outputs (3SK1 213 output expansion)

- Different voltages can be switched through the floating contacts
- The power relay contacts allow currents of up to 10 A AC-15/DC-13 to be connected
- High mechanical and electrical endurance
- Protective separation between enabling circuits and between enabling circuits and electronics

3ZY1 device connectors

Using 3ZY1 device connectors to combine devices reduces the time required to configure and wire the components. At the same time errors are avoided during wiring, and this considerably reduces the testing required for the fully-configured application.

Microprocessor systems

- Flexible use thanks to many different integrated functions
- Easy parameterization using DIP switches on the front
- High functional reliability based on extensive monitoring functions
- Operated by the machine control system
- Also connection of non-contact sensors (light arrays, light barriers etc.)

Configuration and stock keeping

Variable setting options by means of DIP switches, a wide voltage range and a special power supply unit reduce the cost of keeping stocks and the considerations involved in configuration where the evaluation units to be selected are concerned.

Spring-type terminal with push-in functionality

Push-in connections are a form of spring-type terminals allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

As with other spring-type terminals, a screwdriver (with 3.0 mm x 0.5 mm blade) is required to disconnect the conductor. The same tool can also be used to wire finely-stranded or stranded conductors with no end finishing.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

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19

Standard basic units

Overview



The 3SK1 11 Standard basic units are characterized by simple, variable functionality. These devices are recommended for safety functions requiring only a few sensors and a small number of outputs on the safety relay.

3SK1 11 Standard basic units

Selection and ordering data

PU (UNIT, SET, M) = 1 PS* = 1 unit





3SK1 111-1AB30

3SK1 112-1BB40

At 60 Hz			Screw terminals	DT	Spring-type terminals (push-in)		
At AC	At DC		Order No. Price per PU		Order No.	Price per PU	
V	V						
Standard basic units with 3 relay enabling circuits							
24	24	Α	3SK1 111-1AB30	А	3SK1 111-2AB30		
110 240	110 240	Α	3SK1 111-1AW20	Α	3SK1 111-2AW20		
Standard basic units with 2 safety-oriented semicon	ductor outputs						
	24	Α	3SK1 112-1BB40	Α	3SK1 112-2BB40		

Advanced basic units

Overview



The 3SK1 12 Advanced basic units form an innovative system landscape which allows even complex safety functions with large numbers of sensors and outputs to be configured using the device connectors. It is possible to increase both the number of inputs for sensors and the number of enabling circuits of the basic unit without the need for wiring between the devices.

3SK1 12 Advanced basic units

Selection and ordering data

PU (UNIT, SET, M) = 1 PS* = 1 unit







3SK1 121-1AB40

3SK1 122-1AB40

3SK1 122-1CB41

Rated control supply voltage U_s	Adjustable off-delay time	Number of o	'	Semiconduc	ctor outputs	DT	Screw terminals	+	DT	Spring-type terminals (push-in)	
at DC		Instanta- neous	Delayed	Instanta- neous	Delayed		Order No.	Price per PU		Order No.	Price per PU
V	S										
Advanced b	asic units wi	th relay out	puts								
24		3				Α	3SK1 121-1AB40		Α	3SK1 121-2AB40	
24	0.05 3	2	2			Α	3SK1 121-1CB41		В	3SK1 121-2CB41	
24	0,5 30	2	2			Α	3SK1 121-1CB42		Α	3SK1 121-2CB42	
24	5 300	2	2			В	3SK1 121-1CB44		В	3SK1 121-2CB44	
Advanced b	asic units wi	th semicon	ductor ou	tputs							
24				1		Α	3SK1 120-1AB40		Α	3SK1 120-2AB40	
24				3		Α	3SK1 122-1AB40		А	3SK1 122-2AB40	
24	0.05 3			2	2	В	3SK1 122-1CB41		В	3SK1 122-2CB41	
24	0,5 30			2	2	Α	3SK1 122-1CB42		Α	3SK1 122-2CB42	
24	5 300			2	2	В	3SK1 122-1CB44		В	3SK1 122-2CB44	

Output expansion units

Overview



3SK1 21 output expansion

The 3SK1 21 output expansions can be used for Standard and Advanced basic units.

3SK1 211 output expansion

The 3SK1 211 output expansion is used to expand the enabling circuits of a basic unit by adding another four enabling circuits. These enabling circuits have a switching capacity of AC-15 4 A at a switching voltage of 230 V. The devices can be connected to any 3SK1 basic unit by means of wiring. In addition the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced basic units by means of the 3ZY1 2 device connector.

3SK1 213 output expansion

The 3SK1 213 output expansion is used to expand the enabling circuits of a basic unit by adding three enabling circuits with high switching capacity. These enabling circuits have a switching capacity of AC-15 10 A at a switching voltage of 230 V. The devices can be connected to any 3SK1 basic unit by means of wiring. As with 3SK1 211, it is also possible to use the version with a control supply voltage of 24 V DC on the 3ZY1 2 device connector.

Note:

It is only possible to expand the Standard basic units by means of wiring. Advanced basic units can be expanded using the 3ZY1 2 device connector.

Benefits

- Perfect adaptation of the number of outputs
- Simple expansion of instantaneous and time-delayed outputs of Advanced basic units by means of device connector and slide switch on expansion module
- Expansion with power contacts for high AC-15/DC-13 currents in the control circuit
- No enabling circuit required in the evaluation unit to control the expansion modules
- No wiring of the feedback circuit to the expansion units
- · Shorter installation times
- · Less configuring and testing required

Selection and ordering data

PU (UNIT, SET, M) = 1 PS* = 1 unit



3SK1 211-1BB00



3SK1 213-1AB40

Rated control voltage $U_{\rm s}$	rol supply	Number of outputs, switching	Rated opera current ¹⁾	tional	Suitability for use of 3ZY1 2 device	DT	Screw terminals	DT	Spring-type terminals (push-in)	8
At 60 Hz At AC	at DC	instanta- neously	AC	DC	connector		Order No. Price per PL		Order No.	Price per PU
V	V		Α	А						
4RO outp	out expansi	ions								
24		4	B300	R300		В	3SK1 211-1BB00	А	3SK1 211-2BB00	
	24	4	B300	R300	✓	Α	3SK1 211-1BB40	А	3SK1 211-2BB40	
110 240	110 240	4	B300	R300		Α	3SK1 211-1BW20	В	3SK1 211-2BW20	
3RO outp	out expansi	ions								
	24	3	A300	P300	✓	Α	3SK1 213-1AB40	А	3SK1 213-2AB40	
115		3	A300	P300		В	3SK1 213-1AJ20	В	3SK1 213-2AJ20	
230		3	A300	P300		В	3SK1 213-1AL20	В	3SK1 213-2AL20	

[✓] Available

⁻⁻ Not available

¹⁾ For a detailed description of the NEMA Control Circuit Rating see page 19/7

Input expansion units

Overview



3SK1 220 sensor expansion

With the input expansions

- 3SK1 220 sensor expansion
- 3SK1 230 power supply

the Advanced basic units can be made more flexible.

3SK1 220 input expansion

The 3SK1 220 input expansion allows additional sensors to be integrated easily and flexibly. The device monitors two 1-channel sensors or one 2-channel sensor, whatever their output technology (floating/single-ended).

3SK1 230 power supply

The 3SK1 230 power supply makes the 3SK1 devices universally usable, whatever control supply voltage is to be used.

Both devices can be combined with the 3SK1 12 basic units in the Advanced series without the need for wiring.

The 3SK1 220 sensor expansion can only be connected to the Advanced basic units by means of the 3ZY1 2 device connector.

Alongside the 3ZY1 2 device connector, the 3SK1 230 power supply can also be wired to act as a power supply for 3SK1 devices.

Benefits

- A wide voltage range of 110 ... 240 V AC/DC allows the devices to be used worldwide
- · Low stock keeping due to low variance
- Flexible expansion of the number of sensors without the need for additional wiring between the devices
- Perfect adaptation of the number of inputs to suit the applica-
- Universally usable thanks to the wide range of adjustable parameters for sensor expansion (parameters as for Advanced basic units)

Selection and ordering data

PU (UNIT, SET, M) = 1 PS' = 1 unit





3SK1 220-1AB40

3SK1 230-1AW20

Version	DT	Screw terminals	+	DT	Spring-type terminals (push-in)	$\stackrel{\infty}{\square}$
		Order No.	Price per PU		Order No.	Price per PU
3SK1 220 input expansions						
Sensor expansions For safety-oriented expansion of the Advanced basic units by adding a further two-channel sensor or two single-channel sensors Note: Can only be used in conjunction with 3ZY1 2 device connectors, see page 13/124.	А	3SK1 220-1AB40		А	3SK1 220-2AB40	
3SK1 230 power supplies						
Power supplies For supplying Advanced basic units via 3ZY1 2 device connectors at voltages of 110 240 V AC/DC	А	3SK1 230-1AW20		А	3SK1 230-2AW20	

Siemens Industry, Inc. Industrial Controls Catalog

Accessories

Overview

The following accessories are available for SIRIUS 3SK1 safety relays:

- Device connectors
- Terminals
- Sealable covers
- Push-in lugs
- Adapters
- Connection cables
- · Inscription labels
- Tools

Device connectors for 3SK1 12. and 3SK1 2..

The device connector allows several safety relays to be interconnected. The last device in a row is placed on a device termination connector. This closes the circuits that were configured with the connectors.

Device connectors are available in various versions specifically for the 3SK1 safety relays:

	Device connec	ctors	Device termina connectors	ation
For type	3ZY1 212- 1BA00 (type 1, width 17.5 mm)	3ZY1 212- 2BA00 (type 1, width 22.5 mm)	3ZY1 212- 2DA00 (type 1, width 22.5 mm)	3ZY1 212- 0FA01 (type 2, set for enclosure 45 mm)
3SK1 Adva	nced basic unit	s		
3SK1 120	✓			
3SK1 121		✓	1	
3SK1 122		✓	1	
Output exp	ansions			
3SK1 211		✓	1	
3SK1 213				1
Input expar	sions		·	
3SK1 220	✓			
3SK1 230		✓		

- ✓ Available
- -- Not available

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*
	for the electrical connection of SIRIUS devices					
in the industrial end	closure for fixing on TH 35 standard mounting rail					
4		٨	07V4 040 4BA00		4	4
	• Type 1, 7-pole, 17.5 mm wide	A	3ZY1 212-1BA00		- 1	1 unit
	Type 1, 7-pole, 22.5 mm wide	A	3ZY1 212-2BA00			1 unit
	No function, width 22.5 mm	X	3ZY1 210-2AA00		I	1 unit
3ZY1 212-1BA00						
100	Device termination connectors					
	 Type 1, 7-pole, 22.5 mm wide 	Α	3ZY1 212-2DA00		1	1 unit
4	 Type 2, 7-pole, 22.5 mm wide 	•	3ZY1 212-2FA00		1	1 unit
	Device termination connector set Type 2, 7-pole, width > 45 mm, comprising 3ZY1 212-2FA00 and 3ZY1 210-2AA00	Α	3ZY1 212-0FA01		1	1 unit
3ZY1 212-2DA00 Terminals for SIRIU	S devices in the industrial enclosure					
	standard mounting rail					
	Removable terminals					
	 2-pole, screw terminals up to 2 x 1.5 mm² or 1 x 2.5 mm² 	Α	3ZY1 121-1BA00		1	6 units
	• 2-pole, screw terminals up to max. 2 x 2.5 mm ² or 1 x 4 mm ²	•	3ZY1 122-1BA00		1	6 units
9	• 3-pole, screw terminals up to max. 2 x 1.5 mm ² or 1 x 2.5 mn	າ² ▶	3ZY1 131-1BA00		1	6 units
	• 2-pole, push-in terminals up to max. 2 x 1.5 mm ²	•	3ZY1 121-2BA00		1	6 units
07V4 404 4D400	• 2-pole, push-in terminals up to max. 2 x 2.5 mm ² or 1 x 4 mm	2 🕨	3ZY1 122-2BA00		1	6 units
3ZY1 121-1BA00	• 3-pole, push-in terminals up to max. 2 x 1.5 mm ²	•	3ZY1 131-2BA00		1	6 units

Accessories

	Version	DT	Order No. Price per PU	(UNIT,	PS*
				SET, M)	
Enclosure accessorie	es es				
	Sealable covers				
	• 17.5 mm (for 3SK1 120 and 3SK1 220)		3ZY1 321-1AA00	1	5 units
	• 22.5 mm	•	3ZY1 321-2AA00	1	5 units
	(for all 3SK1 devices other than 3SK1 120 and 3SK1 220)				
3ZY1 321-2AA00					
	Push-in lugs	•	3ZY1 311-0AA00	1	10 units
	for wall mounting				
3ZY 1311-0AA00					
Adapters and connec	ction cables				
	Adapters for connecting encoders of type Siemens/Heidenhain				
	• 15-pole	Α	3TK28 10-1A	1	1 unit
3TK28 10-1A					
	• 25-pole	Α	3TK28 10-1B	1	1 unit
3TK28 10-1B	- " 11		OTI/00 40 0 A		4 0
	Connection cables for connecting the safety relay to the 3TK28 10-1A or 3TK28 10-		3TK28 10-0A	1	1 unit
	1B adapter				
3TK28 10-0A	olo.				
Blank inscription lab	Unit labeling plates	D	3RT29 00-1SB20	100	340 units
	for SIRIUS devices 20 mm x 7 mm, titanium gray	_		.00	0.10 01.110
	20 mm x 7 mm, manum gray				
0 0 0					
3RT29 00-1SB20					
Tools for opening sp					
	Screwdrivers for all SIRIUS devices with spring-type terminals;		Spring-type terminals		
50	3.0 mm x 0.5 mm; length approx. 200 mm; titanium gray/black, partially insulated		3RA29 08-1A	1	1 unit
	partially modiated		STILL OUT IN		i dilit

3RA29 08-1A

Technical Data

Application

SIRIUS 3SK1 safety relays are used mainly in autonomous safety applications which are not connected to a safety-oriented bus system. Their function here is to evaluate the sensors and the safety-oriented shutdown of hazards. Also they check and monitor the sensors, actuators and safety-oriented functions of the safety relay.

Technical specifications

Туре		3SK1 safety relays
Dimensions • Width • Height • Depth	mm mm mm	22.5 100 120
General technical specifications		
Ambient temperature • During operation • During storage	°C °C	-25 +60 -40 +80
Installation altitude above sea level, maximum	m	2 000
Air pressure according to SN 31205	hPa	900 1 060
Shock resistance		8 g / 11 ms
Vibration resistance according to IEC 60068-2-6		5 500 Hz: 0.75 mm
IP degree of protection of the enclosure		IP20
Touch protection against electric shock		Finger-safe
Rated insulation voltage	V	300
Rated impulse withstand voltage	V	4 000
Safety integrity level (SIL) for time-delayed enabling circuit according to IEC 61508		SIL 3
Performance level (PL) for time-delayed enabling circuit according to ISO 13849-1		е
Electromagnetic compatibility (EMC) EMC emitted interference Certificate of suitability		IEC 60947-5-1, class B Available soon

Cross reference

Code conversion table

The table below lists the existing 3TK28 order numbers with the corresponding 3SK1 order numbers.

The table below lists	s the existing 3TK28 of	order numbers with the
Order number 3TK28 basic units	Order number 3SK1 Standard basic units	Order number 3SK1 Advanced basic units
3TK28 20		
3TK28 20-1AJ20	3SK1 111-1AW20	3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 20-1AL20	3SK1 111-1AW20	3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 20-1CB30 3TK28 20-2AJ20	3SK1 111-1AB30 3SK1 111-2AW20	3SK1 121-1AB40 3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 20-2AL20	3SK1 111-2AW20	3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 20-2CB30 3TK28 21	3SK1 111-2AB30	3SK1 121-2AB40
3TK28 21-1CB30 3TK28 21-2CB30	3SK1 111-1AB30 3SK1 111-2AB30	3SK1 121-1AB40 3SK1 121-2AB40
	33KT TTT-ZAD30	33KT 121-2AD40
3TK28 22	001/1 111 14 500	001/1 101 14 5 10
3TK28 22-1CB30 3TK28 22-2CB30	3SK1 111-1AB30 3SK1 111-2AB30	3SK1 121-1AB40 3SK1 121-2AB40
	33K1 111-2AB30	33KT 121-2AD40
3TK28 23		
3TK28 23-1CB30 3TK28 23-2CB30	3SK1 111-1AB30	3SK1 121-1AB40 3SK1 121-2AB40
	3SK1 111-2AB30	33N1 121-2AD40
3TK28 24		
3TK28 24-1AJ20	3SK1 111-1AW20	3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 24-1AL20	3SK1 111-1AW20	3SK1 230-1AW20 3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 24-1BB40	3SK1 111-1AB30	3SK1 121-1AB40
3TK28 24-1CB30	3SK1 111-1AB30	3SK1 121-1AB40
3TK28 24-2AJ20	3SK1 111-2AW20	3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 24-2AL20	3SK1 111-2AW20	3SK1 230-2AW20 3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 24-2BB40	3SK1 111-2AB30	3SK1 121-2AB40
3TK28 24-2CB30	3SK1 111-2AB30	3SK1 121-2AB40
3TK28 25		
3TK28 25-1AB20	3SK1 111-1AW20	3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 25-1AJ20	3SK1 111-1AW20	3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 25-1AL20	3SK1 111-1AW20	3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 25-1BB40 3TK28 25-2AB20	3SK1 111-1AB30 3SK1 111-2AW20	3SK1 121-1AB40 3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 25-2AJ20	3SK1 111-2AW20	3SK1 230-2AW20 3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 25-2AL20	3SK1 111-2AW20	3SK1 230-2AW20 3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 25-2BB40	3SK1 111-2AB30	3SK1 121-2AB40
3TK28 27		
3TK28 27-1AB20		
3TK28 27-1AB21 3TK28 27-1AJ20	 	 3SK1 121-1CB42 +
3TK28 27-1AJ21		3SK1 230-1AW20 3SK1 121-1CB41 +
3TK28 27-1AL20		3SK1 230-1AW20 3SK1 121-1CB42 +
3TK28 27-1AL21		3SK1 230-1AW20 3SK1 121-1CB41 + 3SK1 230-1AW20
3TK28 27-1BB40		3SK1 121-1CB42
3TK28 27-1BB41		3SK1 121-1CB41
3TK28 27-2AB20 3TK28 27-2AB21		
3TK28 27-2AJ20		3SK1 121-2CB42 +
3TK28 27-2AJ21		3SK1 230-2AW20 3SK1 121-2CB41 +
3TK28 27-2AL20		3SK1 230-2AW20 3SK1 121-2CB42 +
3TK28 27-2AL21		3SK1 230-2AW20 3SK1 121-2CB41 + 3SK1 230-2AW20
3TK28 27-2BB40 3TK28 27-2BB41		3SK1 230-2AW20 3SK1 121-2CB42 3SK1 121-2CB41

Order number 3TK28 basic units	Order number 3SK1 Standard basic units	Order number 3SK1 Advanced basic units
3TK28 28	Dasic units	basic utilits
3TK28 28-1AB20		
3TK28 28-1AB21 3TK28 28-1AJ20	 	 3SK1 121-1CB42 + 3SK1 230-1AW20
3TK28 28-1AJ21		3SK1 230-1AW20 3SK1 121-1CB41 + 3SK1 230-1AW20
3TK28 28-1AL20		3SK1 121-1CB42 + 3SK1 230-1AW20
3TK28 28-1AL21		3SK1 121-1CB41 + 3SK1 230-1AW20
3TK28 28-1BB40 3TK28 28-1BB41 3TK28 28-2AB20 3TK28 28-2AB21 3TK28 28-2AJ20	- - -	3SK1 121-1CB42 3SK1 121-1CB41 3SK1 121-2CB42 +
3TK28 28-2AJ21		3SK1 121-2CB42 + 3SK1 230-2AW20 3SK1 121-2CB41 +
3TK28 28-2AL20		3SK1 230-2AW20 3SK1 121-2CB42 +
3TK28 28-2AL21		3SK1 230-2AW20 3SK1 121-2CB41 +
3TK28 28-2BB40		3SK1 230-2AW20 3SK1 121-2CB42
3TK28 30		
3TK28 30-1AJ20 3TK28 30-1AL20 3TK28 30-1CB30 3TK28 30-2AJ20 3TK28 30-2AL20 3TK28 30-2CB30	3SK1 211-1BW20 3SK1 211-1BW20 3SK1 211-1BB40 3SK1 211-2BW20 3SK1 211-2BW20 3SK1 211-2BB40	3SK1 211-1BB40 3SK1 211-1BB40 3SK1 211-1BB40 3SK1 211-2BB40 3SK1 211-2BB40 3SK1 211-2BB40
3TK28 34	3311 211-20040	33KTZTT-ZDD40
3TK28 34-1AB20 3TK28 34-1AJ20		 3SK1 121-1AB40 +
3TK28 34-1AL20		3SK1 230-1AW20 3SK1 121-1AB40 + 3SK1 230-1AW20
3TK28 34-1BB40 3TK28 34-2AB20		3SK1 230-1AW20 3SK1 121-1AB40
3TK28 34-2AJ20		3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 34-2AL20		3SK1 121-2AB40 + 3SK1 230-2AW20
3TK28 34-2BB40		3SK1 121-2AB40
3TK28 40 3TK28 40-1BB40 3TK28 40-2BB40	3SK1 112-1BB40 3SK1 112-2BB40	3SK1 122-1AB40 3SK1 122-2AB40
3TK28 41	001(1 112 288 10	OOKT TEE END TO
3TK28 41-1BB40 3TK28 41-2BB40	3SK1 112-1BB40 3SK1 112-2BB40	3SK1 122-1AB40 3SK1 122-2AB40
3TK28 42		
3TK28 42-1BB41 3TK28 42-1BB42 3TK28 42-1BB44 3TK28 42-2BB41 3TK28 42-2BB42 3TK28 42-2BB42	 	3SK1 122-1CB41 3SK1 122-1CB42 3SK1 122-1CB44 3SK1 122-2CB41 3SK1 122-2CB42 3SK1 122-2CB44
3TK28 50		
3TK28 50-1AJ20	3SK1 111-1AW20 + 3SK1 213-1AJ20	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 50-1AL20 3TK28 50-1BB40	3SK1 111-1AW20 + 3SK1 213-1AL20	3SK1 120-1AB40 + 3SK1 213-1AB40 3SK1 120-1AB40 +
3TK28 50-1BB40 3TK28 50-2AJ20	3SK1 111-1AB30 + 3SK1 213-1AB40 3SK1 111-2AW20 +	3SK1 120-1AB40 + 3SK1 213-1AB40 3SK1 120-2AB40 +
3TK28 50-2AL20	3SK1 213-2AJ20 3SK1 111-2AW20 +	3SK1 213-2AB40 3SK1 213-2AB40 3SK1 120-2AB40 +
3TK28 50-2BB40	3SK1 213-2AL20 3SK1 111-2AB30 + 3SK1 213-2AB40	3SK1 213-2AB40 3SK1 120-2AB40 + 3SK1 213-2AB40

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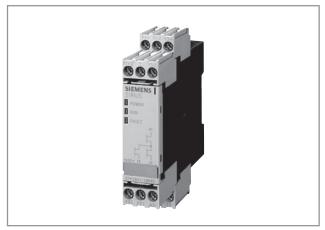
Cross reference

Order number 3TK28 basic units	Order number 3SK1 Standard basic units	Order number 3SK1 Advanced basic units
3TK28 51		
3TK28 51-1AJ20	3SK1 111-1AW20 + 3SK1 213-1AJ20	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 51-1AL20	3SK1 111-1AW20 + 3SK1 213-1AL20	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 51-1BB40	3SK1 111-1AB30 + 3SK1 213-1AB40	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 51-2AJ20	3SK1 111-2AW20 + 3SK1 213-2AJ20	3SK1 120-2AB40 + 3SK1 213-2AB40
3TK28 51-2AL20	3SK1 111-2AW20 + 3SK1 213-2AL20	3SK1 120-2AB40 + 3SK1 213-2AB40
3TK28 51-2BB40	3SK1 111-2AB30 + 3SK1 213-2AB40	3SK1 120-2AB40 + 3SK1 213-2AB40
3TK28 52		
3TK28 52-1AL20	3SK1 111-1AW20 + 3SK1 213-1AL20	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 52-1BB40	3SK1 111-1AB30 + 3SK1 213-1AB40	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 52-2AL20	3SK1 111-2AW20 + 3SK1 213-2AL20	3SK1 120-2AB40 + 3SK1 213-2AB40
3TK28 52-2BB40	3SK1 111-2AB30 + 3SK1 213-2AB40	3SK1 120-2AB40 + 3SK1 213-2AB40

Order number 3TK28 basic units	Order number 3SK1 Standard basic units	Order number 3SK1 Advanced basic units
3TK28 53		
3TK28 53-1BB40	3SK1 111-1AB30 + 3SK1 213-1AB40	3SK1 120-1AB40 + 3SK1 213-1AB40
3TK28 53-2BB40	3SK1 111-2AB30 + 3SK1 213-2AB40	3SK1 120-2AB40 + 3SK1 213-2AB40
3TK28 56		
3TK28 56-1BB40 3TK28 56-2BB40	3SK1 213-1AB40 3SK1 213-2AB40	3SK1 213-1AB40 3SK1 213-2AB40
3TK28 57		
3TK28 57-1BB41		3SK1 213-1AB40 (delay as for basic unit)
3TK28 57-1BB42		3SK1 213-1AB40 (delay as for basic unit)
3TK28 57-1BB44		3SK1 213-1AB40 (delay as for basic unit)
3TK28 57-2BB41		3SK1 213-2AB40 (delay as for basic unit)
3TK28 57-2BB42		3SK1 213-2AB40 (delay as for basic unit)
3TK28 57-2BB44		3SK1 213-2AB40 (delay as for basic unit)

General data

Overview



SIRIUS 3TK28 safety relay

SIRIUS safety relays are the key modules of a consistent and cost-effective safety chain. Be it EMERGENCY-STOP disconnection, protective door monitoring or the protection of presses or punches – with SIRIUS safety relays every safety application can be implemented to optimum effect in terms of engineering and price.

SIRIUS safety relays provide numerous safety-related functions:

- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring the correct operation of the safety relay
- Monitoring actuators for standstill
- Safety-oriented disconnection when dangers arise

Depending on the version of the device, SIRIUS safety relays satisfy the most stringent requirements (PL e) according to ISO 13849-1 and achieve the highest Safety Integrity Level (SIL 3) acc. to IEC 61508.

3TK28 Safety Relays								
With relay enabling circuits		With electronic enabling circuits	With special functions					
Basic units	Basic units T_{ν}	Multifunction units	Standstill monitors	Overspeed monitors				
3TK28 26	3TK28 26	3TK28 45	3TK28 10-0	3TK28 10-1				
See page 13/134		See page 13/134	See page 13/134					

Benefits

General

- Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to ISO 13849-1 or SIL 3 according to IEC 61508)
- Suitable for use all over the world through compliance with all globally established certifications
- Compact, service-proven SIRIUS design creates more space in the control cabinet
- Flexible connectability and expandability make subsequent changes easy
- Removable terminal for greater plant availability
- Yellow front plate clearly identifies the device as an item of safety technology
- Sensor cable up to 2000 m long enables use in large-scale plants

Relay outputs

- Different voltages can be switched through the floating contacts
- Higher currents can be switched with relay contacts

Solid-state outputs

- Wear-free
- Suitable for operation in fast switching applications
- Insensitive to vibrations and dirt
- Good electrical endurance

Microprocessor systems

- Flexible use thanks to many different integrated functions
- Easy parameterization using DIP switches on the front
- High functional reliability based on extensive monitoring functions
- Operated by the machine control system
- Also connection of non-contact sensors (light arrays, light barriers etc.)

Application

SIRIUS safety relays are used mainly in autonomous safety applications which are not connected to a safety-oriented bus system.

Their function here is to evaluate the sensors and the safetyoriented shutdown of hazards. Also they check and monitor the sensors, actuators and safety-oriented functions of the safety relay 2

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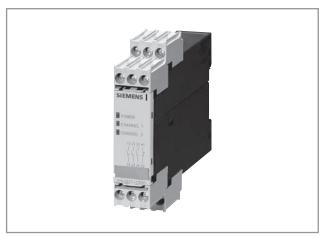
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General data

Overview



SIRIUS 3TK28 2. safety relay

Safety relays with relay enabling circuits – safety with floating contacts

SIRIUS safety relays with relay enabling circuits not only save a great deal of space thanks to their compact design but also offer extra safety in the form of positively driven pairs of make and break contacts. If one of the contacts becomes welded, the other will disconnect the circuit. A positively driven break contact (NC) then performs the fault detection of the faulty make contact (NO).

3TK28 26 safety relays

The 3TK28 26 is a parameterizable safety relay. It is used as an evaluation unit for typical safety chains (detection, evaluation, disconnection). DIP switches on the front can be used to set many different functions. The 3TK28 26 is therefore universally applicable.

Safety sensors (e.g. EMERGENCY-STOP pushbuttons) are connected at the input side while contactors or valves for disconnecting the "hazardous function" are connected at the output side. The 3TK28 26 performs the monitoring of the sensor and actuator functions as well as the safe disconnection of the outputs (enabling circuits).

3TK28 26 with DIP switch:

OFF	Schematic	DIP switch No.	ON
Without crossover monitoring	→ ON	1	Switching mat operation
NC/NO evaluation:		2	NC/NC contact evaluation
2 x 1-channel		3	1 x 2-channel
Debounce time for sensor inputs 50 ms	3	4	Debounce time for sensor inputs 10 ms
Sensor input autostart	4	5	Sensor input monitored start
Cascading input autostart	6	6	Cascading input monitored start
With start test	7	7	Without start test
Automatic start after mains failure (not permitted in connection with a start test)	7 8 000 000N	8	Without automatic start after mains failure

Benefits

3TK28 26 safety relays

- · Compact design
- Connection of all standard sensor types
- · Many functions available in a single unit
- Status indications
- · Expanded diagnostics options
- Approvals (EN 13849-1, IEC 61508, UL/CSA)
- Signaling of disconnect faults in the actuator circuit
- · Floating outputs
- Units with wide voltage range
- Saving of the sensor status in the event of voltage failure
- Can be used up to an ambient temperature of max. 70 °C

Overview

3TK28 45 multi-function units

Evaluation units with solid-state components are being used increasingly in safety applications because their permanent checking of functions and largely wear-free operation results in a far higher switching frequency and electrical endurance of equipment. The compact and lightweight units also permit series connection or normal switching duty, e.g. by a PLC.

Up to now, standard combinations of safety applications such as EMERGENCY-STOP and protective door monitoring were possible only by using several individual safety relays. 3TK28 45 combines several functions in a single unit. Two solid-state and two relay enabling circuits ensure safe disconnection – in just a few actions, quickly and cheaply.

Benefits

3TK28 45 safety relays

- 2 sensor inputs (e.g. EMERGENCY-STOP, protective door)
- Also suitable for protective door interlocking and OK buttons
- · 2 solid-state enabling circuits and 2 relay enabling circuits
- Permanent function checking
- No wear because switched electronically
- High switching frequency
- · Long electrical endurance
- Evaluation of solid-state sensors
- Sensor lead up to max. 2 000 m
- · Cascading possible
- · Insensitive to vibrations and dirt
- · Compact design, low weight

General data

Overview



SIRIUS 3TK28 10 safety relays

3TK28 10-0 standstill monitor

The standstill monitor increases safety in hazardous areas. Without a sensor, it detects motor stoppage from the residual magnetization of the rotating motor. When an adjustable threshold value is undershot, it uses its outputs to allow access to hazardous areas for example by unlocking a protective door.

3TK28 10-1 overspeed monitors

The overspeed monitor combines two safety functions in one unit by continuously monitoring machines and plants for stand-still and speed.

Through simple parameterization and permanent diagnosis on the display, faults can be quickly remedied at any time – often before they cause plant downtimes.

In addition to standstill and speed monitoring the unit also features integrated monitoring of a protective door with spring-type interlocking. An additional evaluation unit is not needed therefore

Benefits

3TK28 10-0 standstill monitor

- No additional sensors required
- Signaling of faults with diagnostics display
- Standstill time can be set
- Unit can be used with frequency converters

3TK28 10-1 overspeed monitors

- Menu-prompted, easy parameterization
- Direct diagnosis on the display means shorter downtimes thanks to early fault detection
- Integrated protective door monitoring means greater safety because access to the plant is allowed only in the safe state
- Suitable for all standard sensors, i.e. high flexibility

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General data

Туре	Basic units				Standstill monitors	Overspeed monitors
	3TK28 26 24 V DC	Wide voltage range	24 V DC <i>t</i> _v	Wide voltage range t _v	3TK28 10-0	3TK28 10-1
Sensors				- V		
• Inputs	1	1	1	1	3	4
• Electronic	/		/			3
With contacts	1	/	1	/		1
• Without sensors	·	•	·	·	3	
(measuring inputs)					3	
Magnetically operated switch	/	✓	✓	✓		
(Reed contacts)						
Safety mats	✓	✓	✓	✓		
Start						
• Auto	✓	✓	✓	✓	✓	✓
Monitored	✓	✓	✓	✓		1
Cascading						
input 24 V DC	✓	✓	✓	✓		
Key-operated switch						
Enabling circuit,						
floating						
 Stop category 0 	4 NO	4 NO	2 NO	2 NO	3 NO + 1 NC	2
Stop category 1			2 NO	2 NO		
Enabling circuit, solid-state						
Stop category 0						
Stop category 1						
Signaling outputs						
Floating	1 NC	1 NO + 1 NC	2 NC	1 NO + 2 NC	1 CO	
• Electronic	2		2		2	2
Standards	EN 60204-1, EN	EN 60204-1, EN	EN 60204-1, EN	EN 60204-1, EN	EN 60204-1,	IEC 60947-5-1
	1, IEC 61508	ISO 12100, EN 954- 1, IEC 61508	1, IEC 61508	1, IEC 61508	EN ISO 12100, EN 954-1,	EN ISO 13849- EN 60204-1,
	1, 120 0 1300	1, 120 0 1300	1, 120 0 1300	1, 120 0 1000	IEC 61508	IEC 61508
Compliance to standards	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV
Category						
according to EN 954-1 max	4	4	4	4	4	4
SIL level max.						
according to EC 61508	3	3	3	3	3	3
Performance level PL						
according to ISO 13849-1	е	е	е	е	е	е
Probability of a dangerous fail- ure per hour (PFH _d)	7.8 x 10 ⁻⁹ 1/h	7.8 x 10 ⁻⁹ 1/h	7.8 x 10 ⁻⁹ 1/h	7.8 x 10 ⁻⁹ 1/h	1.5 x 10 ⁻⁸ 1/h	3.38 x 10 ⁻⁹ 1/
Rated control supply voltage						
• 24 V DC	/		✓		/	1
• 24 V AC/DC						
• 24 V AC		-	-			
115 V AC	-	-	-	-		
	-					
230 V AC					<i>'</i>	
• 400 V AC					/	
• 24 240 V AC/DC		✓		✓		✓

[✓] Available

⁻⁻ Not available

 $^{^{1)}\,}$ Only possible for instantaneous enabling contacts, otherwise Category 3.

²⁾ For expansion of Siemens safety products.

³⁾ Only possible for instantaneous enabling contacts, otherwise SIL 2 or Performance Level PL d.

General data

Selection and ordering data

Туре	Multi-function	units						
	3TK28 45 "Automatic and moni-	"Automatic and moni-	"Monitored start"	"Monitored start"	OK button	OK button	"Spring-type interlocking"	"Magnet- locked inter-
	tored start"	tored start"		,				locking"
0		t _v		t _v		t _v	t _v	t _v
Sensors	2	2	2	2	2	2	2	2
Inputs Electronic	∠ ✓	\(\)	∠ ✓	∠ ✓	∠ ✓	∠ ✓	∠ ✓	∠ ✓
With contacts	-	-	/			•	-	1
Magnetically operated switch	1	✓ ✓	1	✓ ✓	1	1	✓ ✓	✓ ✓
(Reed contacts) Safety mats	/	/	/	/				
•								
Start								
• Auto	1	1			1	1		
Monitored	1	1	2	2	1	1	2	2
Cascading input 24 V DC	✓	✓	✓	✓	✓	✓	✓	✓
Key-operated switch	✓	✓	✓	✓	✓	✓	✓	✓
Enabling circuit, floating								
 Stop category 0 	2 NO	1 NO	2 NO	1 NO	2 NO	1 NO	1 NO	1 NO
Stop category 1		1 NO		1 NO		1 NO	1 NO	1 NO
Enabling circuit, solid-state								
Stop category 0	2	1	2	1	2	1	1	1
Stop category 1		1		1		1	1	1
Signaling outputs								
Floating								
Electronic	1	1	1	1	1	1	1	1
Standards				EN ISC EN 9	0204-1, 0.12100, 0.54-1, 0.51508			
Test certificates								
Category according to EN 954-1 max	4	4	4	4	4	4	4	4
SIL level max. according to IEC 61508	3	3	3	3	3	3	3	3
Performance level PL according to ISO 13849-1	е	е	е	е	е	е	е	е
Probability of a dangerous failure per hour (PFH _d)	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1/h	6.9 x 10 ⁻⁹ 1
Rated control supply voltage 24 V DC	1	1	✓	1	✓	✓	1	✓

[✓] Available

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⁻⁻ Not available

¹⁾ The outputs are only safe when an external contactor is used.

Safety relays

 $\begin{array}{ll} \text{PU (UNIT, SET, M)} = 1 \\ \text{PS*} & = 1 \text{ unit} \\ \text{PG} & = 41 \text{L} \end{array}$













Consideration of the Considera	000000	000000		Section 1	****		333	
3TK28 26-2BB4	3TK28 45-1HB40	3TK28 45-11	HB41	3TK28 45-2DB40	3TK28	3 10-0BA01	3TK28 10-1BA	41
Rated control supply voltage $U_{\rm S}$	Start	OFF-delay t _v	DT	Screw terminals	⊕ D	Spring-type to	erminals	Σ
V		S		Order No.	Price per PU	Order No.	Pri per F	ice PU
Basic units		<u> </u>			porro		рогі	
With floating enabli	ina circuits							
3TK28 26	9							
• 24 DC • 24 240 AC/DC	Auto/monitored Auto/monitored		}	3TK28 26-1BB40 3TK28 26-1CW30	A A	3TK28 26-2BE 3TK28 26-2CV		
With time-delay ena	abling circuits							
3TK28 26 t _v								
• 24 DC • 24 240 AC/DC	Auto/monitored Auto/monitored	0.05 3 0.05 3	A A	3TK28 26-1BB41 3TK28 26-1CW31	A A	3TK28 26-2BE 3TK28 26-2CV		
• 24 DC	Auto/monitored	0.5 30	Α	3TK28 26-1BB42	А	3TK28 26-2BE	342	
• 24 240 AC/DC	Auto/monitored	0.5 30	Α	3TK28 26-1CW32	А	3TK28 26-2CV	V32	
24 DC24 240 AC/DC	Auto/monitored Auto/monitored	5 300 5 300	A A	3TK28 26-1BB44 3TK28 26-1CW34	A	3TK28 26-2BE 3TK28 26-2CV		
Multi-function unit				31R20 20-10W34		31K20 20-20V	¥0 -1	
3TK28 45 "Automatic a								
• 24 DC	1/1		Α	3TK28 45-1HB40	В	3TK28 45-2HE	340	
3TK28 45 t _v "Automati		п						
• 24 DC	1/1	0.05 3	Α	3TK28 45-1HB41	В	3TK28 45-2HE	341	
	1/1	0.5 30	A	3TK28 45-1HB42	В	3TK28 45-2HE		
3TK28 45 "Monitored s	1/1	5 300	A	3TK28 45-1HB44	В	3TK28 45-2HE	344	
• 24 DC			А	3TK28 45-1DB40	В	3TK28 45-2DE	240	
3TK28 45 t _v "Monitore	/2 d etart"		A	31K20 43-1DB40	Ь	31K20 43-2DE	140	_
• 24 DC	/2	0.05 3	А	3TK28 45-1DB41	В	3TK28 45-2DE	241	
- 24 00	/2	0.5 30	A	3TK28 45-1DB42	В	3TK28 45-2DE		
	/2	5 300	С	3TK28 45-1DB44	В	3TK28 45-2DE	344	
3TK28 45 "OK button"								
• 24 DC	1/1		А	3TK28 45-1EB40	В	3TK28 45-2EB	40	
3TK28 45 t _v "OK buttor					_			
• 24 DC	1/1 1/1	0.05 3 0.5 30	A A	3TK28 45-1EB41 3TK28 45-1EB42	B B	3TK28 45-2EB 3TK28 45-2EB		
3TK28 45 t _v "Spring-ty		0.0 00	71	OTIVED TO TED TE	В	01K20 40 ZEE	,	
• 24 DC	/2	0.05 3	А	3TK28 45-1FB41	В	3TK28 45-2FB	41	
2100	/2	0.5 30	Α	3TK28 45-1FB42	В	3TK28 45-2FB	42	
	/2	5 300	В	3TK28 45-1FB44	В	3TK28 45-2FB	44	
3TK28 45 t _v "Solenoid	_	0.05						
• 24 DC	/2 /2	0.05 3 0.5 30	A A	3TK28 45-1GB41 3TK28 45-1GB42	B B	3TK28 45-2GE 3TK28 45-2GE		
	/2	5 300	Č	3TK28 45-1GB44	В	3TK28 45-2GE		
Standstill monitors								
3TK28 10-0								
• 24 DC		0.2 6	Α	3TK28 10-0BA01	A	3TK28 10-0BA		
• 230 AC • 400 AC		0.2 6 0.2 6	A A	3TK28 10-0GA01 3TK28 10-0JA01	A B	3TK28 10-0GA 3TK28 10-0JA		
Overspeed monitor	'S	J.E 0	/ \	5 <u>10 10 00</u> A01	Ь	011120 10 00A	~_	
3TK28 10-1 for NPN/PI		and encoders						
• 24 DC	,,	0 600	А	3TK28 10-1BA41	А	3TK28 10-1BA	42	
• 120 240 AC/DC		0 600	A	3TK28 10-1KA41	A	3TK28 10-1KA		
3TK28 10-1 for NAMUF	R proximity switches a	nd encoders						
• 24 DC • 120 240 AC/DC		0 600 0 600	A A	3TK28 10-1BA41-0AA0 3TK28 10-1KA41-0AA0	A A	3TK28 10-1BA 3TK28 10-1KA		

Accessories

Accessories								
	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
	For 3TK28	Unit labeling plates for SIRIUS devices 20 mm x 7 mm, pastel turquoise		3RT19 00-1SB20		100	340 units	41B
150 D D D D D D D D D D D D D D D D D D D	For 3TK28	Inscription labels for sticking for SIRIUS devices		31119 00-13020		100	040 UIII(3	410
NSBO 01		19 mm x 6 mm, pastel turquoise19 mm x 6 mm zinc yellow	C C	3RT19 00-1SB60 3RT19 00-1SD60			3 060 units 3 060 units	41B 41B
BRT19 00-1SB20 Push-in lugs and c o	vers							
	For 3TK28	Push-in lugs For screw fixing, 2 units are required for each device	>	3RP19 03		1	10 units	41H
3RP19 03	For 3TK28 26	Sealable covers for securing against unauthorized adjustment of setting knobs	В	3TK28 26-0DA00-0HA0		1	5 units	41L
BRP19 02								
Adapters and conne	ection cables for o	verspeed monitors						
	For 3TK28 10-1	Adapters for connecting encoders of type Siemens/Heidenhain						
STK28 10-1A		• 15-pole	Α	3TK28 10-1A		1	1 unit	41L
		• 25-pole	А	3TK28 10-1B		1	1 unit	41L
3TK28 10-1B	For 3TK28 10-1	Connection cables for connecting the overspeed monitor to the 3TK28 10-1A or 3TK28 10-1B adapter	A	3TK28 10-0A		1	1 unit	41L
3TK28 10-0A Tools for opening s	pring-type term <u>ina</u>	ıls						
No.	For auxiliary circuit connections	Screwdrivers For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length		Spring-type terminals				
3RA29 08-1A		approx. 200 mm, titanium gray/black, partially insulated	•	3RA29 08-1A		1	1 unit	41B

13/135

3TK2826 with relay enabling circuits

Technical specifications		OTVOO OC BE40	OTKOO OC OWOO	2TV20 2C DD44	2TV20 00 0040
Туре		3TK28 26BB40	3TK28 26CW30	3TK28 26BB41 3TK28 26BB42 3TK28 26BB44	3TK28 26CW3
General data					
Standards		EN 60204-1, EN IS	SO 12100, EN 954-	1, IEC 61508	
Test certificates		TÜV, UL, CSA			
Safety-oriented output contacts					
Instantaneous FK _{rel}		4		2	
Time-delayed FK _{rel (tv)}				2	
Safety-oriented semiconductor outputs Instantaneous FK _{el}					
• Time-delay FK _{el} (tv)					
Signaling contacts MK _{rel}		1	2		3
Semiconductor signaling outputs MK _{rel}		2		2	
Sensor inputs S		1			
Cascading inputs KAS/BS		1			
Degree of protection acc. to EN 60529					
• Enclosure		IP40			
• Terminals		IP20			
Shock resistance sine wave	g/ms	8/10			
Permissible mounting positions		Any			
Touch protection acc. to EN 61140 or EN 60900		Finger-safe			
Height	mm	106: screw termin	als; 108: spring-typ	oe terminals	
Width	mm	45			
Depth	mm	116			
Weight	kg	0.350			
Connection type		Screw term	inals		
		₹			
Terminal screw	2		ewdriver, size 2 an	d Pozidriv 2)	
SolidFinely stranded with end sleeve	mm ² mm ²	1 x (0.5 4)/2 x (1 x (0.5 2.5)/2 x			
AWG cables, solid or stranded	AWG	2 x (24 16)	(0.0 1.0)		
Tightening torque	Nm	0.8 1.2			
Connection type		Spring-type	terminals		
	2				
SolidFinely stranded, with end sleeves acc. to DIN 4622	mm² mm²	2 x (0.25 1.5) 2 x (0.25 1.0)			
Finely stranded, with end sleeves acc. to bit 4622	mm ²	2 x (0.25 1.5)			
Stripped length	mm	10			
Electrical specifications					
Rated control supply voltage U_s	V	24 DC	24 240	24 DC	24 240
			AC/DC		AC/DC
Operating rangec	V		00 11		00 11
AC operationDC operation	V	0.85 1.2 × <i>U</i> _s	0.9 1.1 × U _s	0.85 1.2 × <i>U</i> _s	$0.9 \dots 1.1 \times U_{s}$ $0.9 1.1 \times U_{s}$
Measurement voltage	V		0.0 1.1 × 0 ₈	0.00 1.2 × 0 ₈	0.0 1.1 × 0 ₈
Response value U _{resp}	mV				
Rated insulation voltage <i>U</i> _i	111 V				
For control circuit	V				
For outputs	V	300			
Rated impulse withstand voltage U _{imp}					
For control circuit	V	4000			
• For outputs	V	4000			
Rated power	W	3			
Frequency ranges	Hz	50/60			
Rated operational current I_e (relay outputs) at					
• AC-15 at 115 V	А	13/14, 23/24,	13/14, 23/24,	13/14, 23/24,	13/14, 23/24,
		33/34, 43/44: 4	33/34, 43/44: 4	33/34, 43/44: 4	33/34, 43/44: 4
• AC-15 at 230 V	А	51/52: 3 13/14, 23/24,	51/52: 3 13/14, 23/24,	51/52: 3 13/14, 23/24,	51/52: 3 13/14, 23/24,
- AO- 10 at 200 v	А	33/34, 43/44: 4	33/34, 43/44: 4	47/48, 57/58: 4	33/34, 43/44: 4
		51/52: 3	51/52: 3	31/32, 61/62: 3	51/52: 3
▲ DC 12 of 24 V	۸	12/14 22/24	63/64: 1	12/14 22/04	12/14 22/24
• DC-13 at 24 V	А	13/14, 23/24, 33/34, 43/44: 4	13/14, 23/24, 33/34, 43/44: 4	13/14, 23/24, 47/48, 57/58: 4	13/14, 23/24, 47/48, 57/58: 4
		51/52: 2	51/52: 2, 63/64: 1	31/32, 61/62: 2	31/32, 61/62: 2
					73/74: 1
		0.0	0.2	0.2	0.2
• DC-13 at 115 V	A	0.2			
• DC-13 at 230 V	A A	0.2	0.1	0.1	0.1
DC-13 at 230 V Rated operational current I _e					
• DC-13 at 230 V					

3TK2826 with relay enabling circuits

Туре		3TK28 26BB40	3TK28 26CW30	3TK28 26BB41 3TK28 26BB42 3TK28 26BB44	3TK28 26CW3
Electrical specifications (continued)					
Electrical endurance	Oper. cycles				
Mechanical endurance	Oper. cycles	10 ⁷			
Switching frequency z	1/h	2000			
Conventional thermal current I _{th}	A	Summation curre	nt max. 12		
Conventional thermal current I _{th}					
• 1 contact	A	4			
2 contacts3 contacts	A A	4			
• 4 contacts	A	3			
Fusing for output contacts Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE, gL/gG operational class • gL/gG	А	4			
• Quick	А	6			
Maximum line resistance	Ω	1000			
Cable length from terminal to terminal With Cu 1.5 mm ² and 150 nF/km	m	2000			
Times					
Bridging of voltage dips, supply voltage (only internal, no outputs)	ms	Min. 10			
Make-time t _E					
 For automatic start typ. For automatic start max. 	ms ms	50 + debounce ti 50 + debounce ti			
For automatic start after mains failure typ	ms	Approx. 8000 sta			
For automatic start after mains failure max	ms	Approx. 8000 sta	rting time		
For monitored start typ. For monitored start max.	ms ms	50 + debounce ti 50 + debounce ti			
Release time t _R					
• For sensor typ.	ms	50 + deb. time	50 + deb. time	 50+ deb. time	 50+ deb. time
For sensor max.For mains failure typ.	ms ms	75		75	
For mains failure max.	ms	125	300	125	320
Recovery time t _W • After sensor	ms	Min. 250		Min. 250	Min. 250
After mains failure	S	Min. 200		Min. 600	Min. 200
Minimum command duration t _B					
Sensor input	ms	30			
ON button Cascading input	S S	0.2 5			
Simultaneity t _G	ms	∞			
	1110				
Temperatures					
Permissible ambient temperature • During operation	°C	-25 +60			
During storage	°Č	-40 +80			
Safety specifications					
Safety integrity level SIL CL acc. to IEC 61508		3			
Performance level PL acc. to ISO 13849-1		е			
Safety category CAT acc. to EN 954-1		4			
Type acc. to EN 574					
Probability of a dangerous failure Per hour (PFH _D)	1/h	7.8 x 10 ⁻⁹	7.8 x 10 ⁻⁹	7.8 x 10 ⁻⁹	7.8 x 10 ⁻⁹
On demand (PFD)					-
Proof-test interval T1	а	20			
Environmental data					
EMC		EN 60947-5-1			
Vibrations acc. to EN 60068-2-6					
Frequency Amplitude	Hz mm	5 500 0.075			
		E11.00000 0 1 E1	1 000000 0 0 ENLOG	068-2-14, EN 6006	0.00

 $^{^{1)}}$ Time-delayed enabling circuit: \leq 300 ms adjustable.

3TK2845 with electronic enabling circuits

Technical specifications			
Туре		3TK28 45B40	3TK28 45B41 3TK28 45B42 3TK28 45B44
General data			
Standards		EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	
Test certificates		TÜV, UL, CSA	
Safety-oriented output contacts • Instantaneous FK _{rel} • Time-delayed FK _{rel (tv)}		2	1
Safety-oriented semiconductor outputs Instantaneous FK _{el} Time-delay FK _{el} (tv)		2	1
Signaling contacts MK _{rel}			
Semiconductor signaling outputs MK _{rel}		1	
Sensor inputs S		2	
Cascading inputs KAS/BS		1	
Degree of protection acc. to EN 60529 • Enclosure • Terminals		IP40 IP20	
Shock resistance sine wave	g/ms	8/10 and 15/5	
Permissible mounting positions Touch protection acc. to EN 61140 or EN 60900		Any Finger-safe	
Height	mm	102: Screw terminals:	104: Spring-type terminals
Width	mm	45	104. Spring-type terminals
Depth	mm	120	
Weight	kg	0.400	
Connection type	Ng .		
Connection type		Screw terminals	
Terminal screw Solid Finely stranded with end sleeve AWG cables, solid or stranded Tightening torque	mm ² mm ² AWG Nm	M 3 (standard screwdr 1 x (0.5 4)/2 x (0.5 1 x (0.5 2.5)/2 x (0.5 2 x (24 16) 0.8 1.2	
Connection type		Spring-type terminal	s
Solid Finely stranded, with end sleeves acc. to DIN 46228 Finely stranded	mm ² mm ²	2 × (0.25 1.5) 2 × (0.25 1.5) 2 × (0.25 1.5)	
Electrical specifications			
Rated control supply voltage U _s	V	24 DC	
Operating range DC operation	V	0.85 1.15 × <i>U</i> _S	
Rated insulation voltage U _i • For control circuit • For outputs	V V	50 50/300	
Rated impulse withstand voltage <i>U</i> _{imp} • For control circuit • For outputs	V V	500 500/4000	
Rated power at U_s	W	2.5	
Frequency ranges	Hz		
Rated operational current I_{e} (relay outputs) at			
• AC-15 at 115 V • AC-15 at 230 V • DC-13 at 24 V	A A A	 3 1	
 DC-13 at 115 V DC-13 at 230 V 	A A	 0.1	
Rated operational current I _e (semiconductor output		0.1	
DC-13 at 115 V	A	0.5	
• DC-13 at 230 V	A		
Electrical endurance	Operat- ing	Unlimited	
	cycles		

Operating cycles 10⁵

2000

Mechanical endurance

Switching frequency z

3TK2845 with electronic enabling circuits

STR28 45B42 STR28 45B	.B41				
Conventional thermal current Ith Conventional thermal current Ith	.B42	3TK28 45B41 3TK28 45B42 3TK28 45B44	3TK28 45B40		Туре
Conventional thermal current I in					Electrical specifications (continued)
• 1 contact • 2 contacts • 3 contacts • 3 contacts • 4 contacts • 4 contacts • 5 contacts • 6 contacts • 7 contacts • 8 contacts • 8 contacts • 9 contacts • 1 contacts • 1 contacts • 2 contacts • 2 contacts • 3 contacts • 4 contacts • 4 contacts • 5 contacts • 6 contacts •					Conventional thermal current Ith
* 2 contacts					
* 3 contacts					
Fusing for output contacts Fusing for output contacts Fusing for output contacts Fusing limits LV HRC Type 3NA, DIAZED Type 5SB, NECZED Type 5SE, QL/gG operational class gl/gG Q 1000 Cable length from terminal to terminal Maximum line resistance Q 1000 Cable length from terminal to terminal Mith Cu 1.5 mm² and 150 nF/km Times Bridging of voltage dips, supply voltage conly internal, no outputs) (only internal, no outputs) Make-time f _c For automatic start typ. For automatic start typ. For automatic start trax. For automatic start atter mains failure typ. For automatic start after mains failure max. For automatic start after mains failure max. For automatic start after mains failure max. For automatic start after mains failure max. For automatic start after mains failure max. For monitored start typ. For sensor typ. For sensor typ. For sensor typ. For sensor typ. For sensor typ. For mains failure max. For mains failur			 		
Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE, gL/gG operational class 9, gL/gG Outck Maximum line resistance Ω 1000 Cable length from terminal to terminal m 1000 With cu 1,5 mm² and 150 nF/km Times Bridging of voltage dips, supply voltage (only internal, no outputs) (only internal, no outputs) Make-time terminal start typ. For automatic start from sailure typ. For automatic start atfer mains failure typ. For automatic start atfer mains failure max. For automatic start atfer mains failure max. For monitored start typ. For maximum sailure max. For monitored start typ. For sensor typ. For sensor typ. For sensor typ. For sensor typ. For sensor typ. For mains failure max. For mains					
Maximum line resistance					Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE, gL/gG operational class • gL/gG
Cable length from terminal With Cu 1.5 mm² and 150 nF/km m 1000 Times Times 25 Bridging of voltage dips, supply voltage (only internal, no outputs) (only internal, no outputs) (only internal, no outputs) ms 25 Make-time f _E For automatic start styp. ms 60 For automatic start after mains failure typ. ms 100 For automatic start after mains failure max. ms For automatic start after mains failure max. ms For automatic start after mains failure max. ms For monitored start py. ms 60 For monitored start max. ms 100 Release time f _E For sensor max. ms 45 For sensor px. ms 25 25 For mains failure typ. ms 25 25 For mains failure max. ms 25 25 For mains failure max. ms 25 25 For mains failure typ. ms 25 25 For mains failure typ. ms 400 <td></td> <th></th> <td>· · · · · · · · · · · · · · · · · · ·</td> <td>0</td> <td></td>			· · · · · · · · · · · · · · · · · · ·	0	
With Cut 1.5 mm² and 150 nF/km Times Bridging of voltage dips, supply voltage (only internal, no outputs) (only internal, no outputs) (only internal, no outputs) Make-time teach colspan="2">E per automatic start fixer For automatic start typ. ms 60 —					
Times Bridging of voltage dips, supply voltage (only internal, no outputs) (only internal, no outputs) ms 25 (conju internal, no outputs) (only internal, no outputs) ms 60 Make-time t _E For automatic start typ. ms 100 For automatic start after mains failure byp. ms - For automatic start after mains failure max. ms - For automatic start after mains failure max. ms 60 For monitored start typ. ms 60 For monitored start max. ms 100 Release time t _B To remain failure max. ms 100 Release time t _B To responsor typ. ms 45			1000	III	With Cu 1.5 mm ² and 150 nF/km
Conty internal, no outputs) (only internal, no outputs)					
Make-time t _E For automatic start typ. ms 60 For automatic start after mains failure typ. ms 100 For automatic start after mains failure max. ms			25		Bridging of voltage dips, supply voltage
 For automatic start typ. ms For automatic start max. ms For automatic start after mains failure typ. ms For automatic start after mains failure max. ms For maintored start typ. ms For monitored start typ. ms For monitored start max. ms For sensor typ. ms For sensor typ. ms For sensor typ. ms For mains failure typ. ms For mains failure typ. ms For mains failure max. ms For mains failure max. ms For mains failure max. ms Adjustable 25 For mains failure max. ms After sensor ms After mains failure max. ms Max. 8 Max. 8 Sensor input ms ON button input ms ON button input ms ON button input ms Cascading input ms Simultaneity t₀ ms Temperatures Permissible ambient temperature During operation children ms Carlo do do do do do do do do do do do do do				,	
 For automatic start after mains failure typ. For automatic start after mains failure max. For monitored start typ. For monitored start typ. For sensor typ. For sensor typ. For sensor max. For sensor max. For mains failure typ. For mains failure max. For mains failure max. Ms After sensor After sensor After mains failure Max. 8 For sensor input Ms After mains failure Ms After mains failure After mains failure Temperatures Femperatures Femissible ambient temperature Ouring operation C C C C C C C C During storage C C C C C C During storage C C C C During storage C C C C C During storage C C C C During storage C C C C C During storage C C During storage C C During storage C C C During storage C During storage C C During storage C During storage C C C C C<td></td><th></th><td></td><td>ms</td><td>For automatic start typ.</td>				ms	For automatic start typ.
 For automatic start after mains failure max. For monitored start typ. For monitored start max. Ms For sensor typ. For sensor typ. For sensor max. Ms For mains failure typ. For mains failure max. Ms Adjustable For mains failure max. Ms Alter sensor Max. 8 Minimum command duration t_B Sensor input Sensor input ON button input Cascading input Simultaneity t_G Temperatures Permissible ambient temperature During operation Cac. to IEC 61508 Performance level PL acc. to ISO 13849-1 Type					
 For monitored start typ. For monitored start max. For sensor typ. 					
For monitored start max. ms 100 Release time f _B — — For sensor typ. ms 45 — For sensor max. ms — 0.05 300 Adjustable — Adjustable — For mains failure typ. ms 25 25 For mains failure max. ms 30 30 Recovery time tw — — After sensor Ms 400 — — After sensor Advo — After mains failure S Max. 8 —					
 For sensor typ. For sensor max. For sensor max. For mains failure typ. For mains failure max. Ms Becovery time fw After sensor After mains failure Max. 8 Minimum command duration f_B Sensor input ON button input Cascading input Temperatures Permissible ambient temperature During operation Cular control of the cont					
 For sensor typ. For sensor max. For sensor max. For mains failure typ. For mains failure max. Ms Becovery time fw After sensor After mains failure Max. 8 Minimum command duration f_B Sensor input ON button input Cascading input Temperatures Permissible ambient temperature During operation Cular control of the cont					Release time t _P
• For mains failure typ. • For mains failure max. Recovery time tw • After sensor • After mains failure • After sensor • After mains failure • Sensor input • ON button input • Cascading input • During operation • During storage Safety specifications Safety specifications Safety category CAT acc. to ISO 13849-1 Type			45	ms	For sensor typ.
• For mains failure typ. • For mains failure max. Recovery time tw - After sensor • After sensor • After mains failure • Sensor input • ON button input • Cascading input Simultaneity t₀ ■ During operation • During storage Safety specifications Safety specifications Safety category CAT acc. to ISO 13849-1 Safety category CAT acc. to EN 954-1 Type				ms	For sensor max.
• For mains failure max.			25	me	For mains failure typ
• After sensor					
• After sensor					
Minimum command duration f _B • Sensor input • ON button input • Cascading input Temperatures Permissible ambient temperature • During operation • During storage Safety specifications Safety integrity level SIL CL acc. to ISO 13849-1 Safety category CAT acc. to EN 954-1 Type				ms	
• Sensor input			Max. 8	S	After mains failure
• ON button input • Cascading					
• Cascading input ms 45 Simultaneity t _G ms ∞ Temperatures Permissible ambient temperature • During operation °C -25 +60 • During storage °C -40 +80 Safety specifications Safety integrity level SIL CL acc. to IEC 61508 Performance level PL acc. to ISO 13849-1 Safety category CAT acc. to EN 954-1 Type					
Simultaneity t _G ms ∞ Temperatures Permissible ambient temperature • During operation °C -25 +60 • During storage °C -40 +80 Safety specifications Safety integrity level SIL CL acc. to IEC 61508 Performance level PL acc. to ISO 13849-1 Safety category CAT acc. to EN 954-1 Type					
Temperatures Permissible ambient temperature ○ C -25 +60 ○ During operation ○ C -40 +80 ○ C -40 +80 ○ C -40 +80 ○ C ○ C -40 +80 ○ C			∞	ms	
Permissible ambient temperature • During operation °C -25 +60 -25 +60 • During storage °C -40 +80 Safety specifications Safety integrity level SIL CL 3 <td< td=""><td></td><th></th><td></td><td></td><td></td></td<>					
• During operation • During storage • During storage Safety specifications Safety integrity level SIL CL acc. to IEC 61508 Performance level PL acc. to ISO 13849-1 Safety category CAT acc. to EN 954-1 Type					
• During storage °C -40 +80 Safety specifications Safety integrity level SIL CL 3 acc. to IEC 61508 Performance level PL eacc. to ISO 13849-1 Safety category CAT 4 acc. to EN 954-1			05 .00	00	
Safety specifications					
Safety integrity level SIL CL 3 acc. to IEC 61508 e Performance level PL e acc. to ISO 13849-1 4 Safety category CAT 4 acc. to EN 954-1 Type					3 3
Performance level PL			3		Safety integrity level SIL CL
Safety category CAT 4 acc. to EN 954-1 Type			е		Performance level PL
acc. to EN 954-1 Type			4		Safety category CAT
Type acc. to FN 574					acc. to EN 954-1
400.10 2.10.1					Type acc. to EN 574
Probability of a dangerous failure					
• Per hour (PFH _D) 1/h 6.86 x 10 ⁻⁹			6.86 x 10 ⁻⁹	1/h	
On demand (PFD) Proof AssA interval T4					× /
Proof-test interval T1 a 20			20	а	
Environmental data					
EMC IEC 60947-5-1, IEC 60000-4-3, IEC 60000-4-5, IEC 60000-4-6			IEC 60000-4-3, IEC 60000-4-5,		EMC
Vibrations					Vibrations
acc. to EN 60068-2-6					acc. to EN 60068-2-6
• Frequency Hz 5 500					
• Amplitude mm 0.075				mm	
Climatic withstand capability EN 60068-2-78			EN 60068-2-78		Climatic withstand capability
Clearances in air and creepage distances EN 60947-1					

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3TK2810 with special functions

Technical specifications

Technical specifications		
Туре		3TK28 10
General data		
Standards		EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Test certificates		TÜV, UL, CSA
Safety-oriented output contacts		
Instantaneous FK _{rel}		4
Time-delayed FK _{rel (tv)}		-
Safety-oriented semiconductor outputs • Instantaneous FK _{el}		
Time-delay FK _{el} (tv)		
Signaling contacts MK _{rel}		1
Semiconductor signaling outputs MK _{rel}		2
Sensor inputs S		1
Cascading inputs KAS/BS		
Degree of protection acc. to EN 60529		
• Enclosure		IP40
• Terminals		IP20
Shock resistance sine wave	<i>g</i> /ms	8/10 Apr
Permissible mounting positions		Any Eigenreafe
Touch protection acc. to EN 61140 or EN 60900		Finger-safe
Height	mm	106: screw terminals; 108: spring-type terminals
Width	mm	45
Depth	mm	116
Weight	kg	0.500
Connection type		
		Screw terminals
Terminal screw Solid	mm ²	M 3 (standard screwdriver, size 2 and Pozidriv 2) 1 x (0.5 4)/2 x (0.5 2.5)
Finely stranded with end sleeve	mm ²	1 x (0.5 4)/2 x (0.5 2.5) 1 x (0.5 2.5)/2 x (0.5 1.5)
AWG cables, solid or stranded	AWG	2 x (24 16)
Tightening torque	Nm	0.8 1.2
Connection type		Spring-type terminals
• Solid	mm ²	2 x (0.25 1.5)
 Finely stranded, with end sleeves acc. to DIN 46228 Finely stranded 	mm ² mm ²	2 x (0.25 1.0) 2 x (0.25 1.5)
Electrical specifications		(
Rated control supply voltage U_s	V	24 DC, 230/400 AC
Operating range		
AC operation	V	0.8 1.1 × <i>U</i> _s
• DC operation	V	0.9 1.15 × U _s
Measurement voltage	V	Max. 690
Response value U _{resp} Rated insulation voltage U _i	V	20 400 adjustable
For control circuit	V	300
For outputs	V	690
Rated impulse withstand voltage U _{imp}		014
For control circuit For outputs	V V	6/4 6
Rated power at <i>U</i> _s	W	3
Frequency ranges	Hz	50/60
Rated operational current I _e (relay outputs) at		
• AC-15 at 115 V	A	
AC-15 at 230 VDC-13 at 24 V	A A	3 (NO contacts); 2 (NC contacts)
DC-13 at 115 V	Α	
• DC-13 at 230 V	А	
Rated operational current I_e (semiconductor outputs) at • DC-13 at 115 V	А	0.1
• DC-13 at 115 V	A	U. 1
Electrical endurance		2 x 10 ⁵
	ing	
Mechanical endurance	cycles Operat-	5 v 10 ⁷
wechanical eliquiance	ing	0 × 10
	cycles	
Switching frequency z	1/h	1200

3TK2810 with special functions

Technical specifications		
Туре		3TK28 10
Electrical specifications (continued)		
Conventional thermal current I _{th}	А	5, summation current max. 8
Conventional thermal current I _{th} 1 contact 2 contacts 3 contacts 4 contacts	A A A	5 5 5
Fusing for output contacts Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE, gL/gG operational class • gL/gG • Quick Maximum line resistance	Α Ω	 5
Cable length from terminal to terminal With Cu 1.5 mm ² and 150 nF/km	m	-
Times		
Release time f _R • For sensor typ. • For sensor max. • For mains failure typ. • For mains failure max.	ms ms ms ms	 6 adjustable
Simultaneity $t_{\rm G}$	ms	∞
Temperatures		
Permissible ambient temperature • During operation • During storage	°C °C	-25 +60 -40 +75
Safety specifications		
Safety integrity level SIL CL acc. to IEC 61508		3
Performance level PL acc. to ISO 13849-1		е
Safety category CAT acc. to EN 954-1		4
Probability of a dangerous failure • Per hour (PFH _D) • On demand (PFD)	1/h	1.49 x 10 ⁻⁹
Proof-test interval T1	а	20

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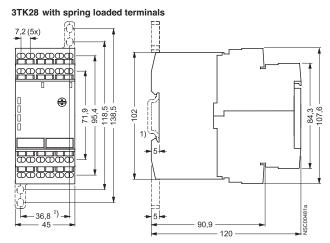
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Dimensional drawings

Dimension drawings 1)

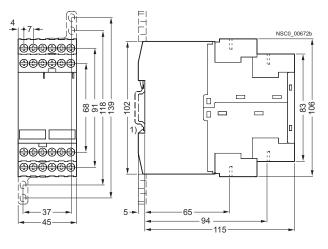
3TK28 safety relays with screw terminals

3TK28 safety relays with Spring Loaded terminals

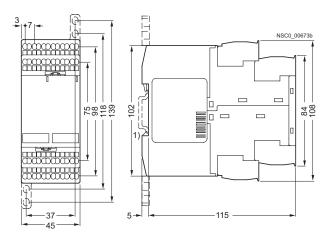


- 1) For 35 mm standard rail to EN 50 022.
- 2) Dimension for screw mounting. Screw mounting with 2 plug-in tabs 3RP19 03 per 3TK28 unit.

3TK28 10 with screw terminals



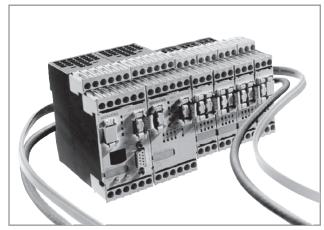
3TK28 10 with spring loaded terminals



¹⁾ For standard mounting rail TH 35 according to EN 60715.

General data

Overview



SIRIUS 3RK3 Modular Safety System

The 3RK3 Modular Safety System (MSS) is a freely parameterizable modular safety relay. Depending on the external circuit version, safety-oriented applications up to Performance Level e according to EN ISO 13849-1 or SIL 3 according to IEC 62061 can be realized.

The modular safety relay enables the interconnection of several safety applications.

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

The MSS comprises the following system components:

- Central units
- Expansion modules
- Interface modules
- · Diagnostics modules
- · Parameterization software
- Accessories

Central units

MSS Basic

The 3RK3 Basic central unit is used wherever more than three safety functions need to be evaluated and the wiring parameterization of safety relays would involve great cost and effort. It reads in inputs, controls outputs and communicates through an interface module with higher-level control systems. An application's entire safety program is processed in the central unit. The 3RK3 Basic central unit is the lowest expansion level and fully functional on its own, without the optional expansion modules.

MSS Advanced

The 3RK3 Advanced central unit is the consistent expansion of the Basic central unit with the functionality of an AS-i safety monitor. In addition to having a larger volume of project data and scope of functionality, it can be integrated into AS-Interface and therefore makes use of the many different possibilities offered by this bus system. The function can be optionally activated in the central unit.

The service-proven insulation piercing method of AS-Interface enables not only the distributed expansion of the project data volume using safe AS-i outputs, safe AS-i sensors and other MSS Advanced or safety monitors (F cross traffic) but also a highly flexible adaptation of the application, e.g. very fast connection of AS-i outputs, LV HRC command devices, position switches with and without interlocking, or light arrays.

Safety-oriented disconnection using MSS or by distributed means using safe AS-i outputs and the formation of switch-off groups can be implemented very easily. The same applies for any subsequent modifications. They are now easily possible by re-addressing, i.e. re-wiring is no longer necessary.

The AS-i bus is connected directly to the central unit.

MSS ASIsafe

The MSS ASIsafe basic and MSS ASIsafe extended central units are a logical development of the AS-i safety monitors based on the 3RK3 Modular Safety System.

Like MSS Advanced, MSS ASIsafe detects – in a comparable way to the safety monitors – safe sensor technology on the AS-i bus and switches actuators off in a safety-oriented manner via a configurable safety logic. It stands out by virtue of its greater project data volume, wider range of functions and the possibility of increasing the the integrated I/O project data volume by means of expansion modules from the MSS system family. In this case the range of functions, such as the number and type of the logic elements that can be interconnected, is equivalent to that of MSS Advanced.

Expansion modules

With the optional expansion modules, both safety-related and standard, the system is flexibly adapted to the required safety applications.

Interface modules

The DP interface module is used for transferring diagnostics data and device status data to a higher-level PROFIBUS network, e.g. for purposes of visualization via HMI. When using the Basic central unit, 32-bit cyclic data can be exchanged with the control system. If an Advanced/ASIsafe central unit is used, the number is doubled to 64-bit cycle data. The acyclic calling of diagnostics data is possible with both central units.

Diagnostics modules

Faults like a cross-circuit, for instance, are displayed directly on the diagnostic display. The fault is diagnosed directly in plain text by the detailed alarm message. The device is fully functional upon delivery. No programming is required.

Parameterization software

Using the MSS ES graphical parameterization tool it is very easy to create the safety functions as well as their logical links on the PC. You can define disconnection ranges, ON-delays, OFF-delays and other dependent factors, for example.

MSS ES also offers comprehensive functions for diagnostics and commissioning. Documentation of the MSS hardware layout and the parameterized logic is drawn up automatically.

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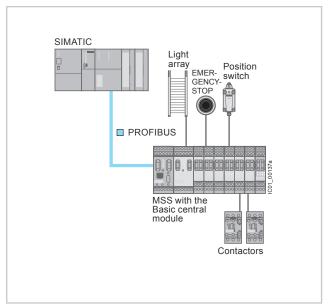
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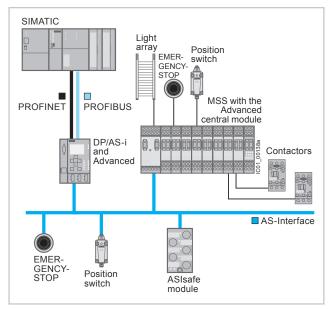
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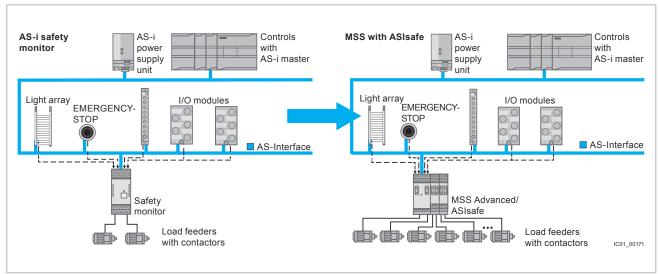
General data





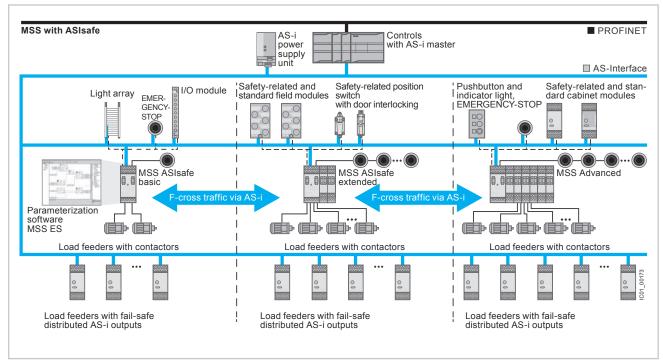


System configuration with the Advanced central unit



Further development of the system design: from the safety monitor to MSS Advanced/MSS ASIsafe

General data



MSS with ASIsafe

Order No. scheme

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th
					-					
Modular safety system	3 R K 3									
Device type										
Device type										
Connection type										
Communications										
Version										
Example	3 R K 3	1	1	1	-	1	Α	Α	1	0

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the selection and ordering data.

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General data

Benefits

- More functionality and flexibility through freely configurable safety logic
- Suitable for all safety applications thanks to compliance with the highest safety standards in factory automation
- For use all over the world through compliance with all productrelevant, globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- · Removable terminals for greater plant availability
- Distributed collection from sensors and disconnection of actuators through AS-Interface
- All MSS ES logic functions are also usable for AS-Interface,
 e. g. muting, protective door with interlocking
- Up to 12 independent safe switch-off groups on the AS-i bus
- Volume of project data can be greatly increased by means of AS-Interface
- Up to 50 two-channel enabling circuits per system

Communication through PROFIBUS

The 3RK3 Modular Safety System can be connected to PROFIBUS through the DP interface and can exchange data with higher-level control systems.

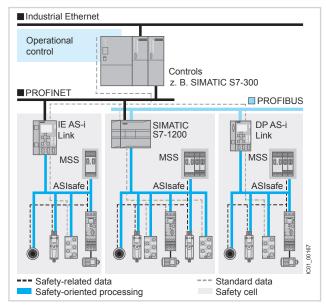
The MSS supports among other things:

- Baud rates up to 12 Mbit/s
- · Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data with MSS Basic or 64-bit cyclic data with MSS Advanced/MSS ASIsafe
- Diagnostics using data record invocations

AS-Interface communication

The 3RK3 Modular Safety System can be integrated into AS-Interface with the Advanced and ASIsafe central units.

- MSS can read in up to 31 AS-i sensors
- Up to 12 preprocessed signals per MSS can be placed on the AS-i bus, e.g. for F-cross traffic or for disconnecting safe AS-i outputs
- Safe cross-traffic between MSS Advanced and MSS ASIsafe or with other AS-i safety monitors
- Standard signals, e.g. for acknowledgement, can also be placed on the bus



Integration of MSS into AS-Interface as ASIsafe Solution local

MSS with communication function see page 13/147 onwards.

Accessories see page 13/149 onwards.

For more information on AS-Interface with ASIsafe, see also Chapter 14 on Industrial Communication.

Central units

Selection and ordering data

PU (UNIT, SET, M) = 1 PS^* = 1 unit





3RK3 111-1AA10

3RK3 121-1AC00 3RK3 122-1AC00 3RK3 131-1AC10

3RK3 131-1AC10						
Version	DT	Screw terminals	(1)	DT	Spring-type terminals	<u> </u>
		Order No.	Price per PU		Order No.	Price per PL
Central units						
3RK3 Basic						
Central unit with safety-oriented inputs and outputs • 8 non-fail-safe inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 7 expansion modules can be connected	•	3RK3 111-1AA10		A	3RK3 111-2AA10	
Note: Memory module 3RK3 931-0AA00 is included in the scope of supply.						
3RK3 Advanced						
Central units for connecting to AS-Interface with safety-oriented inputs and outputs and extended scope of functions • 8 non-fail-safe inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 9 expansion modules can be connected	•	3RK3 131-1AC10		A	3RK3 131-2AC10	
Note: Memory module 3RK3 931-0AA00 is included in the scope of supply.						
3RK3 ASIsafe basic						
Central units for connecting to AS-Interface with safety-oriented inputs and outputs and extended scope of functions • 2 fail-safe inputs • 1 two-channel relay output • 1 two-channel solid-state output No expansion modules can be connected	А	3RK3 121-1AC00		A	3RK3 121-2AC00	
Note:						
Memory module 3RK3 931-0AA00 is included in the scope of supply.						
3RK3 ASIsafe extended						
Central units for connecting to AS-Interface with safety-oriented inputs and outputs and extended scope of functions 4 fail-safe inputs 4 non-fail-safe inputs 1 two-channel relay output 1 two-channel solid-state output Max. 2 expansion modules can be connected Note: Memory module 3RK3 931-0AA00 is included in the scope of supply.	A	3RK3 122-1AC00		A	3RK3 122-2AC00	

Note:

More information on the Internet at www.siemens.com/sirius-mss.

Safety Relays SIRIUS 3RK3 Modular Safety System Expansion modules, interface modules,

operating & monitoring modules

Selection and ordering data

PU (UNIT, SET, M) = 1 PS* = 1 = 1 unit







3RK3 251-1AA10



3RK3 311-1AA10 3RK3 321-1AA10



3RK3 511-1BA10



3RK3 611-3AA00

Version	DT	Screw terminals	(+)	DT	Spring-type terminals	8
		Order No.	Price per PU		Order No.	Price per PU
Expansion modules						
4/8 F-DI						
Safety-related input modules • 8 inputs	А	3RK3 211-1AA10		Α	3RK3 211-2AA10	
2/4 F-DI 1/2 F-RO						
Safety-related input/output modules	Α	3RK3 221-1AA10		Α	3RK3 221-2AA10	
4 inputs2 single-channel relay outputs						
2/4 F-DI 2F-DO						
Safety-related input/output modules	•	3RK3 231-1AA10		Α	3RK3 231-2AA10	
4 inputs2 two-channel solid-state outputs						
4/8 F-RO						
Safety-oriented output modules • 8 single-channel relay outputs	А	3RK3 251-1AA10		•	3RK3 251-2AA10	
4 F-DO						
Safety-oriented output modules 4 two-channel solid-state outputs	А	3RK3 242-1AA10		>	3RK3 242-2AA10	
8 DI						
Standard input module • 8 inputs	•	3RK3 321-1AA10		•	3RK3 321-2AA10	
8 DO						
Standard output module • 8 solid-state outputs	А	3RK3 311-1AA10		Α	3RK3 311-2AA10	
Interface modules						
DP interface						
PROFIBUS DP interface, 12 Mbit/s, RS 485,	Α	3RK3 511-1BA10		Α	3RK3 511-2BA10	
32-bit cyclic data exchange with Basic central unit or 64-bit with Advanced central unit, acyclic exchange of diagnostics data						
Operating and monitoring modules						
Diagnostics module	А	3RK3 611-3AA00				

Notate::

Connection cable required, see page 13/149.

More information on the Internet at www.siemens.com/sirius-mss.

Accessories

Selection and order	ring data						
	Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*
Connection cables	(essential accessory)						
	Connection cables						
	For connection of	e I					
	Central units with expansion modules or interface module						
3UF7 932-0AA00-0	1	• Length 0.025 m (flat)	>	3UF7 930-0AA00-0		1	1 unit
30F7 932-0AA00-0	✓	• Length 0.1 m (flat)	•	3UF7 931-0AA00-0		1	1 unit
	/	• Length 0.3 m (flat)		3UF7 935-0AA00-0		1	1 unit
	<i>\</i>	Length 0.5 m (flat)Length 0.5 m (round)		3UF7 932-0AA00-0 3UF7 932-0BA00-0		1	1 unit 1 unit
	v	• Length 1.0 m (round)	•	3UF7 937-0BA00-0		1	1 unit
	/	• Length 2.5 m (round)	•	3UF7 933-0BA00-0		1	1 unit
PC cables and adap	ters						
	PC cables	Lintonfo o o f o DO/DO		3UF7 940-0AA00-0		1	1 unit
	For connecting to the serial for communication with 3F	al interface of a PC/PG, IK3 through the system interface					
	USB PC cables		•	3UF7 941-0AA00-0		1	1 unit
3UF7 940-0AA00-0	For connecting to the USE for communication with 3F ommended for use in conn	K3 through the system interface, rec	-				
	USB/serial adapters		В	3UF7 946-0AA00-0		1	1 unit
	For connecting the RS 232 to the USB interface of a F						
Interface covers	Interface covers		•	3UF7 950-0AA00-0		1	5 units
TE	For system interface						
3UF7 950-0AA00-0							
Memory modules							
, De	Memory modules For backing up the comple	ete parameterization of the 3RK3		3RK3 931-0AA00		1	1 unit
100 SHO	Modular Safety System with	thout a PC/PG through the system					
2DK2 021 04 400	interface						
3RK3 931-0AA00							
Door adapters				01157 000 04 4 00 0			4 0
A STATE OF THE PARTY OF THE PAR	Door adapters For external connection of	the system interface, e.g. outside a		3UF7 920-0AA00-0		1	1 unit
	control cabinet	the system interface, e.g. outside a					
01/57/000/04/00/0							
3UF7 920-0AA00-0							
Push-in lugs							
	Push-in lugs for screw fi e.g. on mounting plate, 2 (-					
	Can be used for 3RK3	units required per device	•	3RP19 03		1	10 units
3DD10.03							
3RP19 03							
Manuals							
	Manuals for the 3RK3 Mo • English	odular Safety System (MSS)	С	3ZX1 012-0RK31-1AC1		1	1 unit
✓ Available	LIIGIISII		C	JENTUIZ-UNNOT-TACT		I	i uiill

-- Not available

Accessories

Parameterization, startup and diagnostics software for 3RK3

- Runs under Windows XP Professional (Service Pack 2 or 3), Windows 7 32/64 Bit Professional/Ultimate/Enterprise (Service Pack 1)
- Delivered without PC cable. Please order separately, see page 13/149.

	Version	DT	Order No.	Price	PU	PS*
				per PU	(UNIT, SET, M)	
					02.,,	
Modular Safety System	n ES 2008 Basic					
	Floating license for one user					
	Engineering software in limited-function version					
	for diagnostics purposes,					
	software and documentation on CD, 3 languages (German/English/French),					
-El	communication through the system interface					
Sicius	 License key on USB stick, Class A 	Α	3ZS1 314-4CC10-0YA5		1	1 unit
-						
	 License key download, Class A 		3ZS1 314-4CE10-0YB5		1	1 unit
3ZS1 314-4CC10-0YA5						
Modular Safety System	n ES 2008 Standard					
	Floating license for one user					
	Engineering software,					
	software and documentation on CD,					
	3 languages (German/English/French), communication through system interface					
-E	License key on USB stick, Class A	В	3ZS1 314-5CC10-0YA5		1	1 unit
Sirius	- Electrise key off odd stick, oldss //	Ь	0201 014 30010 01A3		1	1 dilit
-	License key download, Class A	•	3ZS1 314-5CE10-0YB5		1	1 unit
3ZS1 314-5CC10-0YA5	Powerpack for MSS ES 2008 Basic to Standard	A	3ZS1 314-5CC10-0YD5		1	1 unit
	Floating license for one user,	A	3231314-30010-0103		1	i uiiit
	engineering software,					
	license key on USB stick, Class A, 3 languages (German/English/French),					
	communication through the system interface					
	Software Update Service	•	3ZS1 314-5CC10-0YL5		1	1 unit
	For 1 year with automatic extension,	•	3ZS1 314-5CC10-0YL5		1	1 unit
	For 1 year with automatic extension, assuming the current software version is in use,	•	3ZS1 314-5CC10-0YL5		1	1 unit
	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD,	•	3ZS1 314-5CC10-0YL5		1	1 unit
	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	•	3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface TES 2008 Premium	•	3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface TES 2008 Premium Floating license for one user	•	3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface The ES 2008 Premium Floating license for one user Engineering software,	•	3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface The ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French),	•	3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface The ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface,	•	3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface The ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French),		3ZS1 314-5CC10-0YL5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface IN ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS,	•	3ZS1 314-5CC10-0YL5 3ZS1 314-6CC10-0YA5		1	1 unit
Modular Safety System	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface IN ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	•				
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A	*				
Modular Safety System 3ZS1 314-6CC10-0YA5	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface IN ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	*	3ZS1 314-6CC10-0YA5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A	A	3ZS1 314-6CC10-0YA5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A**	.	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface I ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros License key on USB stick, Class A Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software,	.	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A** **Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A,	.	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface IN ES 2008 Premium Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros • License key on USB stick, Class A • License key download, Class A Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, communication through PROFIBUS or the system interface,	.	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros • License key on USB stick, Class A **License key download, Class A Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, or the system interface, online t	.	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5		1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros • License key on USB stick, Class A • License key download, Class A Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	.	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5 3ZS1 314-6CC10-0YD5		1	1 unit 1 unit 1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros • License key on USB stick, Class A **License key download, Class A Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, or the system interface, online t	A	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5		1 1	1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** License key on USB stick, Class A** Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** Software Update Service** For 1 year with automatic extension, assuming the current software version is in use,	A	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5 3ZS1 314-6CC10-0YD5		1 1	1 unit 1 unit 1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A • License key download, Class A Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** Software Update Service** For 1 year with automatic extension, assuming the current software version is in use, engineering software,	A	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5 3ZS1 314-6CC10-0YD5		1 1	1 unit 1 unit 1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A • License key download, Class A Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** Software Update Service** For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system interface, software and documentation on CD, communication through PROFIBUS or the system	A	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5 3ZS1 314-6CC10-0YD5		1 1	1 unit 1 unit 1 unit
Total Control	For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface **RES 2008 Premium** Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** • License key on USB stick, Class A • License key download, Class A Powerpack for MSS ES 2008 Standard to Premium** Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros** Software Update Service** For 1 year with automatic extension, assuming the current software version is in use, engineering software, software version on CD,	A	3ZS1 314-6CC10-0YA5 3ZS1 314-6CE10-0YB5 3ZS1 314-6CC10-0YD5		1 1	1 unit 1 unit 1 unit

Technical data

Technical specifications

Central units and expansion modules

Туре		Central u	nits			Expansi	on module	es				
		Basic	Advanced	ASIsafe basic	ASIsafe extended	4/8F-DI	2/4 F-DI 1/2 F-RO		4/8 F-RO	4 F-DO	8 DI	8 DC
Dimensions (W x H x D)				Dasic	extended		1/2 F-RU	2F-DO				
Differsions (WXTTXD)												
W 		45 444 .	. 404			00.5 1	11101		45 444 404	00.514	4 404	
Screw terminals Service type to receive to	mm	45 x 111 >				22.5 x 1			45 x 111 x 124			
Spring-type terminals Device data	mm	45 x 113 >	(124			22.5 x 1	13 X 124		45 x 113 x 124	22.5 X 11	3 X 124	
Shock resistance (sine pulse)	g/ms	15/11										
Touch protection according to EN 50274 and IEC 60529		IP20										
Permissible mounting position			Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature									
Minimum distances		For heat of	dissipation th	rough cor	nvection from	m the dev	ices 25 mm	to the ver	tilation opening	gs (top and	d bottom)	
Permissible ambient temperature • During operation • During storage and transport	°C °C	-20 +60 -40 +85										
Number of sensor inputs (single-channel) • Fail-safe • Not fail-safe		 8	 8	2	4 4	8	4	4	 		 8	 8
Number of test outputs		2	2	2	2	2	2	2				
Number of outputs		_	_	_	_	_	_	_				
Relay outputs Single channel Two-channel		 1	 1	 1	 1		2		8			
Solid-state outputsSingle channel												8
- Two-channel	~	300	300	300	1	160	160	2	400	4	125	160
Weight nstallation altitude above	g m	2 000	300	300	300	160	160	160	400	135	120	160
sea level												
Environmental data												
EMC interference immunity	'	IEC 60947	7-5-1									
/ibrations • Frequency • Amplitude	Hz mm	5 500 0.75										
Climatic withstand capability		IEC 60068	3-2-78									
Electrical specifications	;											
Rated control supply voltage U _s according to IEC 61131-2	V	24 DC 1	5 % ¹⁾									
Operating range		0.85 1.	15 x <i>U</i> _s									
Rated insulation voltage <i>U</i> i	V	300	300	300	300	50	300	50	300	50	50	50
Rated impulse voltage U _{imp}		4	4	4	4	0,5	4	0,5	4	0,5	0,5	0,5
Total current consumption	mA	185	185	185	185	60	85	85	140	8	78	60
Rated power at U _s	W	4.5	4.5	4.5	4.5	1.5	2	2	3	4.8	1.9	1.5
Utilization categories acc. to IEC 60947-5-1 (relay outputs) • AC-15 at 230 V • DC-13 at 24 V (semiconductor outputs) • DC-13 at 24 V	A A	2 1 1.5	2 1 1.5	2 1 1.5	2 1 1.5	 	2 1	 1	2 1	 2	 	 0.5
Mechanical endurance During rated operation		10 x 10 ⁶	10 x 10 ⁶		10 x 10 ⁶		10 x 10 ⁶		10 x 10 ⁶			

Device current supply through a power supply unit acc. to IEC 60536 protection class (SELV or PELV).

_

6 7

8

10

11

14

Technical data

Туре		Central un	its			Expansion	modules					
		Basic	Advanced	ASIsafe basic	ASIsafe extended	4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO
Electrical specification (cont.)	ns											
Switching frequency z for rated operational current	1/h	1 000	1 000	1 000	1 000		1 000	1 000	360	1 000		1 000
Conventional thermal current Ith	А	2/1.5	2/1.5	2/1.5	2/1.5		1	1	3	2		0.5
Protection for output contacts Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE Operational class gG Operational class quick response	A A	4 6	4 6	4 6	4 6	 	4 6	 	4 6	 	 	
Safety specifications												
Probability of a dangerous failure • Per hour (PFH _d) • On demand (PFD)	1/h 1/h	5.14 x 10 ⁻⁹ 1.28 x 10 ⁻⁵	2.8 x 10 ⁻⁹ 1.7 x 10 ⁻⁴	2.8 × 10 ⁻⁹ 1.7 × 10 ⁻⁴	2.8 x 10 ⁻⁹ 1.7 x 10 ⁻⁴	1.89 x 10 ⁻⁹ 4.29 x 10 ⁻⁶	3.79 x 10 ⁻⁹ 5.85 x 10 ⁻⁶	2.7 x 10 ⁻⁹ 8.34 x 10 ⁻⁶	7.15 x 10 ⁻⁹ 4.36 x 10 ⁻⁵	3.18 x 10 ⁻⁹ 2.2 x 10 ⁻⁵	 	
Parameters for cable	S											
Line resistance		100	100	100	100	100	100	100			100	
Cable length from terminal to terminal With Cu 1.5 mm ² and 150 nF/km	m	1 000	1 000	1 000	1 000	1 000	1 000	1 000			1 000	
Conductor capacity	nF	330	330	330	330	330	330	330			330	

Interface and diagnostics modules

Туре		Interface modules	Diagnostics modules
Dimensions (W x H x D)			
T W W			
Screw terminals	mm	45 x 111 x 124	96 x 60 x 44
Spring-type terminals	mm	45 x 113 x 124	
Device data			
Shock resistance (sine pulse)	g/ms	15/11	
Touch protection according to EN 50274 and IEC 60529		IP20	
Permissible mounting position		Vertical mounting surface (+10°/-10°), are permitted for reduced ambient tem	
Minimum distances		For heat dissipation through convection openings (top and bottom)	from the devices 25 mm to the ventilation
Permissible ambient temperature • During operation • During storage and transport	°C	-20 +60 -40 +85	
Weight	g	270	90
Installation altitude above sea level	m	2 000	
Environmental data			
EMC interference immunity		IEC 60947-5-1	
Vibrations • Frequency • Amplitude	Hz mm	5 500 0.75	
Climatic withstand capability		IEC 60068-2-78	
Electrical specifications			
Rated control supply voltage <i>U</i> _s according to IEC 61131-2	V	24 DC 15 %	24 DC 15 % via connecting cable to the central unit
Operating range		0.85 1.15 x <i>U</i> _s	
Rated insulation voltage U _i	V	50	
Rated impulse voltage U _{imp}	kV	0,5	
Total current consumption	mA		24
Rated power at U _s	W		0.6

Application data

Application

The 3RK3 Modular Safety System can be used for all safety-oriented requirements in the manufacturing industry and offers the following safety functions:

	Symbol	MSS Basic	MSS Advanced, MSS ASIsafe
Monitoring functions			
Universal monitoring Evaluation of any binary signals from single-channel and two-channel sensors	?		1
EMERGENCY-STOP Evaluation of EMERGENCY- STOP devices with positive- opening contacts	>	/	1
Safety shutdown mats Evaluation of safety shutdown mats with NC contacts and/or cross-circuit detection	<u></u>	/	1
Protective door monitoring Evaluation of protective door signals and/or protective flap signals	H	1	1
Protective door interlocking mechanism Evaluation of protective doors with interlocking and locking/unlocking of this device			1
Enabling switches Evaluation of OK buttons with NO contact	Time	/	1
Two-hand operator controls Evaluation of two-hand opera- tion consoles		√	1
ESPE monitoring Evaluation of electro-sensitive protective equipment such as light arrays and laser scanners		1	√
Muting Short-time bridging of electro- sensitive protective equipment, 2/4 sensors in parallel, 4 sensors sequentially			1
Operating mode selector switches Evaluation of operating mode selector switches with NO con- tacts	O ⁿ	√	1
Monitoring of AS-i (AS-i 2F-DI) Logic element for monitoring of AS-i input slaves	AS-I		1

AND AND AND AND AND AND AND AND		Symbol	MSS Basic	MSS Advanced, MSS ASIsafe
OR E1 V V NAND NOR E10 V Negation Tip-flop Counter functions Counter 0 -> 1 Counter 0 -> 1/1 -> 0 Timer functions With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q V V V V V V V V V V V V	c operation functions			
XOR □□□		&	✓	✓
NAND NOR Passing make contact With OFF-delay Clock pulsing Start functions Manual start Manual start Poutput functions Salor A A A A A A A A A A A A A A A A A A A		≧1	✓	✓
NOR Ello		=1	1	✓
Negation I o)	&•	1	✓
Flip-flop SR Counter functions Counter 0 -> 1 Counter 1 -> 0 Counter 0 -> 1/1 -> 0 Counter functions With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1 Counter 0 -> 1 Counter 0 -> 1 Counter 1 -> 0 Counter 1 ->		<u>≧1</u> 0	✓	✓
Counter functions Counter 0 -> 1 Counter 1 -> 0 Counter 0 -> 1/1 -> 0 Counter functions With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1 Counter 1 -> 0	iion	100	1	√
Counter 0 -> 1 Counter 1 -> 0 Counter 0 -> 1/1 -> 0 Counter 0 -> 1/1 -> 0 Counter o -> 1/1 -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Counter o -> 1/1 Cou		SR	√	/
Counter 1 -> 0 21 Counter 0 -> 1/1 -> 0 21 Timer functions With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q F output	nter functions			
Counter 0 -> 1/1 -> 0 Timer functions With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q F output	ter 0 -> 1	21	/	✓
Timer functions With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q F output Q V V V V V V V V V V V V	ter 1 -> 0	21	/	✓
With ON-delay Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	ter 0 -> 1/1 -> 0	21	1	✓
Passing make contact With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q / / / / / / / / / / / /	r functions			
With OFF-delay Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	ON-delay	्रा	✓	✓
Clock pulsing Start functions Monitored start Manual start Output functions Standard output Q ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	ng make contact	O'L'	✓	1
Start functions Monitored start Manual start Output functions Standard output Q ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	OFF-delay	⊙ -1	✓	✓
Monitored start Manual start Output functions Standard output Q ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓		<u>∵</u>	√	✓
Manual start Output functions Standard output Q ✓ F output Q ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓				
Output functions Standard output Q F output Q		Ţ.		
Standard output Q F output Q		ŗ	√	√
F output Q / /				
Q				
AS-i output function —		Q	✓	·
		Q AS-I		√
Status functions				
Element status ✓	ent status	i		√

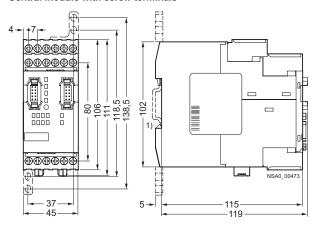
[✓] Available

⁻⁻ Not available

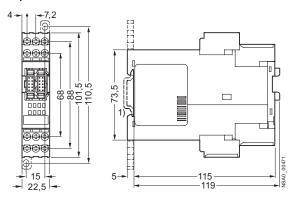
Dimensional drawings

Dimensional drawings

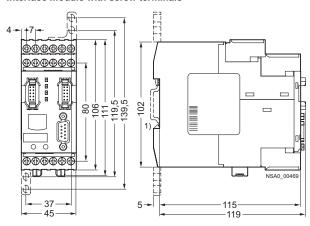
Central module with screw terminals



Expansion module with screw terminals

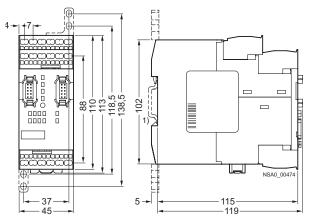


Interface module with screw terminals

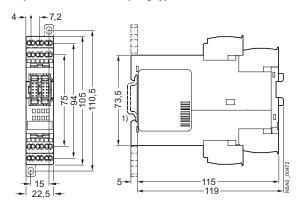


¹⁾ For standard mounting rail TH 35 according to EN 60715.

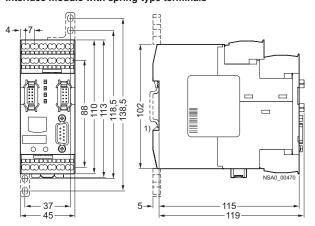
Central module with spring-type terminals



Expansion module with spring-type terminals



Interface module with spring-type terminals





Siemens complete AS-Interface offering is found in Section 6 of the Siemens IK PI 2012 Catalog.

In this section you will find the Table of Contents for Section 6 of the Siemens IK PI 2012 catalog and overview information on AS-Interface and ASIsafe.

A PDF version of Section 6 on AS-Interface can be viewed from the Siemens' on-line version of this 2014 Industrial Controls Catalog.

Contents	Pages	Contents	Pages
Introduction		Slaves	
System overview	6/2	I/O modules for operation in the field,	
AS-Interface specification	6/4	high degree of protection Digital I/O modules, IP67 – Introductio	
ASIsafe		Digital I/O modules, IP67 – K60	
Introduction	6/6	Digital I/O modules, IP68/IP69K – K60	
AS-Interface safety monitors		Digital I/O modules, IP67 – K45	
AS-Interface safety modules		Digital I/O modules, IP67 – K20	
3SF1 position switches		Digital I/O modules, IP67 – User modu	
Plastic enclosures		Analog I/O modules, IP67 – K60	
Metal enclosures		I/O modules for operation in the control	
3SF1 Position switches with separate actuat		Introduction	
Plastic enclosures		SlimLine	-,
Metal enclosures	6/23	F90 module	6/66
Accessories	6/24	Flat module	
3SF1 Position switches with solenoid interlo-	cking6/25	Special integrated solutions	6/68
Plastic enclosures	6/26	AS-Interface communication modules	
Metal enclosures	6/27	Modules with special functions	6/70
3SF1 hinge switches		Counter modules	
Plastic enclosures		Ground-fault detection modules	
Metal enclosures		Overvoltage protection module	
3SF2 Cable-operated switches for AS-Interfa	ce6/30	AS-Interface connection for LOGO!	
SIRIUS EMERGENCY STOP mushroom		Contactors and contactor assemblies.	6/74
pushbuttons for AS-Interface	6/31	SIRIUS 3RT20 contactors	-,
AS-Interface F adaptors for	0/04	SIRIUS 3RA24 contactor assemblies for	
EMERGENCY-STOP devices	6/34	wye-delta starting	6/75
Masters		SIRIUS 3RA27 function modules	0.770
Masters for SIMATIC S7	6/35	for AS-Interface	
CP 243-2		Motor starters for operation in the con	
CP 343-2P, CP 343-2		SIRIUS 3RA6 compact feeders	
01 340-21, 01 340-2	0/30	3RA61 direct-on-line starter	
Network transitions		3RA62 reversing starter	
DP/AS-i LINK Advanced	6/38	Accessories	
DP/AS-Interface Link 20E		Infeed system for 3RA6	
DP/AS-i F-Link		•	0/90
IE/AS-i LINK PN IO		continued on next page	

Control Circuit Components AS-Interface

Contents	Pages
Motor starters for operation in the field,	
high degree of protection	6/97
SIRIUS M200D motor starters	
General data	
M200D motor starters for AS-Interface	
Accessories	
SIRIUS MCU motor starters	
General data	
MCU motor starters for AS-Interface	6/109
Motor starters for AS-Interface, 24 V DC	6/114
SINAMICS G110D distributed converters	6/117
3SF5 pushbuttons and indicator lights	
Enclosures and front panel modules for AS-Interface	e 6/121
General data	6/121
With standard fittings	6/122
Components	6/123
Customized equipment	
Front panel module	6/125
8WD4 signaling columns	6/130
Power supply units and data couplings	
	0/105
AS-Interface power supply units	
S22.5 data decoupling modules	6/136
Transmission media	
AS-Interface shaped cables	6/138
System components and accessories	2/122
Repeater	
Extension Plug	
Addressing units	
Analyser	
Other accessories	6/146
Software	
AS-Interface Function Block Library	
for SIMATIC PCS 7	6/149

Catalog No. Prefix	Description
3RA24	Contactor Assemblies for Wye-Delta Starting
3RA27	Contactor Function Modules for AS-Interface
3RA6	Compact Starter
3RG783	SIMATIC FS600 Laser Scanner
3RK11	Safety Monitor, Analog I/O Modules
3RK12	Compact Safety Modules, I/O Modules, Counter Modules, Communication Modules
3RK13	Enclosed Motor Starters
3RK14	Compact Safety Modules, I/O Modules, Communication Modules, Ground Fault Protection Modules, Connections for LOGO!
3RK19	Accessories
3RK22	I/O Modules
3RK24	I/O Modules, Communication Modules
3RK27	ASI System Manual
3RK31	DP/AS-i F-Link
3RK43	MCU Enclosed Motor Starters
3RV19	Accessories for Compact Starter
3RX90	ASI Shaped Cables
3RX95	ASI Power Supplies
3S83	E-Stop Components
3SE50	Position Switches & Interlock Accessories
3SF1	Position Switches & Key Interlock Switches
3SF2	Cable Operated Switches
3SF54	F Adapters for E-Stops
3SF55	AS-i Slaves for Pilot Devices
3SF58	Pilot Device Stations, Front Panel Module
3SF59	Pilot Device Accessories
6GK12	Repeater/Extender
6GK14	DP/AS-i Links
6GK19	Manuals for SIMATIC S7 Masters
6GK7	Masters for SIMATIC S7
6SL35	SINAMICS G110D Drives
8WD4	Signal Columns

Pages



Siemens complete IO-Link offering is found in Section 7 of the Siemens IK PI 2012 Catalog.

In this section you will find the Table of Contents for Section 7 of the Siemens IK PI 2012 catalog and overview information on IO-Link.

Contents

A PDF version of Section 7 on IO-Link can be viewed from the Siemens' on-line version of this 2014 Industrial Controls Catalog.

Contents	Pages
Introduction Transmission technology Communication overview	
Masters	
IO-Link master module for ET 200S IO-Link 4SI electronic module	7/4
4SI SIRIUS electronic module	
Input modules	
General data	
Contactors and contactor assemblies	
SIRIUS 3RT20 contactors,3-pole, 3 30 HP SIRIUS 3RA23 reversing contactor assemblies SIRIUS 3RA24 contactor assemblies	
for wye-delta starting	
	//15
SIRIUS 3RB2 electronic overload relays	7/47
3RB24 for IO-Link, up to 630 A for high-feature applications	//1 /
Accessories for 3RR24	7/22

SIRIUS 3RA6 compact feeders SIRIUS 3RA64, 3RA65 compact feeders for IO-Link	
SIRIUS 3UG48 monitoring relays for	
stand-alone installation for IO-Link	
General data	
Line monitoring	
Voltage monitoring	7/31
Current monitoring	7/32
Power factor and active current monitoring .	7/33
Speed monitoring	7/35
Accessories	7/37
SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link General data	7/40 ors7/42

As-Interface

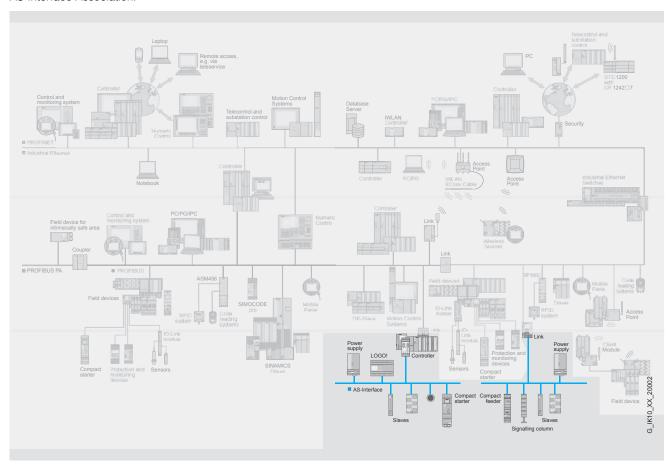
Introduction

Communication overview

Overview

AS-Interface is an open, international standard according to EN 50295 and IEC 62026-2 for process and field communication. Leading manufacturers of actuators and sensors all over the world support the AS-Interface. Interested companies are provided with the electrical and mechanical specifications by the AS-Interface Association.

AS-Interface is a single master system. For automation systems from Siemens, there are communications processors (CPs) communications modules (CMs) and routers (links) that control the process or field communication as masters, and actuators and sensors that are activated as AS-Interface slaves.



Benefits

A key feature of AS-Interface technology is the use of a shared two-conductor cable for data transmission and the distribution of auxiliary power to the sensors/actuators. A power supply unit which meets the requirements of the AS-Interface transmission method and has an external data decoupling module if required is used for the distribution of auxiliary power. The AS-Interface cable used for the wiring is mechanically coded and hence protected against polarity reversal and can be easily contacted by the insulation piercing method.

Elaborately wired control cables in the control cabinet and marshalling racks can be replaced by AS-Interface.

The AS-Interface cable can be connected to any points thanks to a specially developed cable and connection by the insulation piercing method.

With this concept you become extremely flexible and achieve high savings.

Application

I/O data exchange

The AS-i master transmits automatically the inputs and outputs between the control system and the digital and analog AS-Interface slaves.

Slave diagnostics information is forwarded to the control system when required.

AS-Interface masters according to the AS-Interface Specification V2.1 or V3.0 support integrated analog value processing. This means that data exchange with analog AS-Interface slaves is just as easy as with digital slaves.

Command interface

In addition to I/O data exchange with binary and analog AS-Interface slaves the AS-Interface masters provide a number of other functions through the command interface.

Hence it is possible, for example, for slave addresses to be issued, parameter values transferred or configuration information read out from user programs.

You can find more information on the Internet, see http://support.automation.siemens.com/WW/view/en/51678777

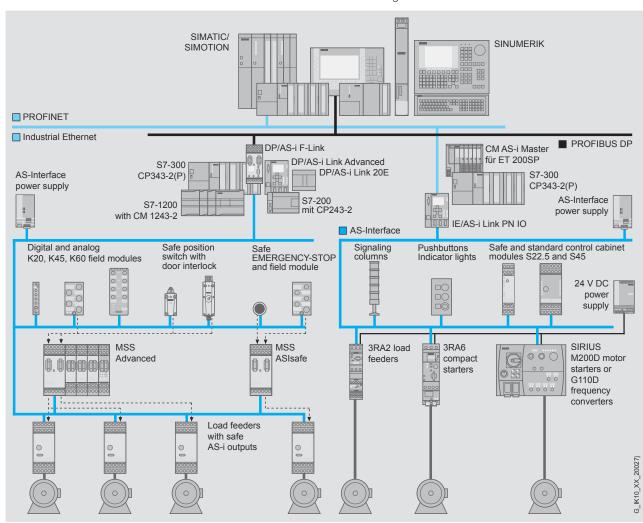
System components

Overview

To implement communication, a system installation has the following main components:

- · Master interface modules for central control units such as SI-MATIC S7, ET 200 distributed peripherals, or routers from PROFIBUS/PROFINET to AS-Interface
- · Power supply units, if required in combination with a data decoupling module for the power supply to the slaves
- AS-Interface shaped cables

- Network components such as repeaters and extension plugs (cannot be used for AS-i Power24V)
- Modules for connection of standard sensors/actuators
- Actuators and sensors with integrated AS-i slave
- Safety modules for transmitting safety-oriented data through AS-Interface
- · Addressing units for setting the slave addresses during commissioning



Example of a configuration with the system components

Features

Standard EN 50295 / IEC 62026-2 Line, star or tree structure Topology (same as electrical wiring) Transmission medium Unshielded two-wire cable (2 x 1.5 mm²) for data and auxiliary power Contacting of the AS-Interface cable Connection methods by insulation piercing method Maximum cable length • 100 m without repeater 200 m with extension plug300 m with two repeaters in series connection • 600 m with extension plugs and two repeaters connected in parallel Larger cable lengths are also possible when additional repeaters are connected in parallel

Maximum cycle time

Number of stations per AS-Interface line

Number of binary sensors and actuators

Access control

Error safeguard

- 5 ms in full expansion with standard addresses • 10 ms in full expansion with A/B addresses. profile-specific for Spec 3.0 slaves
- 31 slaves acc. to AS-Interface Spec. V2.0
 62 slaves (A/B technology) acc. to AS-Interface Spec. V2.1 and V3.0
- Integrated analog value transmission
- Max. 124 DI/124 DO according to Spec. V2.0
- Max. 248 DI/186 DO according to Spec. V2.1
 Max. 496 DI/496 DO according to Spec. V3.0
- Cyclic polling master/slave procedure
 Cyclic data acceptance from host (PLC, PC)
- Identification and repetition of faulty message

As-Interface

Introduction

AS-Interface specification Specification 2.0, 2.1 and 3.0

Overview

Scope of the AS-Interface specification

AS-Interface Specification	Maximum number of slaves		Number of digital inputs	Number of digital outputs	
	Digital	Analog	ASIsafe	DI	DO
Version 2.0	31	31	31	$31 \times 4 = 124$	$31 \times 4 = 124$
Version 2.1	62	31	31	$62 \times 4 = 248$	$62 \times 3 = 186$
Version 3.0	62	62	31	$62 \times 8 = 496$	$62 \times 8 = 496$

Basic data of AS-Interface Specification 2.0

- AS-Interface Specification 2.0 describes a fieldbus system with an AS-i master and up to 31 AS-i slaves.
- Each AS-i slave has up to 4 digital inputs and 4 digital outputs.
- With full expansion, the complete transmission of all input/output data requires max. 5 ms cycle time.

Expansions of AS-Interface Specification 2.1

AS-Interface Specification 2.1 enables the number of network stations to be doubled from 31 to 62 as follows:

- The standard slaves continue to occupy one AS-i address (1...31).
- Slaves with extended addressing divide an address into an A address (1A...31A) and a B address (1B...31B). Up to 62 A/B slaves can be connected accordingly to one AS-Interface network.
- Mixed operation of standard slaves and A/B slaves is possible without difficulty. The AS-i master identifies automatically which type of slave is connected. No special adjustments are required of the user.

Another function of the AS-Interface Specification V2.1 is the integrated analog value transmission function. Access to both analog values and digital values is possible without the need for any special function blocks.

Expansions of AS-Interface Specification 3.0

- AS-Interface Specification 3.0 enables the connection of nearly 1000 digital inputs/outputs (profile S-7.A.A: 8DI/8DO as A/B slave).
- New profiles have also enabled the option of expanded addressing for analog slaves.
- Acceleration of analog value transmission through "Fast Analog Profile".
- Variable use of analog modules: Optional parameterization of resolution (12/14 bit) and 1- and 2-channel capability.
- Asynchronous serial protocol 100 baud or 50 baud, bidirectional.

AS-Interface master for A/B slaves

To be able to operate A/B slaves on an AS-Interface network you must use master modules that meet the minimum requirements of Specification 2.1.

AS-Interface specification	Available masters
Version 2.1	CP 243-2 (S7-200)
Version 3.0	CP 343-2, 343-2P (S7-300 / ET 200M), DP/AS-i Link Advanced, DP/AS-i F-Link, DP/AS-Interface Link 20E, IE/AS-i Link PN IO, CM 1243-2 (S7-1200), CM AS-i Master ST for ET 200SP new

The AS-Interface specification relevant for the respective slave is noted in the "Selection and ordering data".

For the exact slave profile see AS-Interface system manual.

Communication cycle

AS-Interface specification	Maximum cycle time (digital signals)
Version 2.0	5 ms
Version 2.1	5 ms with 31 slaves 10 ms with 62 slaves
Version 3.0	5 ms with 31 slaves 10 ms with 62 slaves, supplementary, up to 20 ms with A/B slaves using 4DI/4DO, up to 40 ms with A/B slaves using 8DI/8DO

Each address is queried in max. 5 ms cycle time. If two A/B slaves are operated on one basic address (e.g. 12A and 12B), a maximum 10 ms will be required for updating the data of both slaves.

All slave types can be mixed and used on a single AS-Interface network.

More information, e.g. whether an AS-Interface slave is a standard slave or an A/B slave, can be seen in the section "Selection and ordering data" or the "AS-Interface system manual".

More information

AS-Interface system manual

More information is available in the AS-Interface system manual.

The German AS-Interface system manual can be downloaded free of charge, see

http://support.automation.siemens.com/WW/view/en/26250840

The English AS-Interface system manual can be downloaded free of charge, see

http://support.automation.siemens.com/WW/view/en/26250840

A print version of the AS-Interface system manual is also available under the following order number.

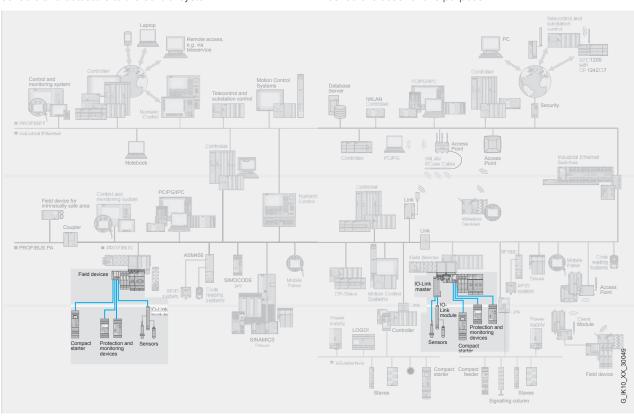
- German 3RK2 703-3AB02-1AA1
- English 3RK2 703-3BB02-1AA1

Communication overview

Overview

IO-Link is an open communication standard for sensors and actuators - defined by the Profibus User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system.

Parameter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensors/actuators. The simple, unshielded three-wire cable customary for standard sensors is used for this purpose.



Benefits

Engineering

- Standardized, open system for greater flexibility (non-Siemens IO-Link devices can be integrated in engineering)
- Uniform, transparent configuring and programming through integrated engineering (SIMATIC STEP 7)
- Unassigned SIMATIC function blocks for easy parameterization, diagnostics and read-out of measured values
- Efficient engineering thanks to pre-integration into SIMATIC

 HMI
- Low error rate in CAD circuit diagram design as a result of reduced control current wiring

Installation and commissioning

- Faster assembly with minimized error rate as a result of reduced control current wiring
- · Less space required in the control cabinet
- Low-cost circuitry where there are several feeders by making full use of existing components

Operation and maintenance

- High transparency in the system right down to field level and integration into power management systems
- Reduction in downtimes and maintenance times thanks to system-wide diagnostics and faster fault correction
- Support of predictive maintenance
- Shorter changeover times, even for field devices, by means of parameter and recipe management

Application

IO-Link can be used in the following main applications:

- Easy connection of complex IO-Link sensors/actuators with a large number of parameters and diagnostic data to the control system
- Replacement of sensor boxes for connecting binary sensors with the IO-Link input modules optimized in terms of cabling
- Optimized cable connection of switching devices to the control system
- Simple transmission of energy values from the device to the control system for integration into a user program or power management

In these cases, all the diagnostics data are transmitted to the higher-level control system through IO-Link. The parameter settings can be changed during operation. Central data storage means that it is possible to exchange an IO-Link sensor/actuator without a PC or programming device.

Integration in STEP 7

Integration of the device configuration in the STEP 7 environment guarantees:

- · Quick and easy engineering
- Consistent data storage
- · Quick localization and rectification of faults

Introduction

System components

Overview



· An IO-Link master

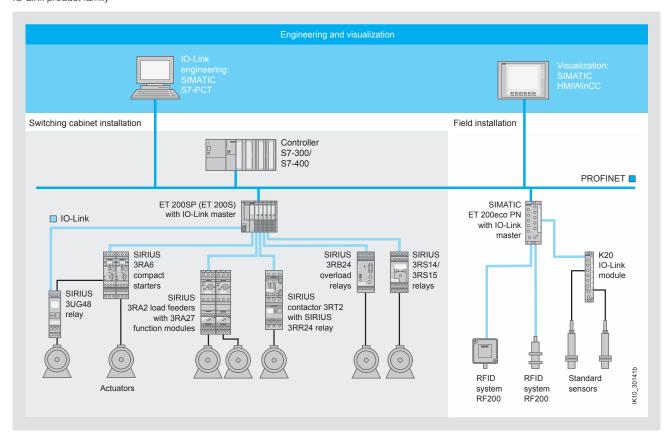
following main components:

• Several IO-Link devices, usually sensors (RFID systems), actuators or combinations of these

To implement communication, a system installation has the

• A standard 3-wire sensor/actuator cable

IO-Link product family



Example of a configuration with the system components

System components

Compatibility of IO-Link

IO-Link guarantees compatibility between IO-Link-capable modules and standard modules as follows:

- IO-Link sensors can be operated both on IO-Link modules (masters) and standard input modules.
- IO-Link sensors/actuators as well as today's standard sensors/actuators can be used on IO-Link masters.
- If conventional components are used in the IO-Link system, then of course only the standard functions are available at this point.

Analog signals

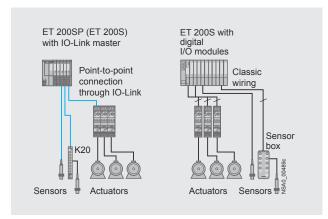
Another advantage of IO-Link technology is that analog signals are digitized already in the IO-Link sensor itself and are digitally transmitted by the IO-Link communication. As the result, faults are prevented and there is no extra cost for cable shielding.

Enhanced through IO-Link input modules

IO-Link compatibility also permits connection of standard sensors/actuators, i.e. conventional sensors/actuators can also be connected to IO-Link. This is particularly effective with the IO-Link input modules, which allow several sensors to be connected at one time via a cable to the controller.

Load feeders and motor starters

Through IO-Link it is possible to control not only sensors but also actuators in the form of load feeders and motor starters.



Possibilities for connecting load feeders and motor starters to IO-Link or in the conventional way

Grouping of motor starters

The SIRIUS controls allow four starters to be combined to form a group.



Connection of a motor starter group made up of three 3RA64 direct-online starters and a 3RA65 reversing starter

In this way up to 16 starters can be operated on a single IO-Link master. This leads to a reduction in the installation space and control wiring required.

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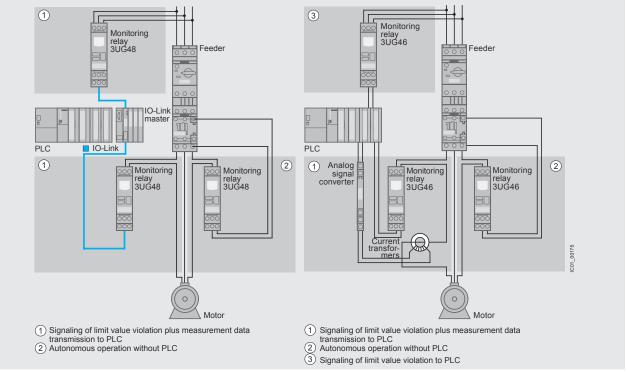
Introduction

System components

Overload and monitoring relays

By combining overload/monitoring relays with IO-Link it is now possible to send data that has already been recorded and

evaluated in the monitoring relays directly to the controller. This avoids the use of duplicated sensors.

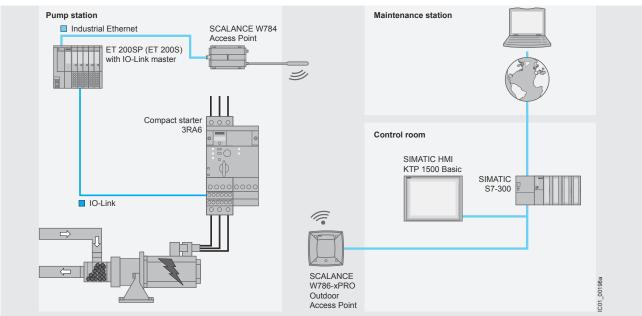


Possibilities for connecting overload relays to IO-Link or in the conventional way

Wireless communication

Using an upstream IWLAN client module, such as SCALANCE W746-1PRO, allows IO-Link to be be integrated into the PROF-INET world via a distributed I/O. Possible uses include acting as an alternative to fault-prone cable carrier or collector wire technology. The individual diagnostics options offered by

the various IO-Link devices provide greater transparency for the production process. Just like the parameter data for a device, these diagnostics data can be evaluated remotely using the possibilities offered by SIMATIC. This supports remote maintenance down to the lowest level in the field.



Wireless communication between Industrial Ethernet and IO-Link components

System components

IO-Link components

IO-Link master, software, cables



Masters

IO-Link master modules for ET 200SP

• CM 4x IO-Link

IO-Link master modules for ET 200S

- IO-Link 4SI electronic module
- SIRIUS 4SI electronic modules

IO-Link master modules for ET 200eco PN

CM 4x IO-Link for ET 200SP

STEP 7 PCT

Software

STEP 7 PCT



Engineering software for configuring the IO-Link master modules for ET 200SP, ET 200S and ET 200eco

- · Available as a stand-alone version or integrated into STEP 7 (Version 5.5 SP1 or later)
- Retrieving parameter and diagnostics data from the IO-Link devices connected to the master
- Monitoring of the process image of the IO-Link devices
- Open interface for importing further IODDs
- Freely available for download from Industry Online Support¹⁾

IO-Link Call function block

STEP 7 function block for easy acyclical data exchange in the user program

Freely available for download from Industry Online Support²⁾

IO-Link Call function block



WinCC flexible

WinCC flexible template project

Easy integration of IO-Link devices into the user program by using ready-made WinCC flexible templates

Freely available for download from Industry Online Support³⁾

template project

IODD files

IO-Link Device Description (IODD) files provide the device description for IO-Link

- Comprehensive IODD catalog of SIEMENS IO-Link
- Freely available for download from Industry Online Support⁴⁾

3-wire standard cable

IO-Link devices



K20 input module

Detection with IO-Link

IO-Link input modules

K20 input module

- 4 inputs, M12 connections
- 8 inputs, standard M8 connections

IO-Link devices (continued)



SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF260R

IO-Link RFID systems

SIMATIC RF200 RFID system in the HF range

- SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF260R products
- Simple identification tasks (read-only), such as reading an ID number
- No RFID-specific programming, ideal for those new to RFID
- Simple connection via master modules for IO-Link, such as SIMATIC ET 200S and ET 200eco
- Use with the tried and tested ISO 15693 transponders (MOBY D)

Switching with IO-Link



SIRIUS 3RA27 11 function module for IO-Link

Contactors and contactor assemblies

Power contactors for switching motors

- SIRIUS 3RT2 contactors, 3-pole, up to 18.5 kW
- · Contactor assemblies
- SIRIUS 3RA23 reversing contactor assemblies
- SIRIUS 3RA24 contactor assemblies for wye-delta
- SIRIUS 3RA27 function modules for IO-Link
- For direct-on-line starters, reversing starters and wye-delta starters

See chapter 2

SIRIUS 3RA64 direct-on-line starter

SIRIUS 3RB24 overload relays

Motor starters for use in the control cabinet

SIRIUS 3RA6 compact starters

- 3RA64 direct-on-line starters
- 3RA65 reversing starters
- Infeed systems for 3RA6

See chapter 4

Contactors with IO-Link

Overload relays

SIRIUS 3RB24 solid-state overload relays for IO-Link

- Evaluation module
- Current measuring modules from 0.3 to 630 A
- Controlling direct-on-line, reversing and star-delta starters via IO-Link in conjunction with contactors
- Full motor protection
- Diagnostics and current value transmission via IO-Link

See chapter 3

Monitoring with IO-Link



SIRIUS 3UG48 monitoring relays



SIRIUS 3RS14 temperature monitoring relays



SIRIUS 3RR24 monitoring relays

Monitoring relays

SIRIUS 3UG48 monitoring relays for IO-Link

- Monitoring voltage, current, power, speed or p.f. according to device design
- ON-delay and tripping delay time can be adjusted

See chapter 11

SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link

- Temperature monitoring with connected sensors
- · Two limit values, can be adjusted separately

See chapter 11

SIRIUS 3RR24 monitoring relays for IO-Link · Monitoring of current, phase failure, open circuit and phase sequence

· Designed for mounting on 3RT2 contactors

See chapter 2

¹⁾ http://support.automation.siemens.com/DE/view/en/37936752

²⁾ http://support.automation.siemens.com/DE/view/en/38487085

³⁾ http://support.automation.siemens.com/DE/view/en/38006560

⁴⁾ http://support.automation.siemens.com/DE/view/en/29801139/133100

Introduction

IO-Link specification

Overview

Principles of the IO-Link specification

According to the IO-Link specification, communication functions as follows:

- Transmission takes place via an unshielded three-wire cable no more than 20 m long, of the kind normally used for standard sensors.
- Analog values which have already been digitized are transmitted in the form of message frames, which may correspond to +/- 10 V or 4 to 20 mA.
- Digital communication from 0 to 24 V on the so-called C/Q cable
- Most of the values transmitted are measured values from the sensors which include the units.
- The sensors and actuators are described by the IO-Link Device Description (IODD).
- While the IO-Link specification permits an infinite number of ports, an IO-Link master currently only supports four ports.
 Only one IO-Link device (slave) can be connected to each port (point-to-point connection).
- Transmission parameters between IO-Link master and the devices: 1 start bit. 8 data bits, 1 parity bit and 1 stop bit.
- The transmission rates between IO-Link master and the devices are as follows:
 - via COM1: 4 800 bpsvia COM2: 38 400 bpsvia COM3: 230 400 bps
- The average cycle time is 2 ms for the reading/writing of 16 data bits at a transmission rate of 38 400 bps.

IO-Link protocol

For the dialog between device and master, IO-Link uses a standard protocol, the standard asynchronous communication interface (UART) in "semi-duplex" mode.

The IO-Link protocol supports both the Standard IO mode (SIO) and the IO-Link communication mode (COM).

Interface hardware: compatible with sensors according to IEC 60947-5-2 and actuators Communication and switching possible alternately IO-Link master IO-Link device L+ SIO Standard IO Serial, bidirectional communication SIO / IO-Link

The structure of the protocol and its message frames depends on the types of data to be transmitted.

Data types

In the IO-Link specification a distinction is made between the following data types:

Process data

The process data of the devices are transmitted cyclically in a data frame, provided the process data width does not exceed 2 bytes. In the case of larger process data widths up to 32 bytes, parts are transmitted one after the other in several cycles. As of Version V1.1 of the specification, up to 32 bytes of process data can be transferred in a single cycle.

Service data (SD)

With the aid of the service data, parameter values or device statuses can be read out. It is also possible to write the parameter values or transmit commands via the service data. Service data are always exchanged acyclically and in response to an inquiry from the IO-Link master.

Events

Via events it is possible to transmit device events or statuses such as contamination, overheating, short circuits etc., from the the device via the IO-Link master to the PLC or to visualize them.

The events are sent on the initiative of the devices via the "event flag", which the master evaluates. The master itself can also generate events.

Three categories of event are defined:

- Error signals (errors)
- Maintenance data (warnings)
- Device functions (notifications)

M-sequence (message frames)

Parameter data, events and process data can be transmitted either in an M-sequence (message frame) or in separate M-sequences (message frame).

Data storage

As of Specification V1.1, a data storage concept has been created for IO-Link. In this concept, the IO-Link device initiates the storage of its data on a higher-level parameter server. In the event that a device is replaced, the parameter server can restore the original parameterization. It is therefore possible to replace the devices without re-parameterization.

The IO-Link master can contain the parameter server. The parameter server can also be implemented centrally in the PLC or in a system server. In this case the IO-link master passes on the corresponding information.

IO-Link master

The IO-Link master is the interface to higher-level control systems. The IO-Link master presents itself as a normal fieldbus node, and is integrated into the appropriate network configurator via the relevant device description (e. g. GSD, FDCML, EDS etc.).

IO-Link Device Description (IODD)

The IO-Link Device Description (IODD) has been defined to provide a full, transparent description of system characteristics as far as the IO-Link device. It is based on the open XML standard.

The IODD contains information on communication characteristics, device parameters, identification, process and diagnostics data, and is supplied by the manufacturer. The design of the IODD is the same for all devices from all manufacturers, and is always presented in the same way by the IODD Interpreter Tools. This therefore ensures that the handling is the same for all IO-Link devices, whatever the manufacturer.

New in IO-Link specification 1.1

The IO-Link specification is currently available in Version 1.1, and is currently standardized as IEC 61131-9 (CDV).

Specification 1.1 offers the following new features compared with the previous specification 1.0:

- New variable M-sequences allow transmission of up to 32 bytes of process or service data in a single cycle.
- Data storage concept

LOGO! Logic Module & SITOP Power Supplies

Contents Pages
LOGO! Programmable Relays Introduction
LOGO! Modular Basic Variants LOGO! 24, 12/24RC, 24RC, 230RC
LOGO! Modular Pure Variants
LOGO! 24Co, 12/24RCo, 24RCo, 230RCo 15/5 - 15/64 LOGO! Modular Expansion Modules
LOGO! DM8 24, DM8 12/24R, DM8 24R, DM8 230R . 15/7 LOGO! DM16 24, DM16 24R, DM16 230R
LOGO! Contact & LOGO! TD
LOGO! Power
LOGO! Software
SITOP Power Supplies & Power Security Components Introduction
Low Wattage, Single Phase Power Supplies (15 - 96 Watts)15/12 - 15/13
Basic, Single Phase Power Supplies (36 - 300 Watts)
Standard, Single Phase Power Supplies (60 - 960 Watts)15/16 - 15/17
Standard, Three Phase Power Supplies (120 - 960 Watts)
Special design power supplies in Single and Three Phase (30 - 720 Watts)15/20 - 15/21
Expansion Modules: Signaling, Redundancy, Buffer, & Diagnostic Modules
DC Uninterruptible Power Supplies 15/23 - 15/26
SIMATIC Net Ethernet Infrastructure Components Overview 15/27

4

5

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8

10

11

2

13

14

LOGO! logic module

Introduction

LOGO! logic module

Overview



LOGO! logic module

- The compact, easy-to-use and low-cost solution for simple control tasks
- Compact, easy to operate, universally applicable without accessories
- "All in one": Integrated display and operator panel
- 36 different functions can be connected at the click of a button or by means of PC software; up to 130 times over
- Functions are easily changed at the press of a key. No more time-consuming rewiring

LOGO! modular basic variants

Overview



- The space-saving basic variants
- Interface for the connection of expansion modules, up to 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! text display TD (can be connected to all LOGO! 0BA6 basic variants)

New in LOGO! 0BA7 variants:

- Ethernet interface for communication with SIMATIC Controller, SIMATIC Panel and PC
- Networking of max. 8 LOGO! devices
- Use of standard SD card or SIMATIC memory card

Ordering data	Order No.		Order No.
LOGO! logic module 24C	6ED1 052-1CC01-0BA6	LOGO! logic module 230RC	6ED1 052-1FB00-0BA6
24 V DC power supply, 8x 24 V DC digital inputs, of which 4 can be used in analog mode (0 to 10 V), 4x 24 V DC digital outputs, 0.3 A, integral time switch; 200 function blocks can be inter- linked,		115/230 V AC/DC power supply, 8x 115/230 V AC/DC digital inputs, 4x 10 A relay outputs, integral time switch; 200 function blocks can be inter- linked, modular expansion capability	6ED1 052-1MD00-0BA7
modular expansion capability LOGO! logic module 12/24RC	6ED1 052-1MD00-0BA6	12/24 V DC power supply,	CEST COL TIMESCO CENT
12/24 V DC power supply, 8x 12/24 V DC digital inputs, of which 4 can be used in analog mode (0 to 10 V) 4x 10 A relay outputs, integral time switch; 200 function blocks can be inter- linked, modular expansion capability	0ED1 032-1MID00-0BA0	8x 12/24 V DC digital inputs, of which 4 can be used in analog mode (0 to 10 V) 4x 10 A relay outputs, integral time switch; 400 function blocks can be interlinked, Ethernet interface, modular expansion capability	
LOGO! logic module 24RC	6ED1 052-1HB00-0BA6	LOGO! logic module 230RCE	6ED1 052-1FB00-0BA7
24 V AC/DC power supply, 8x 24 V AC/DC digital inputs, 4x 10 A relay outputs, integral time switch; 200 function blocks can be inter- linked, modular expansion capability		115/230 V AC/DC power supply, 8x 115/230 V AC/DC digital inputs, 4x 10 A relay outputs, integral time switch; 400 function blocks can be inter- linked, Ethernet interface, modular expansion capability	

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LOGO! logic module LOGO! modular

LOGO! modular basic variants

Ordering data	Order No.		Order No.
Accessories		LOGO! PC cable	6ED1 057-1AA00-0BA
LOGO! TD text display	6ED1 055-4MH00-0BA0	For program transfer between	
4-line text display, can be con-		LOGO! and the PC	
nected to all LOGO! 0BA6 Basic and Pure versions, including con-		LOGO! USB PC cable	6ED1 057-1AA01-0B
necting cable		For transferring the program between LOGO! and PC,	
LOGO! Manual		including driver on CD-ROM	
German	6ED1 050-1AA00-0AE8	LOGO! modem cable	6ED1 057-1CA00-0B
English	6ED1 050-1AA00-0BE8	Adapter cable for analog modem	
French	6ED1 050-1AA00-0CE8	communication	
Spanish	6ED1 050-1AA00-0DE8	Front panel mounting set	
Italian	6ED1 050-1AA00-0EE8	Width 4 MW	6AG1 057-1AA00-0A
Chinese	6ED1 050-1AA00-0KE8	Width 4 MW, with keys	6AG1 057-1AA00-0A
LOGO! Memory Card	6ED1 056-1DA00-0BA0	Width 8 MW	6AG1 057-1AA00-0A
Program module for copying, with know-how protection		Width 8 MW, with keys	6AG1 057-1AA00-0A
LOGO! battery card	6ED1 056-6XA00-0BA0		
Battery module for backing up the integral real-time clock (not LOGO! 24)			
LOGO! memory/battery card	6ED1 056-7DA00-0BA0		
Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 24)			
LOGO! PROM	6AG1 057-1AA01-0BA6		
Programming device used to simultaneously reproduce program module contents on up to 8 program modules			
LOGO!Soft Comfort V7.0	6ED1 058-0BA02-0YA1		
For programming on the PC in LAD/FBD; executes on Windows 7, VISTA, XP, NT4.0, 2000, 98SE, Linux and MAC OSX; on CD-ROM			
LOGO!Soft Comfort V7.0 upgrade	6ED1 058-0CA02-0YE1		
Upgrade from V1.0 to V7.0			

LOGO! modular pure variants

Overview



- The cost-optimized basic variants
- Interface for the connection of expansion modules, up to 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! 0BA6 basic variants)

Ordering data	Order No.	
LOGO! logic module 24Co	6ED1 052-2CC01-0BA6	Accesso
24 V DC power supply, 8 digital inputs 24 V DC, of which 4 can be used in analog mode (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A, integrated time switch;		4-line text connected and Pure necting (
without display and keyboard; 200 function blocks can be inter- linked,		SIPLUS (extende
modular expansion capability		-10 +6
LOGO! logic module 12/24RCo	6ED1 052-2MD00-0BA6	4-line tex
12/24 V DC power supply, 8 digital inputs 12/24 V DC, of which 4 can be used in analog		and Pure
mode (0 to 10 V),		LOGO! I
4 relay outputs 10 A, integral time switch;		German
without display and keyboard; 200 function blocks can be inter-		English
linked,		French
modular expansion capability		Spanish
LOGO! logic module 24RCo	6ED1 052-2HB00-0BA6	Italian
24 V AC/DC power supply, 8 digital inputs 24 V AC/DC,		Chinese
4 relay outputs 10 A,		LOGO! I
integral time switch; without display and keyboard; 200 function blocks can be inter-		Program with kno
linked, modular expansion capability		LOGO! I
LOGO! logic module 230RCo	6ED1 052-2FB00-0BA6	Battery r up the in
115/230 V AC/DC power supply, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integral time clock; without display and keyboard; 200 function blocks can be inter- linked, modular expansion capability		(not LOG

	Order No.
Accessories	
LOGO! TD text display	6ED1 055-4MH00-0BA0
4-line text display, can be connected to all LOGO! 0BA6 Basic and Pure versions, including connecting cable	
SIPLUS LOGO! TD text display	6AG1 055-4MH00-2BA0
(extended temperature range -10 +60 °C and medial loading)	
4-line text display, can be connected to all LOGO! 0BA6 Basic and Pure versions, including connecting cable	
LOGO! Manual	
German	6ED1 050-1AA00-0AE8
English	6ED1 050-1AA00-0BE8
French	6ED1 050-1AA00-0CE8
Spanish	6ED1 050-1AA00-0DE8
Italian	6ED1 050-1AA00-0EE8
Chinese	6ED1 050-1AA00-0KE8
LOGO! Memory Card	6ED1 056-1DA00-0BA0
Program module for copying, with know-how protection	
LOGO! battery card	6ED1 056-6XA00-0BA0
Battery module for backing up the integral real-time clock (not LOGO! 24)	

LOGO! logic module LOGO! modular

LOGO! modular pure variants

Selection and ordering data (continued)

LOGO! memory/battery card	6ED1 056-7DA00-0BA0
Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 240)	
LOGO! PROM	6AG1 057-1AA01-0BA6
Programming device used to simultaneously reproduce program module contents on up to 8 program modules	
LOGO!Soft Comfort V7.0	6ED1 058-0BA02-0YA1
For programming on the PC in LAD/FBD; executes on Windows 7, VISTA, XP, NT4.0, 2000, 98SE, Linux and MAC OSX; on CD-ROM	
LOGO!Soft Comfort V7.0 upgrade	6ED1 058-0CA02-0YE1
Upgrade from V1.0 to V7.0	

LOGO! PC cable	6ED1 057-1AA00-0BA0
For program transfer between LOGO! and the PC	
LOGO! USB PC cable	6ED1 057-1AA01-0BA0
For transferring the program between LOGO! and PC, including driver on CD-ROM	
LOGO! modem cable	6ED1 057-1CA00-0BA0
Adapter cable for analog modem communication	
LOGO! Starter kits (0BA6)	
LOGO! TD Starter kit	
Language-neutral with LOGO! 12/24RCo + LOGO! TD	6ED1 057-3BA10-0AA6

LOGO! modular expansion modules

Overview



- Expansion modules for connection to LOGO! modular
- With digital inputs and outputs, analog inputs, or analog outputs

Ordering data	Order No.
LOGO! DM8 24	6ED1 055-1CB00-0BA0
Supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A	
LOGO! DM16 24	6ED1 055-1CB10-0BA0
Supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 digital outputs 24 V DC, 0.3 A	
LOGO! DM8 12/24R	6ED1 055-1MB00-0BA1
Supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A	
LOGO! DM8 24R	6ED1 055-1HB00-0BA0
Supply voltage24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A	
LOGO! DM16 24R	6ED1 055-1NB10-0BA0
Supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A	
LOGO! DM8 230R	6ED1 055-1FB00-0BA1
Supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A	
LOGO! DM16 230R	6ED1 055-1FB10-0BA0
Supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 8 relay outputs 5 A	
LOGO! AM2	6ED1 055-1MA00-0BA0
Supply voltage 12/24 V DC, 2 analog inputs 0 10 V or 0 20 mA, 10-bit resolution	
LOGO! AM2 PT 100	6ED1 055-1MD00-0BA1
Supply voltage 12/24 V DC, 2 analog inputs Pt100, temperature range -50 °C 200 °C	
LOGO! AM2 AQ	6ED1 055-1MM00-0BA1
Supply voltage 24 V DC, 2 analog outputs 0 to 10 V, 0/4 to 20 mA	

	Order No.
Accessories	
LOGO! Manual	
German	6ED1 050-1AA00-0AE8
English	6ED1 050-1AA00-0BE8
French	6ED1 050-1AA00-0CE8
Spanish	6ED1 050-1AA00-0DE8
Italian	6ED1 050-1AA00-0EE8
Chinese	6ED1 050-1AA00-0KE8
LOGO! Memory Card	6ED1 056-1DA00-0BA0
for copying, with know-how protection	
LOGO!Soft Comfort V7.0	6ED1 058-0BA02-0YA1
For programming on the PC in LAD/FBD; executes on Windows 7, VISTA, XP, NT4.0, 2000, 98SE, Linux and MAC OSX; on CD-ROM	
LOGO!Soft Comfort V7.0 upgrade	6ED1 058-0CA02-0YE1
Upgrade from V1.0 to V7.0	
LOGO! PC cable	6ED1 057-1AA00-0BA0
For program transfer between LOGO! and the PC	

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LOGO! contact & LOGO! TD

Overview



Ordering Data LOGO!Contact

Order No.

Module for direct switching of resistive consumers up to 20 A and motors up to 4 kW

Switching voltage 24 V Switching voltage 230 V 6ED10574CA000AA0 6ED10574EA000AA0

 Switching module for the direct switching of resistive loads and motors



LOGO! TD Text Display

6ED10554MH000BA0

- 4-line backlit LCD, 128x64 pixel resolution
- 24 VDC/VAC input voltage, includes connecting cable (2.5M) & mounting hardware
- 6 screen navigation keys and 4 user function buttons
- Power-on screen and backlight activate function
- Text, numeric display and timer/counter set point changes
- Advanced bar-graph and text ticker features

LOGO! Power

Overview



The flat power supply unit for distribution boards

The new miniature power supply units now offer even greater performance in the smallest space: The efficiency has been improved across the entire load range, and the power loss in no-load operation has been cut in half. The wide-range input now also allows operation with direct voltage, the switch-on behavior has been optimized for capacitive loads, and the operating temperature range has been extended to +70 °C. The power supplies with logic module design can be used extremely flexibly in numerous applications – thanks to their flat, stepped profile in distribution boards, for example.

Essential product features

- 2 performance classes, each with 5 V, 12 V, and 15 V
- 3 performance classes with 24 V
- Flat LOGO! design
- Wide-range input for 85 V to 264 V AC or 110 V to 300 V DC
- Constant current for connection of loads with high inrush current
- Power reserve on starting up through 1.5 times the rated current for capacitive loads
- Adjustable output voltage
- Green LED for "Output voltage OK"
- Temperature range from -20 °C to +70 °C
- Comprehensive certification, e.g. ATEX and GL

Ordering data	Order No.		Order No.
LOGO!Power 5 V		LOGO!Power 15 V	
Stabilized power supply; output: 5 V DC/3 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 311-1SH03	Stabilized power supply; output: 15 V DC/1.9 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 351-1SH03
Stabilized power supply; butput: 5 V DC/6.3 Å Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 311-1SH13	Stabilized power supply; output: 15 V DC/4 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 352-1SH03
LOGO!Power 12 V		LOGO!Power 24 V	
Stabilized power supply; output: 12 V DC/1.9 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 321-1SH03	Stabilized power supply; output: 24 V DC/1.3 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 331-1SH03
Stabilized power supply; output: 12 V DC/4.5 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 322-1SH03	Stabilized power supply; output: 24 V DC/2.5 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 332-1SH43
		Stabilized power supply; output: 24 V DC/4 A • Input rated value: 100 240 V AC; extended operating temperature range: up to +70 °C	6EP1 332-1SH52

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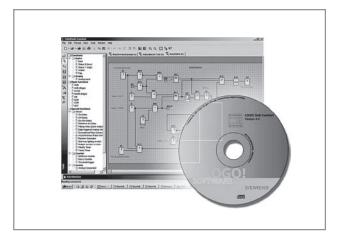
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LOGO! Power

LOGO! software

Overview



- The user-friendly software for creating control programs on a PC
- Creation of control programs in Function Block Diagram (FBD) or Ladder Diagram (LAD)
- Plus testing, simulation, online testing and archiving of control programs
- Professional documentation via numerous comment and print functions

Minimum system requirements

Windows 98 SE, NT 4.0, ME, 2000, XP (32 bit), Vista or 7 (32/64 bit)

- PC Pentium.
- 90 MB free disk capacity.
- 64 MB RAM.
- SVGA graphics card with minimum resolution 800x600 (256 colors).

Mac OS X

- Mac OS X 10.4 with J2SE 1.5.0
- Mac OS X 10.5 with J2SE 1.6.0
- PowerMac G3, G4, G4 Cube, IMac, PowerBook G3, G4 or iBook.

Linux

- Tested with SUSE Linux 10 SP2, kernel 2.6.16
- Runs on all Linux distributions on which the Java 2 SDK Version 1.3.1 runs.
- Please refer to your relevant Linux distribution for the necessary hardware requirements.

Ordering data	Order No.
LOGO!Soft Comfort V7.0	6ED1 058-0BA02-0YA1
For programming on the PC in LAD/FBD; executes on Windows 7 (32/64 bit), VISTA, XP, NT4.0, 2000, 98SE, Linux and MAC OSX; on CD-ROM	
LOGO!Soft Comfort V7.0 upgrade	6ED1 058-0CA02-0YE1
Upgrade from V1.0 to V7.0	

Switched Mode Regulated Technology

Introduction

DC Power supplies for single phase applications 15 watts to 96 watts





- Wide input voltage range on AC and DC networks for wide range of application uses, worldwide
- Output voltages of 5, 12, 15, or 24 VDC
- Wide operating temperature range from -20° to +70° C
- Worldwide agency approvals allow for universal applications

DC Power supplies for standard and demanding single phase applications 60 watts to 960 watts





- SITOP Smart available in 12 VDC or 24 VDC output voltages
- SITOP Modular 5A and 10A can be used on single phase and three phase networks
- Built-in relay contact for feedback to upper level control system for most units
- SITOP Smart 24 VDC/10A wall-mount version available for high shock and vibration requirements
- Comprehensive certifications for HazLoc and Marine applications
- Great for use with power security add-on modules

Power Security Add-ons









- The signaling module with signal contacts and remote ON/OFF function optimally integrates SITOP modular devices without integral signaling contact into automated plants.
- For maximum availability, the redundancy module decouples SITOP power supplies of the same type.
- The buffer module bridges short power failures up to 3 seconds with capacitors as energy storage.
- The SITOP select diagnosis and the newer, selectivity module offer selective protection of individual 24 V paths against overload and short-circuits. With this protection and by means of fast fault localization, downtimes can be reduced to a minimum.

DC Power Supplies for basic, single phase applications 36 watts to 300 watts



- Designed for basic applications that require switched-mode, regulated technology at a competitive price.
- SITOP Lite available in 24 VDC 2.5A, 5A, or 10 A
- SITOP Direct Mount available in 12 VDC and 24 VDC output voltages up to 300 Watts
- SITOP Direct Mount: direct wall mounting, allowing for variable mounting positions

DC Power Supplies for three-phase applications 120 watts to 960 watts





- Robust metal housing and metal DIN rail clip
- SITOP Smart available in 24 VDC 10A, 20A, or 40A
- SITOP Modular available in 24VDC and 48VDC output voltages
- Integrated signaling contact for "24 V OK", high efficiencies, and slim, compact design
- Extra power of 150% for brief operational overloads for most units. SITOP Modular units feature power boost of 300% for 25ms for tripping protective devices.
- Great for use with power security add-on modules

DC Uninterruptible Power Supplies









- DC UPS Modules (6A, 15A or 40A) in conjunction with battery modules (ranging from 1.2 Ah to 12 Ah) offer high security and availability of the power network
- DC UPS with capacitor back-up with with integrated energy storage 2.5 or 5 kWs, combinable with up to three expansion modules for absolutely maintenance free back-up thanks to high-capacity double layer capacitors
- The new DC UPS 1600 modules now offer reliable back-up in conjunction with DC UPS 1100 battery modules in 1.2, 3.2, or 7 Ah with even more possibilities for diagnostics and system integration thanks to an integrated web server and the option of an Ethernet/PROFINET interface

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Low Wattage, Single Phase Switched-Mode Technology

LOGO! Power:

The flat power supply unit for distribution boards

Overview

These miniature power supply units offer great performance in a small space. They feature high efficiencies across the entire load range and lower power losses in no-load operation. The wide-range input allows operation on both AC and DC networks and the switch-on behavior has been optimized for capacitive loads. The operating temperature range has been extended to -20°C to +70°C allowing these power supplies with logic module design to be used in numerous applications - particularly suited for use in distribution boards thanks to their flat, stepped profile.

- 2 peformance classes each for 5 VDC, 12 VDC, and 15 VDC
- 3 performance classes for 24 VDC units
- Flat, stepped profile design
- Wide-range input for 85 264 VAC or 110 300 VDC
- Constant current for connection of loads with high inrush current
- Power reserve on starting up through 1.5x rated current

	Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
	5	3	15	85264 VAC 110300 VDC	54x90x55	-20°C+70°C	77%	Constant Current	CE, cULus, GL, ABS, ATEX, NEC Class2, Class I Div 2, FM	6EP1311-1SH03
The state of	12	1.9	23	85264 VAC 110300 VDC	54x90x55	-20°C+70°C	80%	Constant Current	CE, cULus, FM, GL, ABS, ATEX, NEC Class 2, Class I Div 2	6EP1321-1SH03
	15	1.9	29	85264 VAC 110300 VDC	54x90x55	-20°C+70°C	80%	Constant Current	CE, cULus, cCSAus, ATEX, Class I Div 2, GL , ABS	6EP1351-1SH03
	24	1.3	31	85264 VAC 110300 VDC	54x90x55	-20°C+70°C	85%	Constant Current	CE, cULus, FM, GL, ABS, ATEX, NEC Class 2, Class I Div 2	6EP1331-1SH03
The same of the sa	5	6.3	32	85264 VAC 110300 VDC	72x90x55	-20°C+70°C	83%	Constant Current	CE, cULus, GL, ABS, ATEX, Class I Div 2	6EP1311-1SH13
	12	4.5	54	85264 VAC 110300 VDC	72x90x55	-20°C+70°C	85%	Constant Current	CE, cULus, cCSAus, ATEX, Class I Div 2, GL, NEC Class 2	6EP1322-1SH03
	15	4	60	85264 VAC 110300 VDC	72x90x55	-20°C+70°C	85%	Constant Current	CE, cULus, FM, GL, ABS, ATEX, cCSAus Class I Div 2, NEC Class 2	6EP1352-1SH03
	24	2.5	60	85264 VAC 110300 VDC	72x90x55	-20°C+70°C	88%	Constant Current	CE, cULus, FM, GL, ABS, ATEX, cCSAus Class I Div 2	6EP1332-1SH43
	24	4	96	85264 VAC 110300 VDC	90x90x55	-20°C+70°C	89%	Constant Current	CE, cULus, cCSAus, ATEX, Class I Div 2, GL	6EP1332-1SH52

Low Wattage, Single Phase Switched-Mode Technology

SITOP Compact: The slim power supply unit for control boxes

Overview

Thanks to the extremely space-saving slim design, this power supply series for lower performance ranges is especially suited to distributed applications in control boxes or in small control cabinets. These power supplies are characterized by their low power losses throughout the load range. The losses are extremely low even while idling, which makes them great for supply machines and plants which are frequently in stand-by mode. These power supply units have a wide range input for AC and DC networks and plug-in terminals that facilitate the electrical connection.

- Small mounting surface thanks to its slim design
- Wide-range input for 85 264 VAC or 110 300 VDC
- Low energy consumption during no-load operation or stand-by
- High efficiency across the entire load range
- Up to 28% energy savings in comparison to similar devices
- Plug-in terminals for easy electrical connection

Selection and ordering data

Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
24	0.6	14	85264 VAC 110300 VDC	22.5x80x100	-20°C+70°C	82%	Auto Restart	CE, cULus, cCSAus, ATEX, Class I Div 2 GL, ABS, NEC Class 2	6EP1331-5BA00
12	2	24	85264 VAC 110300 VDC	30x80x100	-20°C+70°C	82%	Auto Restart	CE, cULus, cCSAus, ATEX, Class I Div 2, GL ABS	6EP1321-5BA00
24	1.3	31	85264 VAC 110300 VDC	30x80x100	-20°C+70°C	86%	Auto Restart	CE, cULus, cCSAus, ATEX, Class I Div 2, GL, ABS, NEC Class 2	6EP1331-5BA10
24	2.5	60	85264 VAC 110300 VDC	45x80x100	-20°C+70°C	89%	Auto Restart	CE, cULus, cCSAus, ATEX, Class I Div 2, GL, ABS, NEC Class 2	6EP1332-5BA00
12	6.5	78	85264 VAC 110300 VDC	52.5x80x100	-20°C+70°C	85%	Auto Restart	CE, cULus, cCSAus, ATEX, Class I Div 2, GL, ABS	6EP1322-5BA10
24	3.7	89	85264 VAC 110300 VDC	52.5x80x100	-20°C+70°C	87%	Auto Restart	CE, cULus, cCSAus, ATEX, NEC Class 2, GL, ABS, Class I	6EP1332-5BA20
24	4	96	85264 VAC 110300 VDC	52.5x80x100	-20°C+70°C	88%	Auto Restart	CE, cULus, cCSAus, ATEX, Class I Div 2, GL, ABS	6EP1332-5BA10

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Basic, Single Phase Switched-Mode Technology

SITOP Lite: Low-cost basic power supply

Overview

This new range of power supplies is designed for standard requirements in industrial environments and offers all important functions at a favorable price, of course without compromising quality and the proverbial SITOP reliability. The wide range input with manual switchover supports connection to a wide range of 1-phase supply systems.

Thanks to the narrow width, the primary switched-mode units require little space on the DIN rail, and the good efficiency results in low thermal losses in the control cabinet. Short-circuit and overload protection as well as UL approval for export ensure problem- free use.

- 24 VDC/ 2.5A, 5A,10A for industrial applications with standard requirements
- 1-phase wide-range input with manual switch-over
- Narrow mounting width
- High degree of efficiency
- Parallel connection possible
- Ambient temperature range of 0...+60°C (above +45°C with derating)

Selection and ordering data

	Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
	24	2.5	60	85132/ VAC 170264 VAC (manual switch)	32.5x125x125	0°C+60°C	85%	Constant Current	CE, cULus	6EP1332-1LB00
NOTICE STORE STORE	24	5	120	85132/ VAC 170264 VAC (manual switch)	50x125x125	0°C+60°C	86%	Constant Current	CE, cULus	6EP1333-1LB00
Tourse source	24	10	240	85132/ VAC 170264 VAC (manual switch)	70x125x125	0°C+60°C	90%	Constant Current	CE, cULus	6EP1334-1LB00

Basic, Single Phase Switched-Mode Technology

SITOP Direct Mount:
Cost-effective power supply for wall mounting

Overview

This attractively priced regulated power supplies can be screwed directly onto the wall. The rugged aluminum enclosure with IP20 degree of protection can be variably mounted in different positions, even in applications with high temperatures and high shock and vibration requirements.

The wide-range input enables connectivity to the most diverse supply networks worldwide and ensures reliable 12 V DC or 24 V DC supply even if there are large voltage fluctuations. Short circuit and overload protection as well as international certifications ensure problem free and universal use.

- Wall mounting for variable mounting positions
- Aluminum, IP 20 enclosure
- High shock and vibration resistance for harsh environments
- 1 phase wide-range input 85..264 VAC
- UL 508 rated

Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
12	3	36	85264 VAC	97x98x38	-10°C+70°C	84%	Auto Restart	CE, cULus,	6EP1321-1LD00
							nestart	COnus	
24	2.1	50	85264 VAC	97x128x38	-10°C+70°C	86%	Auto Restart	CE, cULus, cURus	6EP1331-1LD00
24	3.1	74	85264 VAC	97x128x38	-10°C+70°C	86%	Auto Restart	CE, cULus, cURus	6EP1332-1LD00
12	8.3	100	85264 VAC	97x158x38	-10°C+70°C	84%	Auto Restart	CE, cULus, cURus	6EP1322-1LD00
24	4.1	98	85264 VAC	97x158x38	-10°C+70°C	86%	Auto Restart	CE, cULus, cURus	6EP1332-1LD10
24	6.2	149	85264 VAC	97x178x38	-10°C+70°C	86%	Auto Restart	CE, cULus, cURus	6EP1333-1LD00
24	12.5	300	85264 VAC	105x199x38	-10°C+70°C	86%	Auto Restart	CE, cULus, cURus	6EP1334-1LD00

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Standard, Single Phase Switched-Mode Technology

SITOP Smart:

The powerful standard power supply

Overview

SITOP smart is the optimum power supply for standard applications in 12 VDC or 24 VDC. They offer compact dimensions, a strong performance, and a favorable price. Despite its compactness it offers an outstanding overload withstand capability. Thanks to the extra power feature with 1.5 times the rated current for 5 seconds, even large loads can be switched on without any problems. With a continuous rated power of 120 percent, the slim power supply units are among the most reliable of their kind. Numerous certifications facilitate the universal and global use and permit their use in hazardous areas.

- Output voltages in 12 VDC or 24 VDC
- All 24 VDC units feature 120% continuous overload at 45°C or less
- All units with extra power of 1.5x rated current for 5s/min
- All 12 VDC and 24 VDC units (except the Wallmount variation) feature automatic input range detection and an integrated relay contact
- SITOP Smart Wallmount 24V/10 A version for applications that require high shock and vibration

Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
24	2.5 3 (to 45°C)	60	85132/ VAC 170264 VAC (automatic switch	32.5x125x125	-10°C+70°C	85%	Constant Current	CE, cULus, ATEX, GL, Class I Div 2	6EP1332-2BA
24	5 6 (to 45°C)	120	85132/ VAC 170264 VAC (automatic switch	50x125x125	-10°C+70°C	88%	Constant Current	CE, cULus, ATEX, GL, Class I Div 2	6EP1333-2BA
12	7	84	85132/ VAC 170264 VAC (automatic switch	50x125x125	-10°C+70°C	84%	Constant Current	CE, cULus, ATEX, GL, Class I Div 2	6EP1322-2BA
24	10 12 (to 45°C)	240	85132/ VAC 170264 VAC (automatic switch	70x125x125	-10°C+70°C	87%	Constant Current	CE, cULus, ATEX, GL, Class I Div 2	6EP1334-2BA
12	14	168	85132/ VAC 170264 VAC (automatic switch	70x125x125	-10°C+70°C	87%	Constant Current	CE, cULus, ATEX, GL, Class I Div 2	6EP1323-2BA
 24	10 12 (to 45°C)	240	85132/ VAC 170264 VAC (automatic switch	70x125x125	0°C+60°C	90%	Constant Current	CE, UL, CSA, ATEX, GL, Class I Div 2	6EP1334-2AA 0AB0
24	20 24 (to 45°C)	480	85132/ VAC 170264 VAC (automatic switch	115x145x150	0°C+70°C	90%	Auto Restart	CE, UL, CSA, ATEX, GL, Class I Div 2	6EP1336-2BA

Standard, Single Phase Switched-Mode Technology

SITOP Modular: The technology power supply for demanding solutions

Overview

SITOP modular fulfills the highest functionality requirements, e.g. for use in complex plants and machines. The wide-range input allows a connection to almost any electrical power system worldwide and ensures a high degree of safety even if there are large voltage fluctuations. The power boost provides up to three times the rated current for brief periods. In the event of an overload, you have two options: Constant current with automatic restart or latching shutdown. The newly innovated PSU100M features a DC input voltages and an integrated signaling contact.

- SITOP Modular 5A and 10A feature extra wide input voltage range for uses on either 1-phase or 3-phase networks in one unit
- SITOP Modular PSU100M 24V/20A features integrated relay contact, DC input voltage range, and high efficiency of 93%
- All units feature power boost of 3x rated current for 25ms
- Load sharing functionality makes this the ideal product for use with power security add-ons (e.g. Redundancy Modules)

Selection and ordering data

	Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
dous !!	24	5	120	85264 VAC/ 176550 VAC (manual switch)	70x125x125	-25°C+70°C	87%	Constant Current or Latching Shutdown	CE, cULus, GL, ABS, ATEX, Class I Div 2, SEMI F471)	6EP1333-3BA00
dens ii	24	10	240	85264 VAC/ 176550 VAC (manual switch)	90x125x125	-25°C+70°C	87%	Constant Current or Latching Shutdown	CE, cULus, GL, ABS, ATEX, Class I Div 2, SEMI F471)	6EP1334-3BA00
	24	20	480	85275 VAC 88350 VDC	90x125x125	-25°C+70°C	93%	Constant Current or Latching Shutdown	CE, cULus, GL, ABS, ATEX, Class I Div 2	6EP1336-3BA10
	24	20	480	85132/ VAC 176264 VAC (manual switch)	160x125x125	0°C+70°C	89%	Constant Current or Latching Shutdown	CE, cULus, GL, ABS, ATEX	6EP1336-3BA00
The same	24	40	960	85132/ VAC 176264 VAC (manual switch)	240x125x125	0°C+70°C	88%	Constant Current or Latching Shutdown	CE, cULus, ATEX	6EP1337-3BA00

 $^{^{\}mbox{\scriptsize 1)}}$ At input voltage 208 to 230 VAC

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Standard, Three Phase Switched-Mode Technology

SITOP Smart:

The powerful standard power supply

Overview

SITOP smart is the optimum power supply for many applications in 24 VDC. They offer compact dimensions, a strong performance, and a favorable price. Despite its compactness it offers an outstanding overload withstand capability.

Thanks to the extra power feature with 1.5 times the rated current for 5 seconds, even large loads can be switched on without any problems. With a continuous rated power of 120 percent, the slim power supply units are among the most reliable of their kind. Numerous certifications facilitate the universal and global use and permit their use in hazardous areas.

- Output voltages in 24 VDC
- All units feature 120% continuous overload at 45°C or less.
- All units feature extra power of 1.5x rated current for 5s/min
- All units with built-in signaling contact for "24 V DC ok"
- Robust metal housing and metal DIN rail clip
- Expandable with power security add-on components

Selection and ordering data											
		Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
	Smart Fa	mily									
		24	10	240	340550 V 3 AC	90x145x150	0°C+70°C	91%	Auto Restart	CE, cULus, ATEX, Class I Div 2, GL	6EP1434-2BA10
_		24	20	480	340550 V 3 AC	90x145x150	0°C+70°C	91%	Auto Restart	CE, cULus, ATEX, Class I Div 2, GL	6EP1436-2BA10
		24	40	960	340550 V 3 AC	150x145x150	0°C+70°C	91.5%	Auto Restart	CE, cULus, ATEX, Class I Div 2, GL	6EP1437-2BA20

Standard, Three Phase Switched-Mode Technology

SITOP Modular: The technology power supply for demanding solutions

Overview

SITOP modular fulfills the highest functionality requirements,e.g. for use in complex plants and machines. The wide-range input allows a connection to almost any electrical power system worldwide and ensures a high degree of safety even if there are large voltage fluctuations.

The power boost provides up to three times the rated current for brief periods. In the event of an overload, you have two options: Constant current with automatic restart or latching shutdown. The newly innovated PSU300M features a DC input voltages and an integrated signaling contact.

- SITOP Modular 5A and 10A feature extra wide input voltage range for uses on either 1-phase or 3-phase networks in one unit
- Output voltages in 24 VDC and 48 VDC
- SITOP Modular PSU300M 24V/20A, 24V/40A, 48V/10A features integrated relay contact, extra power of 1.5x rated current, and high efficiency of 93%
- All units feature power boost of 3x rated current for 25ms
- Robust metal housing and metal DIN Rail clip
- Load sharing functionality makes this the ideal product for use with power security add-ons (e.g. Redundancy Modules)

	Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.
lodular										
	24	5	120	85264 VAC/ 176550 VAC (manual switch)	70x125x125	-25°C+70°C	87%	Contant Current or latching shutdown	CE, cULus, GL, ABS, ATEX, Class I Div 2, SEMI F471)	6EP1333-3BA00
	24	10	240	85264 VAC/ 176550 VAC (manual switch)	90x125x125	-25°C+70°C	87%	Contant Current or latching shutdown	CE, cULus, GL, ABS, ATEX, Class I Div 2, SEMI F471)	6EP1334-3BA00
	24	20	480	320575 V 3 AC	70x125x125	-25°C+70°C	93%	Contant Current or latching shutdown	CE, cULus, GL, ABS, SEMI F47, ATEX, Class I Div 2	6EP1436-3BA10
44	48	10	480	320575 V 3 AC	70x125x125	-10°C+70°C	93%	Constant Current or Latching Shutdown	CE, cULus, GL, ABS, ATEX, Class I Div 2	6EP1456-3BA00
	24	20	480	340550 V 3 AC	160x125x125	0°C+70°C	90%	Auto Restart	CE, UL, CSA, GL, ABS, SEMI F47	6EP1436-3BA00
	24	40	960	320550 V 3 AC	150x125x150	-25°C+70°C	93%	Auto Restart	CE, UL, CSA, GL, ABS, SEMI F47, ATEX, Class I Div 2	6EP1437-3BA10
	24	40	960	340550 V 3 AC	240x125x125	0°C+70°C	90%	Auto Restart	CE, UL, CSA, SEMI F47	6EP1437-3BA00
	48	20	960	340550 V 3 AC	240x125x125	0°C+60°C	90%	Auto Restart	CE, UL, CSA, GL, ABS	6EP1457-3BA00

¹⁾ At input voltage 208 to 230 VAC

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Three Phase Power Supplies in Special Design

SITOP in Special Design: Well prepared for special tasks and conditions

Revised08/01/14

Overview

SITOP PSU300E: three-phase power supply with low output and removable plug-in terminals.

- Sturdy metal enclosure is only 42 mm wide and does not require mounting distances on the sides to other devices
- Low heat generation due to the high efficiency level of 90%
- The wide input range of 320 V to 550 V 3AC allows for mains buffering times of 50 ms, thus enabling use in unstable three-phase systems
- Removable plug-in terminals simplify the connection to AC and DC
- An LED and an integrated "DC 24 V OK" signaling contact indicate the status of the output voltage
- Output voltage can be adjusted from 24 V to 29 V

SITOP PSU300B: three-phase power supply optimized for battery charging

- Available in output in 12 VDC and 24 VDC output voltages
- High efficiencies up to 93%
- Slim, compact design without the need for lateral mounting clearance
- Constant current characteristic makes them optimal for battery charging
- Wide range input for voltages 3AC 320 to 575 V allow for use in traditional three-phase applications

Selection	Selection and ordering data												
	Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short Circuit Protection	Certificates Approvals	Order No.			
PSU300E	Family												
	24	5	120	320575 V 3 AC	42x125x125	0°C+60°C	90%	Auto Restart	CE, cULus, ATEX, cCSAus Class I Div 2, GL	6EP1433-0AA00			
PSU300B	Family												
	12	20	240	320575 V 3 AC	70x125x125	-25°C+60°C	86%	Contant Current or latching shutdown	CE, cULus	6EP1424-3BA00			
	24	17	408	320575 V 3 AC	70x125x125	-25°C+70°C	93%	Contant Current or latching shutdown	CE (cULus pending)	6EP1436-3BA20			
	24	30	720	320575 V 3 AC	150x125x125	-25°C+70°C	93%	Contant Current or latching shutdown	CE, cULus	6EP1437-3BA20			

Single Phase Power Supplies in Special Design

SITOP in Special Design: Well prepared for special tasks and conditions

Overview

SIMATIC Design:

- The original SIMATIC power supplies merge perfectly into the PLC network in terms of their design and functionality.
- SIMATIC S7-200: this flat power supply unit is also used for low installation depths
- SIMATIC S7-1200: the compact PM1207 power module supplies power to the S7-1200 micro PLC.
- SIMATIC S7-300: these innovative power supplies feature automatic switchover on 120/230 VAC networks and a slimmer design than older versions of the PS307
- SIMATIC S7-1500: the compact PM1507 power modules supply power to the newly released, SIMATIC S7-1500 PLC

Other Types:

- DC/DC Converter: features a narrow DIN rail housing and needs a 24 V DC input voltage it can also be used in conjuction with a DC UPS to provided an uninterruptible 12 VDC.
- Dual: the electronics power supply for the control cabinet; the industry-standard rail mounted device has two 15 VDC outputs for loads that may require ±15 V DC
- Flexi: limitless diversity thanks to variable output. Allows flexible adjustment between 3 and 52 VDC so just one standard power supply can be used for different voltages
- PSU400M: compact DC/DC converter with wide DC input voltage range from 200 to 900 VDC. Ideally suited for use with frequency-controlled drive systems

Selection and ordering data

	Output Voltage (V DC)	Output Current (A)	Power (W)	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Certificates Approvals	Order No.
SIMATIC Design									
SIMATIC S7-200	24	3.5	84	85132 V AC/ 176264 VAC (auto switch)	160x80x62	0°C+60°C	84%	CE, cULus	6EP1332-1SH31
SIMATIC S7-1200	24	2.5	60	85132 V AC/ 176264 VAC (auto switch)	70x100x75	0°C+60°C	83%	CE, cULus, ATEX, cCSAus Class I Div 2, GL, ABS	6EP1332-1SH71
SIMATIC \$7-300	24	2	48	85132 V AC/ 170264 VAC (auto switch)	40x125x120	0°C+60°C	84%	CE, cULus, ATEX, cULus Class I Div 2, GL, ABS	6ES7307-1BA01- 0AA0
	24	5	120	85132 V AC/ 170264 VAC (auto switch)	60x125x120	0°C+60°C	86%	CE, cULus, ATEX, cULus Class I Div 2, GL, ABS	6ES7307-1EA01- 0AA0
	24	10	240	85132 V AC/ 170264 VAC (auto switch)	80x125x120	0°C+60°C	90%	CE, cULus, ATEX, cULus Class I Div 2, GL, ABS	6ES7307-1KA02- 0AA0
SIMATIC S7-1500	24	3	72	85132 V AC/ 176264 VAC (auto switch)	50x141x135	0°C+60°C	87%	CE, cULus, FM, ATEX, pending: cULus Class I Div 2, GL, ABS	6EP1332-4BA00
SIMATIC S7-1500	24	8	192	85132 V AC/ 176264 VAC (auto switch)	75x147x135	0°C+60°C	91%	CE, cULus, FM, ATEX, pending: cULus Class I Div 2, GL, ABS	6EP1333-4BA00
Other Types									
DC/DC	12	2.5	30	24 VDC (18.530.2 V DC)	32.5x125x125	0°C+60°C	80%	CE, cULus	6EP1621-2BA00
Dual	2x15	3.5	105	93264 V AC	75x125x125	0°C+60°C	80%	CE	6EP1353-0AA00
Flexi	3.52	10	max 120W	85132 V AC/ 170264 V AC	75x125x125	0°C+60°C	84%	CE, cULus	6EP1353-2BA00
PSU400M	24	20	480	200900 V DC (start-up from 400 V DC)	90x125x125	-25°C +70°C	95%	CE, cULus, GL (ABS pending)	6EP1536-3AA00

Siemens Industry, Inc.

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Power Security Add-On Modules

SITOP Expansion Modules

Overview

A power supply unit on its own cannot guarantee a fault-free 24 V DC supply. Power failures, extreme variations in the mains voltage, or a faulty load can bring plant operation to a standstill and cause high costs. The expansion modules offer everything from extensive protection against interference on the primary and secondary side right up to complete all-round protection.

- Signaling Module: Module for snapping onto the side of the basic unit SITOP modular (6EP1x3x-3BA00, 6EP1457-3BA00); automatic contacting, with floating signaling contacts for "Output voltage o.k." and "Operating readiness o.k."; with signal input for switching the basic unit ON/OFF remotely.
- **Buffer Module**: Module for mains buffering; parallel connection at output of 24 V basic units (6EP1x3x-3BAxx); buffering time 200 ms at 40 A to 1.6 s at 5 A load current; multiplication possible through parallel connection; maximum buffer time 10 s.
- Redundancy Module: Module for redundancy mode. Floating relay contact and green LED for signaling "Infeed 1 and 2 o.k.", switching threshold adjustable between 20 to 25 V DC.
- Selectivity/Select Diagnosis Module: Module for distributing the 24 V DC supply over up to four load circuits and their monitoring for overload; selective shutdown of faulty

Selection and ordering data Power Rated Output Output Dimensions **Ambient** Efficiency Certificates Notes Order No. Voltage Current (WxHxD) Input Temperature Approvals (V DC) (A) Voltage **SITOP Expansion Modules** CE, UL, 6EP1961-3BA10 Signaling N/A N/A Contact 25x125x125 0...+60°C N/A Rating: CSA 240 V AC/ 6 A Buffer 24 40 60 24 V DC 70x125x125 0...+60°C N/A CE, UL, 6EP1961-3BA01 (24...28.8 VDC) CSA, GL ABS, ATEX, Class I Div 2 24 V DC Decouple of 2 5 A or one 10A power supply per redundancy 6EP1964-2BA00 Redundancy 24 10' 30x80x100 -20°...+60°C 97% CE, cULus 48 (19..29 VDC) . module 24 24 V DC Decoupling and limitation of the 6EP1962-2BA00 3.5 30x80x100 -20°...+60°C 95% CE, cULus, (19..29 VDC) NEC Class 2 output to Class 2 limit (100 W) of 2 powèr supplies 5 to 40. Redundancy 24 40' 240 24 V DC 70x125x125 0...+60°C 97% CE, cULus, 6EP1961-3BA21 Decouple of 2 5 to 20 A or (24...28.8 VDC) cCSAus one 40A power supply per redun-Class I Div 2. ATEX, GL, dancy module ABS Selectivity 24 4 x 3A 72 24 V DC 72x80x72 0...+60°C 97% CE, UL, Individual load 6EP1961-2BA11 circuits can be 6EP1961-2BA31** (0.5A...3A) (22...30 VDC) cURus, switched on sequentially. cCSAus Class I Div 2. Status indication via 3-color LED per channel; remote reset with 24 V signal and reset via pushbutton per channel; ATEX, GL (ABS pending) 24 4 x 10 A 24 V DC 72x80x72 0...+60°C 97% CE, UL, 6EP1961-2BA21 192 6EP1961-2BA41** (3A...10 A) (22...30 VDC) cURus, per channel: cCSAus common signal-ing contact Class I Div 2, ATEX, GL (ABS pending) Status indication via 2-color LED per channel; Select Diagnosis CE, UL, 6EP1961-2BA00 12 4 x 10 A 30 24 V DC 72x90x90 0...+60°C (2A...10 A) (22...30 VDC) cURus, cCSAus common reset via pushbutton plug-in fuse Class I Div 2, **ATEX** per channel; status indication via 3-color LED per channel;

common signaling contact.

^{*}Total Current

^{**}With single channel signaling for individual channel specific analyses

SITOP Power SuppliesDC Uninterruptible Power Supplies

DC UPS with Battery Back-up

Overview

Reliable 24 VDC at all times, even when power fails

Compact DC UPS modules ensure continued operation, even over a period of hours, depending on battery capacity and power requirements. The sophisticated battery management ensures optimal charging of the batteries – and means that the unit is always reliably available for buffering. The active battery test function even checks the age of the battery. This means that precautionary replacement of the battery isn't necessary –a substantial cost saving for your plant. All relevant messages are output via floating contacts, or optionally via a serial interface or USB port.

- DC UPS Modules 6A, 15A, and 40 A
- Maintenance-free battery modules up to 12 Ah
- Monitoring of operational readiness, battery feeder, aging, and charging status
- Extended life of loads and batteries due to built-in intelligent battery management
- Uninterrupted transition into buffer mode

Selection and ordering data

		Output Current (A)	Storage	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short- Circuit Protection	Certificates Approvals	Order No.
DC UPS Module	24	6		24 V DC (2229 V DC)	50x125x125	-25°+60°C	94%		CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1931-2DC21 6EP1931-2DC31* 6EP1931-2DC42*
	24	15		24 V DC (2229 V DC)	50x125x125	-25°+60°C	96%		CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1931-2EC21 6EP1931-2EC31* 6EP1931-2EC42**
DC UPS Module	24	40		24 V DC (2229 V DC)	102x125x125	-25°+60°C	97%		CE, cULus, ATEX; cCSAus Class I Div 2, GL, ABS	6EP1931-2FC21 6EP1931-2FC42**
DC UPS Battery	24	6	1.2 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	96x106x108	-10°+50°C	N/A	Fuse	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1935-6MC01
DC UPS Battery	24	15	3.2 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	190x151x82	-10°+50°C	N/A	Fuse	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1935-6MD11
DC UPS Battery	24	30	7 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	186x168x121	-10°+50°C	N/A	Fuse	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1935-6EM21
DC UPS Battery	24	30	12 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	253x168x121	-10°+50°C	N/A	Fuse	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1935-6MF01
DC UPS Battery	24	15	2.5 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	265x151x91	-40°+60°C	N/A	Fuse	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1935-6MD31

EOC = End of Charge

*With Serial Interface **With USB Interface 4

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DC Uninterruptible Power Supplies

DC UPS with Battery and Capacitor Back-up

Overview

UPS 1600/1100 System with Ethernet/PROFINET Interface

New UPS1600 now offers all of the same functionality as older DC UPS system with even more possibilities for diagnostics and system integration. The UPS 1600 offers comprehensive functions, open communication via USB or Ethernet/PROFINET, and remote monitoring with integrated web server functionality. With conjunction with the UPS1100 battery modules, the system automatically detects the type of battery and charges it at the optimal, temperature-controlled charging characteristics.

- DC UPS 1600 Modules in 24VDC/ 10 A or 20 A
- DC UPS 1100 Modules up to 7 Ah
- Increased diagnostics with Ethernet/PROFINET interface and integrated webserver

24 V DC UPS with maintenance-free capacitor back-up

These highly-capacitive double-layer capacitors store sufficient energy to shut down PC-based systems safely. The capacitors have an extremely long life even at high ambient temperatures. No maintenance or replacement of the energy buffer is required, which means that the DC UPS pays for itself within a short time. And because the capacitors do not emit any gas, no ventilation of the control cabinet is required. The buffering time can be extended by adding expansion modules .

- SITOP UPS500S 15A up to 20 kWS with expansion modules
- Capacitors eliminate replacement of batteries
- Long life even at high ambient temperatures

Selection and ordering data

	Output Voltage (V DC)	Output Current (A)	Storage	Rated Input Voltage	Dimensions (WxHxD) mm	Ambient Temperature	Efficiency	Short- Circuit Protection	Certificates Approvals	Order No.
DC UPS 1600 Module ¹⁾	24	10	Depends on battery	24 VDC (2129 VDC)	50x125x125	-25°+70°C	97.3%	Auto Restart	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP4134-3AB00-0AY0 6EP4134-3AB00-1AY0** 6EP4134-3AB00-2AY0***
	24	20	Depends on battery	24 VDC (2129 VDC)	50x125x125	-25°+70°C	97.5%	Auto Restart	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP4136-3AB00-0AY0 6EP4136-3AB00-1AY0** 6EP4136-3AB00-2AY0***
DC UPS 1100 Battery ¹⁾	24	10	1.2 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	89x130x107	-10°+50°C	N/A	Installed Fuse 15 A/32 V	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP4131-0GB00-0AY0
DC UPS 1100 Battery ¹⁾	24	20	3.2 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	190x169x79.5	-10°+50°C	N/A	Installed Fuse 25 A/32 V	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP4133-0GB00-0AY0
DC UPS 1100 Battery ¹⁾	24	40	7 Ah	EOC (> +20°C) 26.427.3 VDC EOC (<+20°C) 27.329.0 VDC)	186x186x110.5	-10°+50°C	N/A	Installed Fuse 2 x 25A A/32 V	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP4134-0GB00-0AY0
DC UPS Capacitor Module	24	15	2. 5 kWs	24 VDC (2229 VDC) infeed from 24 VDC SITOP	120x125x125	0+60°C	97.5%	Auto Restart	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1933-2EC41
	24	15	5 kWs	24 VDC (2229 VDC) infeed from 24 VDC SITOP	120x125x125	0+60°C	97.5%	Auto Restart	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1933-2EC51
DC UPS Capacitor Expansion	N/A	N/A	5 kWs	Infeed from 2.5 kWs or 5 kWs basic unit	70x125x125	0+60°C	N/A	Auto Restart	CE, cULus, ATEX; Class I Div 2, GL, ABS	6EP1935-5PG01

EOC = End of Charge

1) To be released Q1 2014

**With USB Interface

***With Ethernet/PROFINET Interface

SITOP Power Supplies DC Uninterruptible Power Supplies

Back-Up Times

Overview

















	6EP1935- 6MC01	6EP1935- 6MD11	6EP1935- 6EM21	6EP1935- 6MF01	6EP1935- 6MD31	6EP4131- 0GB00-0AY0	6EP4133- 0GB00-0AY0	6EP4134- 0GB00-0AY0
	1.2 Ah	3.2 Ah	7 Ah	12 Ah	2.5 Ah	1.2 Ah	3.2 Ah	7 Ah
1A	34.5 min	2.6 h	5.4 h	9 h	2 h	24.5 min	2.6 h	5.4 h
2A	15.5 min	1 h	2.6 h	4.6 h	1 h	15.5 min	1 h	2.6 h
3A	9 min	39.3 min	1.6 h	2.9 h	37.5 min	9 min	39.3 min	1.6 h
4A	6.5 min	27.1 min	1.2 h	2.2 h	27 min	6.5 min	27.1 min	1.2 h
6A	3.5 min	17.5 min	41 min	1.2 h	17.6 min	3.5 min	17.5 min	41 min
8A	_	12.1 min	28.6 min	53.3 min	12.5 min	2 min	12.1 min	28.6 min
10A	_	9 min	21.8 min	43.5 min	8.8 min	1 min	9 min	21.8 min
12A	_	_	17.3 min	33.3 min	6.8 min	_	7 min	17.3 min
14A	_	_	15.1 min	27.5 min	5.1 min	_	5 min	15.1 min
16A	_	_	12.5 min	23.8 min	4.3 min	_	4 min	12.5 min
20A	_	_	9.1 min	20.1 min	_	_	1 min	9.1 min
25A	_	_	_	12.6 min	_	_	_	_
30A	_	_	_	9.1 min	_	_	_	_

Please use the SITOP Selection Tool for more detailed back-up time information www.siemens.com/sitop-selection-tool

SITOP Power Supplies DC Uninterruptible Power Supplies

Back-Up Times







		6EP1933- 2EC41	6EP1933- 2EC51			6EP1	935-5PG01		
Basic Units		2.5 kWs	5 kWs	2.5 kWs	5 kWs	2.5 kWs	5 kWs	2.5 kWs	5 kWs
Expansion modules		_	_	1 x 5 kWs	1 x 5 kWs	2 x 5 kWs	2 x 5 kWs	3 x 5 kWs	3 x 5 kWs
Combined Energy Storage		2.5 kWs	5 kWs	7.5 kWs	10 kWs	12.5 kWs	15 kWs	17.5 kWs	20 kWs
at load current	0.5 A	134 s	236 s	390 s	478 s	632 s	748 s	851 s	1007 s
	0.8 A	90 s	167 s	266 s	346 s	440 s	527 s	580 s	706 s
	1A	75 s	138 s	219 s	296 s	365 s	414 s	490 s	572 s
	2A	38 s	76 s	122 s	156 s	203 s	230 s	265 s	306 s
	3A	26 s	52 s	82 s	106 s	136 s	159 s	186 s	213 s
	4 A	19 s	39 s	61 s	81 s	101 s	120 s	139 s	160 s
	5 A	15 s	31 s	49 s	65 s	81 s	95 s	111 s	130 s
	6 A	12 s	26 s	40 s	55 s	67 s	80 s	94 s	106 s
	7 A	10 s	21 s	34 s	47 s	58 s	69 s	81 s	82 s
	8 A	8 s	18 s	29 s	40 s	50 s	59 s	69 s	79 s
	10 A	6 s	15 s	23 s	32 s	39 s	47 s	54 s	62 s
	12 A	4 s	12 s	19 s	26 s	32 s	38 s	44 s	52 s
	15 A	3 s	9 s	14 s	20 s	25 s	30 s	35 s	40 s
Charging Times at load current	2 A	54 s	120 s	158 s	223 s	263 s	318 s	355 s	417 s
	1 A	110 s	205 s	311 s	425 s	503 s	625 s	695 s	816 s

Please use the SITOP Selection Tool for more detailed back-up time information www.siemens.com/sitop-selection-tool

SIMATIC Net

Ethernet Infrastructure Components

Scalance Unmanaged Switches

Ordering Data Order No. XB005 (5 RJ45 ports) 6GK5005-0GA00-1AB2 XB008 (8 RJ45 ports) 6GK5008-0BA00-1AB2

Scalance Unmanaged Industrial Ethernet Switches

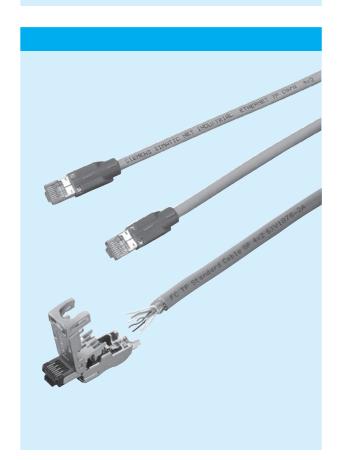
The SCALANCE unmanaged Industrial Ethernet switch with up to eight RJ45 10/100 Mbit/s ports. These products provide a cost-optimized solution for the design of small star or line structures with switching functionality in isolated machines or plant sections. These SCALANCE switches are designed for space saving installation on standard DIN rail and include a removable terminal block for the 24 VDC power connection.

Scalance Managed Switches

Ordering Data	Order No.
XB208 (8 RJ45 ports)	6GK5208-0BA00-2AA3

Scalance Managed Industrial Ethernet Switches

The SCALANCE managed Industrial Ethernet switch is offered with on-site diagnostics via LEDs. The unit can be included in network management systems via SNMP. SCALANCE X-208 switch has an integrated redundant ring manager. The SCALANCE X-208 product has a redundant voltage supply (2 x 24 V DC) and a fault-signaling contact on the front of the housing. For diagnostics purposes the unit can also be accessed via a Web Browser.



Ordering Data		Order No.
IE FC RJ45 Plug	90 deg - 1 unit	6GK19011BB202AA0
IE FC RJ45 Plug	90 deg - 10 units	6GK19011BB202AB0
IE FC RJ45 Plug	90 deg - 50 units	6GK19011BB202AE0
IE FC RJ45 Plug	180 deg - 1 unit	6GK19011BB102AA0
IE FC RJ45 Plug	180 deg - 10 unit	6GK19011BB102AB0
IE FC RJ45 Plug	180 deg - 50 unit	6GK19011BB102AE0

Industrial Ethernet FastConnect RJ45 Plugs

The compact and rugged design of the plug-in connectors allow the FC RJ45 Plugs to be used in the industrial environment.

IE FC Stripping Tool	6GK19011GA00	
IE FC Blade Cassettes (5pack)	6GK19011GB01	
Industrial Ethernet FastConnect Stripping Tool Preadjusted stripping tool for fast stripping of Industrial Ethernet		

IE TP RJ45/RJ45 CAT 5e Cable - 0.5 m	6XV18502GE50
IE TP RJ45/RJ45 CAT 5e Cable - 1 m	6XV18502GH10
IE TP RJ45/RJ45 CAT 5e Cable - 2 m	6XV18502GH20
IE TP RJ45/RJ45 CAT 5e Cable - 6 m	6XV18502GH60
IE TP RJ45/RJ45 CAT 5e Cable - 10 m	6XV18502GN10

Industrial Ethernet Twisted Pair Cables

FC cables.

Premolded Cat5e (2x2) patch cables in pre-assembled lengths from 0.5 - 10m.

3

4

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6

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10

1

2

3

4

Notes

Contents

5SJ4 Branch Circuit Protectors



5SJ4	Page
Selection and ordering data1-pole up to 63A	16/4
• 1-pole, 2-pole, 3-pole, 240VAC	16/5
1-pole, 2-pole,3-pole, 480Y/277VAC	16/6
Additional components	16/7
General data	16/3
Tripping characteristics Dimension drawings	16/2 16/10
Technical data	16/8

5SY4 Supplementary Protectors



5SY4	Page
Selection and ordering data	
 1-pole, 1-pole+ N, and 	
2-pole up to 63A	16/13
• 3-pole, 3-pole + N, and	
4-pole up to 63A	16/14
 Additional components 	16/19
 Accessories 	16/21

General data	16/11,16/22
Tripping characteristics	16/2
Dimension drawings	16/25
Technical data	16/23

5SY6 Supplementary Protectors



5SY6	Page
Selection and ordering data	
 1-pole, 1-pole+ N, and 	
2-pole up to 63A	16/15
• 3-pole, 3-pole + N, and	
4-pole up to 63A	16/16
 Additional components 	16/19
 Accessories 	16/21

General data	16/11, 16/22
Tripping characteristics	16/2
Dimension drawings	16/25
Technical data	16/23

5SP Supplementary Protectors



5SP4	Page
Selection and ordering	data
• 1-pole, 2-pole, 3-pole	
and 4-pole up to 125A	16/17
 Additional components 	16/19
 Accessories 	16/21
General data	16/11, 16/22
Tripping characteristics	16/2

16/25

16/23

Dimension drawings

Technical data

AC/DC Product Range 5SY5 Supplementary Protectors



5515	Page
Selection and ordering data	
 1-pole, 2-pole up to 63A 	16/18
 Additional components 	16/17
 Accessories 	16/21
General data	16/11
Tripping characteristics	16/2

16/25

16/23

Dimension drawings

Technical data

3NW7 Cylindrical Fuse Holders





3NW7 and 3NC10	Page
Selection and ordering data	
3NW7	
• 1-, 1+N, 2- and 3-, 3+N	
and 4-poles up to 100 A	16/27
3NC1038	
• 1-, 2- & 3-pole up to 30 A	16/30

General data	16/26, 16/30
Dimension drawings	16/29, 16/30
Technical data	16/28, 16/30

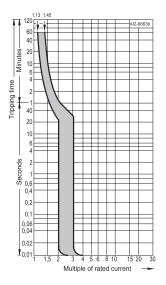
General Data

Trip characteristics

Tripping characteristics acc. to EN 60 898

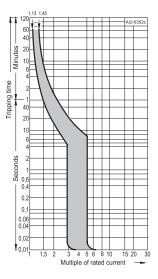
Tripping characteristic A, -5

Type A characteristic is designed to protect very sensitive circuits such as semiconductors. Magnetic trip point - 2 to 3 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



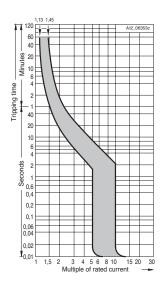
Tripping characteristic B, -6

Type B characteristic designed for European residential circuit protection. This characteristic can also be used for protection of computers and electronic equipment. Magnetic trip point - 3 to 5 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



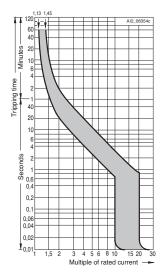
Tripping characteristic C, -7

Type C characteristic is for general device protection in control circuits. Magnetic trip point - 5 to 10 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



Tripping characteristic D, -8

Type D characteristic is designed for high inrush loads. Magnetic trip point - 10 to 20 times I_n rating. Thermal trip point - 1.13 to 1.45 protector rating.



circuit breakers or supplementary protectors, the resulting increase in ambient temperature affects the characteristic curve.

For DC voltages the maximum current values of the instantaneous tripping operation increase by a factor of 1.2.

For different ambient tempera-

tures, the current values of the

change by approximately 5% per 10°K temperature differ-

for temperatures below 25°C

ence. Specifically they increase

(5SJ41), 30°C (5SP, 5SY) and decrease for temperatures

above 25°C (5SJ41), 30°C (5SP,

delayed tripping operation

If more that one electrical circuit is loaded in a series of miniature In this case an additional correction factor found in the following table must be used.

Number	1	2 - 3	4 - 6	> 7
Correction factor K	1.00	0.90	0.88	0.85

5SY).

5SJ4 70 mm mounting depth

Selection and ordering data

5SJ4 Miniature Circuit Breaker Guide			
Catalog Series	5SJ41HG40	5SJ4HG41	5SJ4HG42
Rated Voltage	240, 120 VAC 60 VDC Same Polarity	240 VAC 60/125 VDC	480Y/277 VAC 60/125 VDC
Number of Poles	1-Pole	1-, 2- and 3-Poles	
Trip Characteristics	B, C, D	C, D	
Rated Current	B Characteristic: 6 to 63 C and D Characteristic:		C Characteristic: 03. to 40 A D Characteristic: 0.3 to 32 A
	B Characteristic: 14 kA (6 to 63 A)	_	_
Interrupting Ratings ¹⁾	C Characteristic: 14 kA (0.3 to 40 A) 10 kA (45 to 63 A)		C Characteristic: 10 kA (0.3 to 40 A) ²⁾
	D Characteristic: 14 kA (0.3 to 20 A) 10 kA (25 to 63 A)		D Characteristic: 10 kA (0.3 to 32 A) ²⁾
4) 44 LA . T LIQ L 40 LA	T NO.1		



5SJ4...-. HG41 Miniature Circuit Breakers

Certitications:

CE

UL Listed and Certified to Canadian Standards **HACR Rated**

1) 14 kA = Type HSJ; 10 kA = Type NSJ.

2) At 240 VAC the Interrupting Rating is the same as the 5SJ4...-. HG40 and .HG41.

Features

Features - UL 489

- Suitable for Branch Circuit Protection Applications up to 277 VAC and 60 VDC (1-pole); and, up to 480Y VAC and 125 VDC (2- and 3-pole)
- UL Listed and Certified to Canadian Standards, File E243414
- HACR Rated
- Hight AC Interrupting Ratings of up to 14,000 (Type HSJ) or 10,000 (Type NSJ) Maximum RMS Symmetrical Amps and, DC interrupting ratings of 10,000 Amps
- 40°C Calibration Base (Industrial Applications)
- Can be used for "field wiring" applications; AWG 14 to AWG 4, Copper (Cu) Only
- Suitable for "reverse feed" applications

Features - EN/IEC 60 898

- 30°C Calibration Base
- Trip Characteristic B, C and D B: Designed for the protection of computers and electronic equipment. Magnetic trip point is 3 to 5 times the MCB rating.
- C: Designed for general device protection in control circuits and all other miniature circuit breaker systems. Magnetic trip point is 5 to 10 times the MCB rating.
- D: Designed for high inrush loads. Magnetic trip point is 10 to 20 times the MCB rating.
- Rated voltage of 24 VAC minimum, 440 VAC Maximum and 60 VDC per pole
- · High Interrupting Rating (Icn) of up to 10,000 Amps
- 0.75 to 35 mm² solid and stranded conductors

Features - Common

- Depending on the device selected
- Available with 1-, 2- or 3-poles
- Available from 0.3 to 63 amps
- Visible Indicator for ON and OFF/Trip
- Touch Protection to EN50274
- DIN Rail Mounting (Standard 35 mm)
- Identical WIre Screw Connections on Line and Load Sides
- Smaller Size than traditional MCCB's

Auxiliary Circuit Switches (AS) are available with One Normally Open + One Normally Closed, Two Normally Open or Two Normally Closed contacts. They are primarily used to signal the miniature circuit breaker's trip mechanism position.

Fault Signal Contacts (FC) are available with One Normally Open + One Normally Closed, Two Normally Open or Two Normally Closed contacts. They are primarily used to signal the automatic tripping of the miniature circuit breaker's trip mechanism; and, trip position.

Shunt Trip Switches (ST) are available in voltages of 110 to 480 VAC and 24 to 60 V AC/DC. They are used for remote tripping of a miniature circuit breaker.

5ST366.-.HG busbars, touch protection covers and terminal connectors are intended for use with Siemens lines of 5SJ4...-.HG4. UL 489 Miniature Circuit Breakers. They are UL Recognized (File E32159) with a rating of 115 Amps maximum at 480Y/277 VAC. Busbars are available in 1-, 2- or 3-pole versions.

Touch Protection Covers are used to cover any unused busbar terminals. They are intended to protect a user from live electrical parts.

Terminal Connectors are used to connect electrical conductors up to 1 AWG (50mm²) to the busbar terminals. Two versions are available; connecton directly to the miniature circuit breaker or direct connection to the busbar.

5SJ Branch Circuit Protection

5SJ4 70 mm mounting depth

Features

5SJ41..-.HG40 miniature circuit breakers are designed to comply with UL 489 and CSA 22.2 No. 5-02 standards. They are used in single pole, branch circuit protection applications up to 240 VAC maximum and 60 VDC maximum, same polarity. Refer to Technical Data (page 16/8) for additional information.

Selection and ordering data

		I_{n}	Characteristic B Order No.	Inter- List ruption Price\$	Characteristic C Order No.	Inter- List ruption Price \$	Characteristic D Order No.	Inter- List ruption Price \$	Weight 1 Item
				Type ¹)		Type ¹)		Type ¹)	
		A		1 item		1 item		1 item	kg
	1-pole	0.3	_	_	5SJ4114-7HG40	HSJ	5SJ4114-8HG40	HSJ	0.155
0	* 1	0.5	_	_	5SJ4105-7HG40	HSJ	5SJ4105-8HG40	HSJ	
11	~ \^	1	_	_	5SJ4101-7HG40	HSJ	5SJ4101-8HG40	HSJ	
Esta Lill	2	1.6	_	_	5SJ4115-7HG40	HSJ	5SJ4115-8HG40	HSJ	
·		2	_	_	5SJ4102-7HG40	HSJ	5SJ4102-8HG40	HSJ	
		3	_	_	5SJ4103-7HG40	HSJ	5SJ4103-8HG40	HSJ	
0		4	_	_	5SJ4104-7HG40	HSJ	5SJ4104-8HG40	HSJ	
		5	_	_	5SJ4111-7HG40	HSJ	5SJ4111-8HG40	HSJ	
		6	5SJ4106-6HG40	HSJ	5SJ4106-7HG40	HSJ	5SJ4106-8HG40	HSJ	
		8	_	_	5SJ4108-7HG40	HSJ	5SJ4108-8HG40	HSJ	
		10	5SJ4110-6HG40	HSJ	5SJ4110-7HG40	HSJ	5SJ4110-8HG40	HSJ	
		13	5SJ4113-6HG40	HSJ	5SJ4113-7HG40	HSJ	5SJ4113-8HG40	HSJ	
		15	5SJ4118-6HG40	HSJ	5SJ4118-7HG40	HSJ	5SJ4118-8HG40	HSJ	
		16	5SJ4116-6HG40	HSJ	5SJ4116-7HG40	HSJ	5SJ4116-8HG40	HSJ	
		20	5SJ4120-6HG40	HSJ	5SJ4120-7HG40	HSJ	5SJ4120-8HG40	HSJ	
		25	5SJ4125-6HG40	HSJ	5SJ4125-7HG40	HSJ	5SJ4125-8HG40	NSJ	
		30	5SJ4130-6HG40	HSJ	5SJ4130-7HG40	HSJ	5SJ4130-8HG40	NSJ	
		32	5SJ4132-6HG40	HSJ	5SJ4132-7HG40	HSJ	5SJ4132-8HG40	NSJ	
		35	5SJ4135-6HG40	HSJ	5SJ4135-7HG40	HSJ	5SJ4135-8HG40	NSJ	
		40	5SJ4140-6HG40	HSJ	5SJ4140-7HG40	HSJ	5SJ4140-8HG40	NSJ	
		45	5SJ4145-6HG40	HSJ	5SJ4145-7HG40	NSJ	5SJ4145-8HG40	NSJ	
		50	5SJ4150-6HG40	HSJ	5SJ4150-7HG40	NSJ	5SJ4150-8HG40	NSJ	
		60	5SJ4160-6HG40	HSJ	5SJ4160-7HG40	NSJ	5SJ4160-8HG40	NSJ	
		63	5SJ4163-6HG40	HSJ	5SJ4163-7HG40	NSJ	5SJ4163-8HG40	NSJ	

¹⁾ Interrupting Rating to UL489, AC Max. RMS Symmetrical: Type NSJ = 10kA, Type HSJ = 14 kA.

Control Circuit Protection 5SJ Branch Circuit Protection

5SJ4 70 mm mounting depth

Features

5SJ4...-.HG41 miniature circuit breakers are designed to comply with UL 489 and CSA 22.2 No. 5-02 standards. They are used in single and multi-pole, branch circuit protection applications up to 240 VAC maximum and 60/125 VDC maximum. Refer to Technical Data (page 16/8) for additional information.

Selection and ordering data

		I_{\cap}	Characteristic C			Characteristic D			Weight
		- 11	Order No.	Interruption	List	Order No.	Interruption	List	1 item
				Type ¹)	Price \$		Type ¹)	Price \$	
		Α			1 item			1 item	kg
ala	1-pole	0.3	5SJ4114-7HG41	HSJ		5SJ4114-8HG41	HSJ		0.155
	* 1	0.5	5SJ4105-7HG41	HSJ		5SJ4105-8HG41	HSJ		
	~\ [†]	1	5SJ4101-7HG41	HSJ		5SJ4101-8HG41	HSJ		
and the)2	1.6	5SJ4115-7HG41	HSJ		5SJ4115-8HG41	HSJ		
THE STREET	12	2 3	5SJ4102-7HG41 5SJ4103-7HG41	HSJ HSJ		5SJ4102-8HG41 5SJ4103-8HG41	HSJ HSJ		
QA.		4	5SJ4104-7HG41	HSJ		5SJ4104-8HG41	HSJ		
E .		5	5SJ4111-7HG41	HSJ		5SJ4111-8HG41	HSJ		
169 5		6	5SJ4106-7HG41	HSJ		5SJ4106-8HG41	HSJ		
100		8	5SJ4108-7HG41	HSJ		5SJ4108-8HG41	HSJ		
~ ~		10	5SJ4110-7HG41	HSJ		5SJ4110-8HG41	HSJ		
		13	5SJ4113-7HG41	HSJ		5SJ4113-8HG41	HSJ		
		15	5SJ4118-7HG41	HSJ		5SJ4118-8HG41	HSJ		
		16	5SJ4116-7HG41	HSJ		5SJ4116-8HG41	HSJ		
		20	5SJ4120-7HG41	HSJ		5SJ4120-8HG41	HSJ		
		25	5SJ4125-7HG41	HSJ		5SJ4125-8HG41	NSJ		
		30 32	5SJ4130-7HG41	HSJ		5SJ4130-8HG41	NSJ		
		35	5SJ4132-7HG41 5SJ4135-7HG41	HSJ HSJ		5SJ4132-8HG41 5SJ4135-8HG41	NSJ NSJ		
		40	5SJ4140-7HG41	HSJ		5SJ4140-8HG41	NSJ		
		45	5SJ4145-7HG41	NSJ		5SJ4145-8HG41	NSJ		
		50	5SJ4150-7HG41	NSJ		5SJ4150-8HG41	NSJ		
		60	5SJ4160-7HG41	NSJ		5SJ4160-8HG41	NSJ		
		63	5SJ4163-7HG41	NSJ		5SJ4163-8HG41	NSJ		
د اشاله	2-pole	0.3	5SJ4214-7HG41	HSJ		5SJ4214-8HG41	HSJ		0.310
	* 1 * 3	0.5	5SJ4205-7HG41	HSJ		5SJ4205-8HG41	HSJ		
4-1		1	5SJ4201-7HG41	HSJ		5SJ4201-8HG41	HSJ		
white to	2 4	1.6	5SJ4215-7HG41	HSJ		5SJ4215-8HG41	HSJ		
	12 14	2	5SJ4202-7HG41	HSJ		5SJ4202-8HG41	HSJ		
THE .		3	5SJ4203-7HG41	HSJ		5SJ4203-8HG41	HSJ		
		4 5	5SJ4204-7HG41	HSJ HSJ		5SJ4204-8HG41 5SJ4211-8HG41	HSJ HSJ		
		6	5SJ4211-7HG41 5SJ4206-7HG41	HSJ		5SJ4206-8HG41	HSJ		
-		8	5SJ4208-7HG41	HSJ		5SJ4208-8HG41	HSJ		
,		10	5SJ4210-7HG41	HSJ		5SJ4210-8HG41	HSJ		
		13	5SJ4213-7HG41	HSJ		5SJ4213-8HG41	HSJ		
		15	5SJ4218-7HG41	HSJ		5SJ4218-8HG41	HSJ		
		16	5SJ4216-7HG41	HSJ		5SJ4216-8HG41	HSJ		
		20	5SJ4220-7HG41	HSJ		5SJ4220-8HG41	HSJ		
		25	5SJ4225-7HG41	HSJ		5SJ4225-8HG41	NSJ		
		30	5SJ4230-7HG41	HSJ		5SJ4230-8HG41	NSJ		
		32	5SJ4232-7HG41	HSJ		5SJ4232-8HG41	NSJ		
		35	5SJ4235-7HG41	HSJ		5SJ4235-8HG41	NSJ		
		40	5SJ4240-7HG41	HSJ		5SJ4240-8HG41	NSJ		
		45 50	5SJ4245-7HG41	NSJ NSJ		5SJ4245-8HG41	NSJ NSJ		
		60	5SJ4250-7HG41 5SJ4260-7HG41	NSJ		5SJ4250-8HG41 5SJ4260-8HG41	NSJ		
		63	5SJ4263-7HG41	NSJ		5SJ4263-8HG41	NSJ		
Alan -	3-pole	0.3	5SJ4314-7HG41	HSJ		5SJ4314-8HG41	HSJ		0.465
Car Car Car	*1 *3 *5	0.5	5SJ4305-7HG41	HSJ		5SJ4305-8HG41	HSJ		
	1 1 1	1	5SJ4301-7HG41	HSJ		5SJ4301-8HG41	HSJ		
The same of the	_ <i>\=</i> +=+	1.6	5SJ4315-7HG41	HSJ		5SJ4315-8HG41	HSJ		
000	2 4 6	2	5SJ4302-7HG41	HSJ		5SJ4302-8HG41	HSJ		
E.E.E.		3	5SJ4303-7HG41	HSJ		5SJ4303-8HG41	HSJ		
		4	5SJ4304-7HG41	HSJ		5SJ4304-8HG41	HSJ		
A PARTY OF THE PAR		5	5SJ4311-7HG41	HSJ		5SJ4311-8HG41	HSJ		
		6	5SJ4306-7HG41	HSJ HSJ		5SJ4306-8HG41	HSJ HSJ		
		8 10	5SJ4308-7HG41 5SJ4310-7HG41	HSJ		5SJ4308-8HG41 5SJ4310-8HG41	HSJ		
		13	5SJ4313-7HG41	HSJ		5SJ4313-8HG41	HSJ		
		15	5SJ4318-7HG41	HSJ		5SJ4318-8HG41	HSJ		
		16	5SJ4316-7HG41	HSJ		5SJ4316-8HG41	HSJ		
		20	5SJ4320-7HG41	HSJ		5SJ4320-8HG41	HSJ		
		25	5SJ4325-7HG41	HSJ		5SJ4325-8HG41	NSJ		
		30	5SJ4330-7HG41	HSJ		5SJ4330-8HG41	NSJ		
				HSJ		5SJ4332-8HG41	NSJ		
		32	5SJ4332-7HG41						
		35	5SJ4335-7HG41	HSJ		5SJ4335-8HG41	NSJ		
		35 40	5SJ4335-7HG41 5SJ4340-7HG41	HSJ HSJ		5SJ4335-8HG41 5SJ4340-8HG41	NSJ NSJ		
		35 40 45	5SJ4335-7HG41 5SJ4340-7HG41 5SJ4345-7HG41	HSJ HSJ NSJ		5SJ4335-8HG41 5SJ4340-8HG41 5SJ4345-8HG41	NSJ NSJ NSJ		
		35 40 45 50	5SJ4335-7HG41 5SJ4340-7HG41 5SJ4345-7HG41 5SJ4350-7HG41	NSJ HSJ HSJ		5SJ4335-8HG41 5SJ4340-8HG41 5SJ4345-8HG41 5SJ4350-8HG41	NSJ NSJ NSJ		
		35 40 45	5SJ4335-7HG41 5SJ4340-7HG41 5SJ4345-7HG41	HSJ HSJ NSJ		5SJ4335-8HG41 5SJ4340-8HG41 5SJ4345-8HG41	NSJ NSJ NSJ		

¹⁾ Interrupting Rating to UL489, AC Max. RMS Symmetrical: Type NSJ = 10kA, Type HSJ = 14kA.

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5SJ Branch Circuit Protection

5SJ4 70 mm mounting depth

Features

5SJ4...-HG42 miniature circuit breakers are designed to comply with UL 489 and CSA 22.2 No. 5-02 standards. They are used in single and multi-pole, branch circuit protection and feeder applications up to 480Y/277 VAC maximum and 60/125 VDC maximum. Refer to Technical Data (page 16/8) for additional information.

Selection and ordering data

		I_{n}	Characteristic C			Characteristic D			Weight
			Order No.	Interruption Type ¹)	List Price \$	Order No.	Interruption	List Price \$	1 item
		۸		Type)			Type 1)		ka
	1-pole	0.3	5SJ4114-7HG42	NSJ	1 item	5SJ4114-8HG42	NSJ	1 item	kg 0.155
W.		0.5	5SJ4105-7HG42	NSJ		5SJ4105-8HG42	NSJ		0.155
	<u>.</u> *1	1	5SJ4101-7HG42	NSJ		5SJ4101-8HG42	NSJ		
2. 27	7	1.6	5SJ4115-7HG42	NSJ		5SJ4115-8HG42	NSJ		
	l 2	2	5SJ4102-7HG42	NSJ		5SJ4102-8HG42	NSJ		
		3	5SJ4103-7HG42	NSJ		5SJ4103-8HG42	NSJ		
243		4	5SJ4104-7HG42	NSJ		5SJ4104-8HG42	NSJ		
1		5	5SJ4111-7HG42	NSJ		5SJ4111-8HG42	NSJ		
~ ~		6	5SJ4106-7HG42	NSJ		5SJ4106-8HG42	NSJ		
		8	5SJ4108-7HG42	NSJ		5SJ4108-8HG42	NSJ		
		10	5SJ4110-7HG42	NSJ		5SJ4110-8HG42	NSJ		
		13	5SJ4113-7HG42	NSJ		5SJ4113-8HG42	NSJ		
		15 16	5SJ4118-7HG42 5SJ4116-7HG42	NSJ NSJ		5SJ4118-8HG42 5SJ4116-8HG42	NSJ NSJ		
		20	5SJ4120-7HG42	NSJ		5SJ4120-8HG42	NSJ		
		25	5SJ4125-7HG42	NSJ		5SJ4125-8HG42	NSJ		
		30	5SJ4130-7HG42	NSJ		5SJ4130-8HG42	NSJ		
		32	5SJ4132-7HG42	NSJ		5SJ4132-8HG42	NSJ		
		35	5SJ4135-7HG42	NSJ		_	_		
		40	5SJ4140-7HG42	NSJ		_			
attaite	2-pole	0.3	5SJ4214-7HG42	NSJ		5SJ4214-8HG42	NSJ		0.310
PP	* 1 * 3	0.5	5SJ4205-7HG42	NSJ		5SJ4205-8HG42	NSJ		
3.433.65		1	5SJ4201-7HG42	NSJ		5SJ4201-8HG42	NSJ		
	2 4	1.6	5SJ4215-7HG42	NSJ		5SJ4215-8HG42	NSJ		
E. E. 19		2	5SJ4202-7HG42	NSJ		5SJ4202-8HG42	NSJ		
		3 4	5SJ4203-7HG42 5SJ4204-7HG42	NSJ NSJ		5SJ4203-8HG42 5SJ4204-8HG42	NSJ NSJ		
Witness Co.		5	5SJ4211-7HG42	NSJ		5SJ4211-8HG42	NSJ		
P 1P 1P		6	5SJ4206-7HG42	NSJ		5SJ4206-8HG42	NSJ		
		8	5SJ4208-7HG42	NSJ		5SJ4208-8HG42	NSJ		
		10	5SJ4210-7HG42	NSJ		5SJ4210-8HG42	NSJ		
		13	5SJ4213-7HG42	NSJ		5SJ4213-8HG42	NSJ		
		15	5SJ4218-7HG42	NSJ		5SJ4218-8HG42	NSJ		
		16	5SJ4216-7HG42	NSJ		5SJ4216-8HG42	NSJ		
		20	5SJ4220-7HG42	NSJ		5SJ4220-8HG42	NSJ		
		25	5SJ4225-7HG42	NSJ		5SJ4225-8HG42	NSJ		
		30	5SJ4230-7HG42	NSJ		5SJ4230-8HG42	NSJ		
		32	5SJ4232-7HG42	NSJ		5SJ4232-8HG42	NSJ		
		35 40	5SJ4235-7HG42	NSJ NSJ		_	_		
	3-pole	0.3	5SJ4240-7HG42 5SJ4314-7HG42	NSJ		5SJ4314-8HG42	MSJ		0.465
000	•	0.5	5SJ4305-7HG42	NSJ		5SJ4305-8HG42	NSJ		550
A L	*1*3*5	1	5SJ4301-7HG42	NSJ		5SJ4301-8HG42	NSJ		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1-1-1	1.6	5SJ4315-7HG42	NSJ		5SJ4315-8HG42	NSJ		
臣 臣 臣	12 14 16	2	5SJ4302-7HG42	NSJ		5SJ4302-8HG42	NSJ		
. W. W.		3	5SJ4303-7HG42	NSJ		5SJ4303-8HG42	NSJ		
222		4	5SJ4304-7HG42	NSJ		5SJ4304-8HG42	NSJ		
- 7		5	5SJ4311-7HG42	NSJ		5SJ4311-8HG42	NSJ		
		6	5SJ4306-7HG42	NSJ		5SJ4306-8HG42	NSJ		
		8	5SJ4308-7HG42	NSJ		5SJ4308-8HG42	NSJ		
		10 13	5SJ4310-7HG42 5SJ4313-7HG42	NSJ NSJ		5SJ4310-8HG42 5SJ4313-8HG42	NSJ NSJ		
		15	5SJ4318-7HG42	NSJ		5SJ4318-8HG42	NSJ		
		16	5SJ4316-7HG42	NSJ		5SJ4316-8HG42	NSJ		
		20	5SJ4320-7HG42	NSJ		5SJ4320-8HG42	NSJ		
		25	5SJ4325-7HG42	NSJ		5SJ4325-8HG42	NSJ		
		30	5SJ4330-7HG42	NSJ		5SJ4330-8HG42	NSJ		
		32	5SJ4332-7HG42	NSJ		5SJ4332-8HG42	NSJ		
		35	5SJ4335-7HG42	NSJ		_	_		
		40	5SJ4340-7HG42	NSJ		_	_		
			MC Cummatriaal: Tuna						

¹⁾ Interrupting Rating to UL489, AC Max. RMS Symmetrical: Type NSJ = 10kA.

5SJ Branch Circuit Protection

Additional components for **5SJ4 Branch Circuit Protection**

Features

- For use with the **5SJ4...-.HG4.** family of miniature circuit breakers
 UL Listed and CSA Certified to UL 489

Selection and ordering data

				Order No.	List Price \$	Weight 1 item
					1 item	kg
	Auxiliary switches (AS)	1 NO + 1 NC		5ST 3010-0HG		0.050
	13 	2 NO		5ST 3011-0HG		
	14 	2 NC		5ST 3012-0HG		
	Fault signal contacts (FC)				
	13 21 22 14	1 NO + 1 NC		5ST 3020-0HG		0.050
1.	13 23 	2 NO		5ST 3021-0HG		
W.	7-7-22 12	2 NC		5ST 3022-0HG		
	Shunt trip (ST)	110 - 480 VAC		5ST 3030-0HG		0.098
		24 - 60 V AC/DC		5ST 3031-0HG		0.098
	Busbars Fixed lengths, cannot be	cut ¹)	Length			
	1-Pole	For 6 MCBs For 12 MCBs For 18 MCBs	100 mm 205 mm 310 mm	5ST 3663-0HG 5ST 3663-1HG 5ST 3663-2HG		0.056 0.112 0.170
44444	2-Pole	For 3 MCBs For 6 MCBs For 9 MCBs	100 mm 205 mm 310 mm	5ST 3664-0HG 5ST 3664-1HG 5ST 3664-2HG		0.065 0.137 0.211
	3-Pole	For 2 MCBs For 4 MCBs For 6 MCBs	100 mm 205 mm 310 mm	5ST 3665-0HG 5ST 3665-1HG 5ST 3665-2HG		0.067 0.155 0.243
6	Connection terminals					
	Infeed - MCBs	35 mm ²		5ST 3666-0HG		0.033
1	Infeed - busbars	50 mm ²		5ST 3666-2HG		0.034
AAA	Touch protection covers ²) 3 x 1 pin		5ST 3666-1HG		0.003
Cut-able BusBars Availab	ility to be announced.					

¹⁾ Cut-able BusBars Availability to be announced.

Siemens Industry, Inc. Industrial Controls Catalog

²⁾ Always cover all exposed terminals with touch protection covers 5ST3666-1HG.

General Data

5SJ4 Branch Circuit Protection

Technical data

		5SJ41HG40	5SJ4HG41	5SJ4HG42	
Standards Certifications		EN 60898; EN 60947-2; UL 489; CSA C22.2 No. 5-02 CE; CULus, UL File No. E243414			
Tripping characteristic		B, C, D	C, D		
Number of poles		1	1, 2 & 3		
Operating voltage	Min. V AC/DC	24			
- IEC 60898	Max. V DC/pole	60			
	Max. V AC	440			
- UL 489 and CSA C22.2 No. 5-02	Max. V AC	240 Same Polarity	240	480Y/277	
	V DC/1P	60	60	60	
	V DC/2P, 3P	-	125	125	
Interrupting rating 1)					
- I _{cn} to IEC 60898-1	kA AC	10			
- UL 489 and CSA C22.2 No. 5-02		Type NSJ: 10kA			
AC: Max. RMS Symmetrical	kA AC	Type HSJ: 14kA		Type NSJ: 10k	
Touch protection to EN 50274		Yes			
Degree of protection to EN 60529		IP20, with connected	conductors		
CFC and silicone free		Yes			
Mounting		On standard mounting	g rail (DIN 35 mm)		
Device depth	mm	70			
Terminals					
- Identical screw terminals on both line and load sides		Yes			
- Terminal tightening torque	lb. in.	31			
	Nm	3.5			
Conductor cross sections	mm ²	Solid and Stranded: (0.75 to 35		
	mm^2	Finely Stranded, with	end sleeve: 0.75 to 25		
	AWG	14 to 4, 60/75°C, Cu (Only		
Calibration Base	°C	40 (UL 489) 30 (EN 6	60898)		
Average service life, with rated load		20,000 actuations			
Ambient temperature	°C	-25 to 45, occassiona	lly +55, max. 95% humi	dity	
Storage Temperature	°C	-40 to +75			
Resistance to vibration to IEC 60068-2-6	m/s ²	60 at 10 Hz to 150 Hz			

¹⁾ See Selection and ordering data for specific device interrutping rating

Busbar & Connecting Terminals

Material Version		Busbars	Connecting Terminals	
		5ST3663	5ST3666-0HG	5ST3666-2HG
		5ST3664		
		5ST3665		
Standards Certifications		UL 489 UL Listed, File No. E243	3414	
Operating voltage				
- IEC 60898	VAC	690		
- UL 489	VAC	480Y/277 and 240		
Rated current to 40°C	А	115		
Busbar cross section	mm ²	16 (Copper)		
Conductor cross sections	Solid and Stranded mm ²	-	2.5 to 35	2.5 to 50
	AWG	-	14 to 2	14 to 1
Terminal tightening torque	lb. in.	-	30	30
	Nm	-	3.3	3.3
Temperature Resistance	°C	200 - UL 94-V0/0.4mm		

5SJ4 Branch Circuit Protection

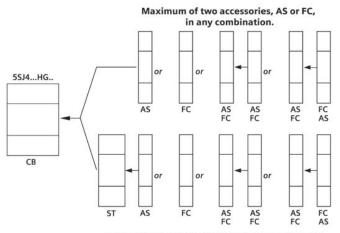
Technical data

Auxilliary Switch (AS), Fault Signal Contacts (FC) and Shunt Trip (ST)

Material Version		AS	FC	ST	
		5ST3010HG	5ST3020HG	5ST3030-0HG	5ST3032-0HG
Standards		UL 489; CSA C22.2 No. 5-02			
		IEC/EN 62019, IEC/EN 60947	'-5-1	IEC/EN 60947-1	
Certifications		CE, UL 489, CSA, UL File No	. E321559		
Rated voltages/-load		IEC AC V 400 230		110 to 415	24 to 60
		AC A 2 I 6 (NC:AC	13, NO: AC14)	-	-
		DC V 220 110 60	24	110	24 to 60
		DC A 1 1 3	6 (DC 13)	-	-
		UL AC V 480 277 240	120	110 to 480	24 to 60
		AC A 1.5 3 4	6	-	
		DC V 125 I 60		-	24 to 60
		DC A 1 I 3		-	-
Contact load		min. 50 mA, 24 V		-	-
Conductor cross-sections	AWG	22 14		22 14	
	mm ²	0.5 2.5		0.5 2.5	
Terminals - terminal tightening torque	Nm	0.5 max.		0.8 max.	
	lb/in.	4.5		6.8	

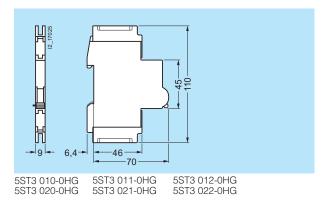
Applications

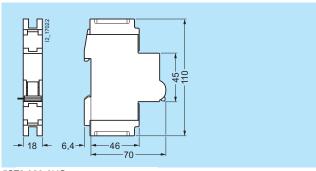
Auxiliary Switch (AS), Fault Signal Contact (FC) and Shunt Trip (ST) accessories are used with 5SJ4...-. HG4. miniature circuit breakers (CB) and are mounted to the right of them.



Maximum of one ST + Maximum of two AS or FC in any combination.

Dimensions





5ST3 030-0HG 5ST3 031-0HG

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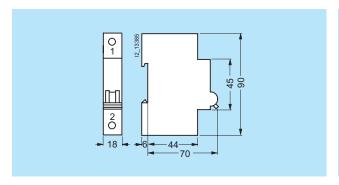
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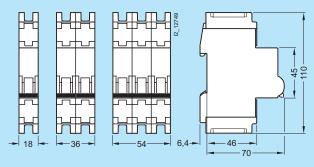
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General Data

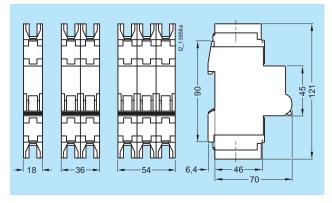
Dimensions



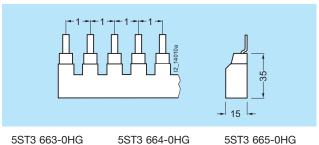




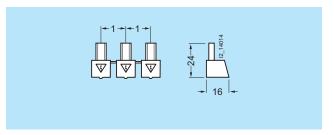
5SJ4...-.HG41



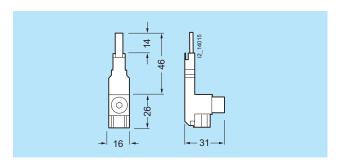
5SJ4...-.HG42



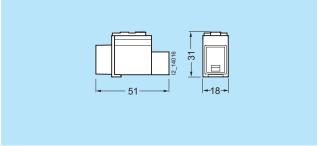
5ST3 663-0HG 5ST3 663-1HG 5ST3 663-2HG 5ST3 664-0HG 5ST3 664-1HG 5ST3 664-2HG 5ST3 665-0HG 5ST3 665-1HG 5ST3 665-2HG



5ST3 666-1HG



5ST3 666-0HG



5ST3 666-2HG

General Data

5SY and 5SP supplementary protection

Application

Siemens' UL 1077 Supplementary Protectors are designed to provide additional protection along with a branch circuit protection device. Since our Supplementary protectors are made to trip faster than a standard UL 489 Circuit Breaker they are able to provide additional protection for more sensitive devices inside the panel. Supplementary protectors can be used in a number of industrial applications such as to provide selectivity for multiple motor control circuits on the secondary side of a control transformer or power supply by allowing the user to quickly find the problem circuit should a fault occur without having to shut down all of the other control circuits. Supplementary protectors may also be used as a local disconnecting means inside the panel when a branch circuit protection device is already present.

Always remember to follow the National Electric code when wiring your panel for applications within the United States.

Design

Supplementary protectors are equipped with a delayed overload/time-dependent thermal release (thermal bimetal) for low overcurrents and with an instantaneous electromagnetic release for high overload and short-circuit currents.

The special contact materials used virtually guarantee a long service life and offer a high degree of protection against contact welding.

Mode of operation

Thanks to the extremely fast contact separation in cases of failures and the rapid quenching of the arc consequently generated in the arcing chamber, supplementary protectors assure a safe and current-limiting off-switching.

The permissible limit- I^2t -values of the energy limitation class 3 specified in EN 60 898 are generally undercut. This guarantees an excellent selectivity towards upstream overcurrent protection devices.

Features

- High rated breaking capacity of up to 10,000 A acc. to EN 60 898 / up to 15 kA acc. to EN 60 947-2
- Excellent current limiting and selectivity characteristics
- Tripping characteristic A, B, C and D
- Terminals offer protection against contact with fingers or the back of the hand acc. to the German accident prevention regulations VBG 4/ BGV A2
- Combined terminals enable a simultaneous connection of busbars and feeder cables
- Uniform components that can be quickly mounted individually, thanks to their snap-on technique
- The handle locking device virtually prevents any unauthorized operation of the handle

Features of 5SY

- Rapid connection of the feeder cable in front of the busbar
- Identical terminals at both sides for an optional infeed from the top or the bottom
- No tool required for mounting or dismounting
- Supports a fast and comfortable removal from the assembly
- Trip indication

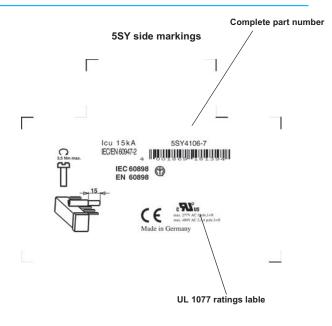
Features of 5SP4

- Disconnection characteristics acc. to EN 60947-3 (DIN VDE 0660 Part 107)
- Main switch characteristics acc. to EN 60 204-1
- Can be screwed onto bases
- Separate switch position indication.

Device markings

5SY Front Markings





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5SY4 Supplementary Protection

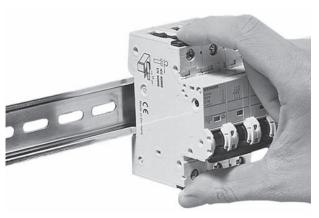
Overview

Features of 5SY supplementary protectors



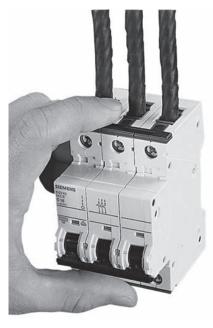
Easier, faster, enlarged wiring space

- Identical top and bottom terminals
- Connection of incoming cables vis-à-vis of the busbar
 Enlarged and easily accessible wiring space for the feeder cables
- Comfortable insertion of the incoming cables into the terminal
- Defined, visible and controllable connection of the feeder cables
- Universal infeed with top and bottom busbar mounting options.



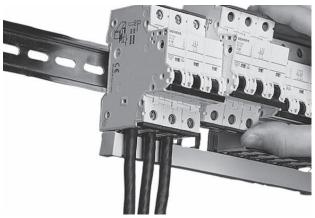
Flexible and no use of tools required

- Manually operable quick-assembly and disassembly systems requiring no use of tools
- Fast assembly and disassembly of 5SY supplementary protectors to and from the standard mounting rail.
- All devices can be easily and comfortably replaced at any time.



Protection against contact with clear advantages

- Integrated movable terminal covers located at the feeder cable input
- The terminals are completely closed when screws are fully tightened
- Effective protection against contact, also when the device is fully grabbed



Removal from the assembly

Thanks to the combination of the various features stated above, 5SY supplementary protectors can be easily and rapidly removed from the assembly when circuits need to be changed with these devices, removal of the busbar is no longer necessary.

Control Circuit Protection 5SY4 Supplementary Protection

5SY4 70 mm mounting depth

Features

All 5SY4 designs have been certified to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications up to 277 V AC (1-pole and 1-pole + N designs) and 480 V AC (2-pole, 3-pole, 3-pole + N and 4-pole designs).

Selection	and	ordering	data
OCICOLIOII	ullu	oracining	uutu

Selection and ordering	g data						
		In MW		Characteristic B	Characteristic C	Characteristic D	Weight
			Order No. List Price \$	Order No. List Price \$	Order No. List Price \$	Order No. List Price \$	1 item
		А	1 item	1 item	1 item		kg
	1-pole		1 Item	1 Itom	1 Itom	T Itom	Ng
	*1 *1	0.3 1	_	_	5SY4 114-7	5SY4 114-8	0.165
T. P	~\ ¹	0.5	5SY4 105-5	_	5SY4 105-7	5SY4 105-8	
6 (1)	2	1	5SY4 101-5	_	5SY4 101-7	5SY4 101-8	
A Sheal of	12	1.6 2	5SY4 115-5 5SY4 102-5		5SY4 115-7 5SY4 102-7	5SY4 115-8 5SY4 102-8	
		3	5SY4 103-5	—	5SY4 103-7	5SY4 103-8	
		4	5SY4 104-5	5SY4 104-6	5SY4 104-7	5SY4 104-8	
1.30		5	_	_	5SY4 111-7	_	
		6	5SY4 106-5	5SY4 106-6	5SY4 106-7	5SY4 106-8	
		8	5SY4 108-5		5SY4 108-7	5SY4 108-8	
		10 13	5SY4 110-5 5SY4 113-5	5SY4 110-6 5SY4 113-6	5SY4 110-7 5SY4 113-7	5SY4 110-8 5SY4 113-8	
		15	_	_	5SY4 118-7	_	
		16	5SY4 116-5	5SY4 116-6	5SY4 116-7	5SY4 116-8	
		20	5SY4 120-5	5SY4 120-6	5SY4 120-7	5SY4 120-8	
		25	5SY4 125-5	5SY4 125-6	5SY4 125-7	5SY4 125-8	
		30	50V4 400 5		5SY4 130-7	-	
		32 35	5SY4 132-5 —	5SY4 132-6	5SY4 132-7 5SY4 135-7	5SY4 132-8	
		40	 5SY4 140-5		5SY4 140-7		
		45	_	_	5SY4 145-7	_	
		50	5SY4 150-5	5SY4 150-6	5SY4 150-7	5SY4 150-8	
		60	— ESV4 463 F	— ESV4 463 C	5SY4 160-7	— ECV4 462 0	
	4	63	5SY4 163-5	5SY4 163-6	5SY4 163-7	5SY4 163-8	
23	1-pole + N	0.3 2	_	_	5SY4 514-7	5SY4 514-8	0.330
9.9	 111 ± N	0.5	_	_	5SY4 505-7	5SY4 505-8	0.000
(Teguero)	4-1	1	5SY4 501-5	_	5SY4 501-7	5SY4 501-8	
3 0 - 1	2 N	1.6	5SY4 515-5	_	5SY4 515-7	5SY4 515-8	
		2 3	5SY4 502-5	_	5SY4 502-7	5SY4 502-8	
13 1000		4	5SY4 503-5 5SY4 504-5	_	5SY4 503-7 5SY4 504-7	5SY4 503-8 5SY4 504-8	
9.9		6	5SY4 506-5	5SY4 506-6	5SY4 506-7	5SY4 506-8	
		8	5SY4 508-5	_	5SY4 508-7	5SY4 508-8	
		10	5SY4 510-5	5SY4 510-6	5SY4 510-7	5SY4 510-8	
		13	5SY4 513-5	5SY4 513-6	5SY4 513-7	5SY4 513-8	
		16 20	5SY4 516-5 5SY4 520-5	5SY4 516-6 5SY4 520-6	5SY4 516-7 5SY4 520-7	5SY4 516-8 5SY4 520-8	
		25	5SY4 525-5	5SY4 525-6	5SY4 525-7	5SY4 525-8	
		32	5SY4 532-5	5SY4 532-6	5SY4 532-7	5SY4 532-8	
		40	5SY4 540-5	5SY4 540-6	5SY4 540-7	5SY4 540-8	
		50	5SY4 550-5	5SY4 550-6	5SY4 550-7	5SY4 550-8	
		63	5SY4 563-5	5SY4 563-6	5SY4 563-7	5SY4 563-8	
39	2-pole	0.3 2	_	_	5SY4 214-7	5SY4 214-8	0.330
0.0	<u></u> *1**	0.5	5SY4 205-5	_	5SY4 205-7	5SY4 205-8	
1	44	1	5SY4 201-5	_	5SY4 201-7	5SY4 201-8	
	2 4	1.6	5SY4 215-5	_	5SY4 215-7	5SY4 215-8	
		2	5SY4 202-5	_	5SY4 202-7	5SY4 202-8	
1 1 1 1 1 1		3 4	5SY4 203-5 5SY4 204-5	_	5SY4 203-7 5SY4 204-7	5SY4 203-8 5SY4 204-8	
9.9		5	_	_	5SY4 211-7	-	
		6	5SY4 206-5	5SY4 206-6	5SY4 206-7	5SY4 206-8	
		8	5SY4 208-5	_	5SY4 208-7	5SY4 208-8	
		10	5SY4 210-5	5SY4 210-6	5SY4 210-7	5SY4 210-8	
		13 15	5SY4 213-5 —	5SY4 213-6	5SY4 213-7 5SY4 218-7	5SY4 213-8	
		16			5SY4 216-7	5SY4 216-8	
		20	5SY4 220-5	5SY4 220-6	5SY4 220-7	5SY4 220-8	
		25	5SY4 225-5	5SY4 225-6	5SY4 225-7	5SY4 225-8	
1 MW = modular width		30			5SY4 230-7		
of 18 mm. Depth = 70		32 35	5SY4 232-5	5SY4 232-6	5SY4 232-7 5SY4 235-7	5SY4 232-8	
mm.		35 40	5SY4 240-5	 5SY4 240-6	5SY4 235-7 5SY4 240-7	5SY4 240-8	
		45	_	_	5SY4 245-7	_	
		50	5SY4 250-5	5SY4 250-6	5SY4 250-7	5SY4 250-8	
		60	_	_	5SY4 260-7	_	
		63	5SY4 263-5	5SY4 263-6	5SY4 263-7	5SY4 263-8	

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5SY4 Supplementary Protection

5SY4 70 mm mounting depth

Selection and ordering data

All 5SY4 designs have been certified acc. to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications of up to 277 V AC (1-pole and 1-pole + N designs) and 480 V AC (2-pole, 3-pole, 3-pole + N and 4-pole designs).

designs).		In MW	Characteristic A Order No. List Price \$	Characteristic B Order No. List Price \$	Characteristic C Order No. List Price \$	Characteristic D Order No. List Price \$	Weight 1 item
		Α	1 item	1 item	1 item	1 item	kg
9 9 9	3-pole *1 *3 *5	0.3 0.5	 5SY4 305-5	_	5SY4 314-7 5SY4 305-7	5SY4 314-8 5SY4 305-8	0.495
altalta.		1 3	5SY4 301-5	_	5SY4 301-7	5SY4 301-8	
A WELL	2 4 6	1.6	5SY4 315-5	_	5SY4 315-7	5SY4 315-8	
		2	5SY4 302-5	_	5SY4 302-7	5SY4 302-8	
() () () ()		3 4	5SY4 303-5 5SY4 304-5	_	5SY4 303-7	5SY4 303-8	
2 9 9		5	5514 504-5 —	_	5SY4 304-7 5SY4 311-7	5SY4 304-8	
		6	5SY4 306-5	5SY4 306-6	5SY4 306-7	5SY4 306-8	
		8	5SY4 308-5	_	5SY4 308-7	5SY4 308-8	
		10	5SY4 310-5	5SY4 310-6	5SY4 310-7	5SY4 310-8	
		13	5SY4 313-5	5SY4 313-6	5SY4 313-7	5SY4 313-8	
		15	— ECVA 246 E	— ECV4 246 6	5SY4 318-7	— ECV4 246 0	
		16 20	5SY4 316-5 5SY4 320-5	5SY4 316-6 5SY4 320-6	5SY4 316-7 5SY4 320-7	5SY4 316-8 5SY4 320-8	
		25	5SY4 325-5	5SY4 325-6	5SY4 325-7	5SY4 325-8	
		30	_	_	5SY4 330-7	_	
		32	5SY4 332-5	5SY4 332-6	5SY4 332-7	5SY4 332-8	
		35	-	_	5SY4 335-7	_	
		40	5SY4 340-5	5SY4 340-6	5SY4 340-7	5SY4 340-8	
		45 50	— ECV4 2E0 E	— ESV4 2E0 6	5SY4 345-7	— ECV4 2E0 0	
		60	5SY4 350-5	5SY4 350-6	5SY4 350-7 5SY4 360-7	5SY4 350-8	
		63	5SY4 363-5	5SY4 363-6	5SY4 363-7	5SY4 363-8	
3337	3-pole + N	0.3	_	_	5SY4 614-7	5SY4 614-8	0.660
9 9 9 9	*1*3*5*N	0.5	_	_	5SY4 605-7	5SY4 605-8	
The start of	7-7-7-1	1 4	5SY4 601-5	_	5SY4 601-7	5SY4 601-8	
() () () ()	l2 l4 l6 lN	1.6	5SY4 615-5	_	5SY4 615-7	5SY4 615-8	
		2	5SY4 602-5	_	5SY4 602-7	5SY4 602-8	
		3 4	5SY4 603-5 5SY4 604-5		5SY4 603-7 5SY4 604-7	5SY4 603-8 5SY4 604-8	
9.0.0.0		6	5SY4 606-5	5SY4 606-6	5SY4 606-7	5SY4 606-8	
		8	5SY4 608-5	_	5SY4 608-7	5SY4 608-8	
		10	5SY4 610-5	5SY4 610-6	5SY4 610-7	5SY4 610-8	
		13	5SY4 613-5	5SY4 613-6	5SY4 613-7	5SY4 613-8	
		16	5SY4 616-5	5SY4 616-6	5SY4 616-7	5SY4 616-8	
		20 25	5SY4 620-5	5SY4 620-6	5SY4 620-7	5SY4 620-8	
		32	5SY4 625-5 5SY4 632-5	5SY4 625-6 5SY4 632-6	5SY4 625-7 5SY4 632-7	5SY4 625-8 5SY4 632-8	
		40	5SY4 640-5	5SY4 640-6	5SY4 640-7	5SY4 640-8	
		50	5SY4 650-5	5SY4 650-6	5SY4 650-7	5SY4 650-8	
		63	5SY4 663-5	5SY4 663-6	5SY4 663-7	5SY4 663-8	
9999	4-pole	0.3	_	_	5SY4 414-7	5SY4 414-8	0.660
9.9.9.9	*1 *3 *5 *7	0.5	_	_	5SY4 405-7	5SY4 405-8	
Washington Control	1/2/2/2	1 4	5SY4 401-5	_	5SY4 401-7	5SY4 401-8	
NEL H	12 14 16 18	1.6	5SY4 415-5	_	5SY4 415-7	5SY4 415-8	
		2 3	5SY4 402-5	_	5SY4 402-7	5SY4 402-8	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		4	5SY4 403-5 5SY4 404-5		5SY4 403-7 5SY4 404-7	5SY4 403-8 5SY4 404-8	
-9.9.9.9		6	5SY4 406-5	5SY4 406-6	5SY4 406-7	5SY4 406-8	
_		8	5SY4 408-5	_	5SY4 408-7	5SY4 408-8	
		10	5SY4 410-5	5SY4 410-6	5SY4 410-7	5SY4 410-8	
		13	5SY4 413-5	5SY4 413-6	5SY4 413-7	5SY4 413-8	
		16	5SY4 416-5	5SY4 416-6	5SY4 416-7	5SY4 416-8	
		20 25	5SY4 420-5 5SY4 425-5	5SY4 420-6 5SY4 425-6	5SY4 420-7 5SY4 425-7	5SY4 420-8 5SY4 425-8	
1 MW = modular		32	5SY4 432-5	5SY4 432-6	5SY4 432-7	5SY4 432-8	
width of 18 mm.		40	5SY4 440-5	5SY4 440-6	5SY4 440-7	5SY4 440-8	
		50	5SY4 450-5	5SY4 450-6	5SY4 450-7	5SY4 450-8	
Depth = 70 mm.		30	3014 430-3				

5SY6 Supplementary Protection

5SY6 70 mm mounting depth

Features

All 5SY6 designs have been certified to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications up to 277 V AC (1-pole and 1-pole + N designs) and 480 V AC (2-pole, 3-pole, 3-pole + N and 4-pole designs). The only difference between 5SY4 and 5SY6 is the IEC 60898-1 Interrupting Rating. 5SY4 has10kA and 5SY6 has 6kA Interrupting rating according to IEC 60898-1. However, UL Interrupting ratings are the same for 5SY4 and 5SY6.

Selection and ordering data

			Characteristic B		Characteristic C				
	I_{Π}	Mounting DT width	Order No. Price per PU	PG DT	Order No. Pric		PS*/ P. unit	PG	Weight per PU approx.
	А	MW ¹⁾							kg
MCBs 6000 A 1-Pole, 230/400 V AC	0.3 0.5 1	1	-		5SY6 114-7 5SY6 105-7 5SY6 101-7	1 1 1	1 unit 1/12 units 1/12 units	001 001 001	0.167 0.165 0.164
	1.6 2 3		5SY6 102-6	001 ►	5SY6 115-7 5SY6 102-7 5SY6 103-7	1 1 1	1 unit 1/12 units 1/12 units	001 001 001	0.162 0.153 0.145
@	4 5		5SY6 104-6 —	001 >	5SY6 104-7 5SY6 111-7	1 1	1/12 units 1/12 units 1/12 units	001 001	0.160 0.160
	6 8	•	5SY6 106-6 —	001 >	5SY6 106-7 5SY6 108-7	1	1/12 units 1/12 units	001 001	0.160 0.158
	10 13 15	•	5SY6 110-6 5SY6 113-6	001 > 001	5SY6 110-7 5SY6 113-7 5SY6 118-7	1 1	1/12 units 1/12 units 1/12 units	001 001 001	0.158 0.148 0.160
G	16 20	•	5SY6 116-6 5SY6 120-6	001 > 001	5SY6 116-7 5SY6 120-7	1	1/12 units 1/12 units	001 001	0.158 0.162
	25 30 32		5SY6 125-6 — 5SY6 132-6	001	5SY6 125-7 5SY6 130-7 5SY6 132-7	1	1/12 units 1/12 units 1/12 units	001 001 001	0.163 0.160 0.149
	40 50		5SY6 140-6 5SY6 150-6	001 001	5SY6 140-7 5SY6 150-7	1 1	1/12 units 1/12 units	001 001	0.150 0.168
	63		5SY6 163-6	001	5SY6 163-7	1	1/12 units	001	0.172
1-Pole + N , 230 V AC	0.3 0.5 1	2	=		5SY6 514-7 5SY6 505-7 5SY6 501-7	1 1	1 unit 1 unit 1 unit	001 001 001	0.328 0.325 0.321
	1.6 2		 5SY6 506-6	001	5SY6 515-7 5SY6 502-7	1	1 unit 1 unit	001	0.318 0.324
W. W.	3 4		5SY6 510-6	001	5SY6 503-7 5SY6 504-7	1	1 unit 1 unit	001	0.314 0.314
6.6.	6 8		5SY6 513-6 —	001	5SY6 506-7 5SY6 508-7	1 1	1/6 units 1 unit	001 001	0.310 0.310
1 4 6	10 13		5SY6 510-6 5SY6 513-6	001 001	5SY6 510-7 5SY6 513-7	1	1/6 units 1/6 units	001	0.301 0.320
	15 16		5SY6 516-6	001	5SY6 218-7 5SY6 516-7	1 1	1/12 units 1/6 units	001	0.160 0.302
6.6	20 25 32		5SY6 520-6 5SY6 525-6 5SY6 532-6	001 001 001	5SY6 520-7 5SY6 525-7 5SY6 532-7	1	1 unit 1 unit 1 unit	001 001 001	0.316 0.318 0.319
	40 50		5SY6 540-6 5SY6 550-6	001 001	5SY6 540-7 5SY6 550-7	1	1 unit 1 unit	001 001	0.318 0.323
	63		5SY6 563-6	001	5SY6 563-7	1	1 unit	001	0.343
2-Pole , 400 V AC	0.3 0.5	2	=		5SY6 214-7 5SY6 205-7	1	1 unit 1 unit	001 001	0.328 0.324
	1 1.6 2		_		5SY6 201-7 5SY6 215-7 5SY6 202-7	1	1/6 units 1 unit 1/6 units	001 001 001	0.302 0.317 0.324
	3		Ξ		5SY6 203-7 5SY6 204-7	1	1/6 units 1/6 units	001	0.320
6.6.	5 6		 5SY6 206-6	001 >	5SY6 211-7 5SY6 206-7	i 1	1/12 units 1/6 units	001	0.160 0.292
1	8 10			001 -	5SY6 208-7 5SY6 210-7	1	1 unit 1/6 units		0.309 0.310
	13 15 16		5SY6 213-6 — 5SY6 216-6	001 001 >	5SY6 213-7 5SY6 218-7 5SY6 216-7	1 1	1 unit 1/12 units 1/6 units	001 001 001	0.318 0.160 0.291
9.0	20 25		5SY6 220-6 5SY6 225-6	001 001	5SY6 220-7 5SY6 225-7	1 1	1/6 units 1/6 units		0.300
2 0	30 32		 5SY6 232-6	001	5SY6 230-7 5SY6 232-7	1 1	1/12 units 1/6 units	001 001	0.160 0.318
	40 50 63		5SY6 240-6 5SY6 250-6	001 001	5SY6 240-7 5SY6 250-7	1 1 1	1 unit 1 unit 1 unit	001	0.318
	UJ		5SY6 263-6	001	5SY6 263-7	, i	i urilt	UUT	0.340

^{1) 1} MW (modular width) = 18 mm.

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^{*} Availability to be announced

5SY6 Supplementary Protection

5SY6 70 mm mounting depth (cont.)

Selection and ordering data

-		_									
	ī	Mounting	DT	Characteristic B	PG DT	Characteristic C	Drice	PU	DC*/	DC	Woight
	I_{n}	Mounting width	וט	Order No. Price per PU	PG DI	Order No.	Price per PU	(UNIT,	PS*/ P. unit	PG	Weight per PU
	^	MW ¹⁾						SET, M)			approx.
	Α					5000 044 7			d	004	kg
MCBs 6000 A 3-Pole, 400 V AC	0.3 0.5	3		_		5SY6 314-7 5SY6 305-7		1 1	1 unit 1 unit	001 001	0.489 0.481
2 2 2 2 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3	1			_		5SY6 301-7		1	1 unit	001	0.473
R. R. R.	1.6 2			_		5SY6 315-7 5SY6 302-7		1 1	1 unit 1/4 units	001 001	0.471 0.480
6.6.6.	3 4			_		5SY6 303-7 5SY6 304-7		1	1 unit 1/4 units	001 001	0.465 0.458
4 6	5				004	5SY6 311-7		1	1/12 units	001	0.160
(E E E	6 8			5SY6 306-6 —	001 >	5SY6 306-7 5SY6 308-7		1 1	1/4 units 1 unit	001 001	0.435 0.461
0.0	10 13			5SY6 310-6 5SY6 313-6	001 > 001	5SY6 310-7 5SY6 313-7		1	1/4 units 1 unit	001 001	0.443 0.471
0.8	15 16		•	5SY6 316-6	001	5SY6 318-7 5SY6 316-7		1	1/12 units 1/4 units	001 001	0.160 0.437
	20			5SY6 320-6	001	5SY6 320-7		1	1/4 units	001	0.455
	25 30			5SY6 325-6 —	001	5SY6 325-7 5SY6 330-7		1	1/4 units 1/12 units	001 001	0.464 0.160
	32 40			5SY6 332-6 5SY6 340-6	001 > 001	5SY6 332-7 5SY6 340-7		1	1/4 units 1/4 units	001 001	0.459 0.472
	50			5SY6 350-6	001	5SY6 350-7		1	1/4 units	001	0.489
	63			5SY6 363-6	001	5SY6 363-7		1	1/4 units	001	0.488
3-Pole + N, 400 V AC	0.3	4				5SY6 614-7		1	1 unit	001	0.631
3-F016 + 11, 400 V AC	0.5	4		_		5SY6 605-7		1	1 unit	001	0.643
R.R.P. P.	1 1.6			_		5SY6 601-7 5SY6 615-7		1	1 unit 1 unit	001 001	0.623 0.631
6.6.6.6.	2			_		5SY6 602-7 5SY6 603-7		1	1 unit 1 unit	001 001	0.632 0.590
	4			<u></u>		5SY6 604-7		1	1 unit	001	0.620
	6 8			5SY6 606-6 —	001	5SY6 606-7 5SY6 608-7		1 1	1 unit 1 unit	001 001	0.609 0.607
6.6.6.6	10 13			5SY6 610-6 5SY6 613-6	001 001	5SY6 610-7 5SY6 613-7		1	1 unit 1/3 units	001 001	0.611 0.630
0.0	16			5SY6 616-6	001	5SY6 616-7		1	1/3 units	001	0.613
	20 25			5SY6 620-6 5SY6 625-6	001 001	5SY6 620-7 5SY6 625-7		1 1	1 unit 1 unit	001 001	0.623 0.622
	32 40			5SY6 632-6 5SY6 640-6	001 001	5SY6 632-7 5SY6 640-7		1	1 unit 1 unit	001 001	0.628 0.629
	50			5SY6 650-6	001	5SY6 650-7		1	1 unit	001	0.655
	63			5SY6 663-6	001	5SY6 663-7		1	1 unit	001	0.671
4-Pole, 400 V AC	0.3	4		_		5SY6 414-7		1	1 unit	001	0.640
	0.5 1			_		5SY6 405-7 5SY6 401-7		1	1 unit 1 unit	001 001	0.641 0.634
REFE	1.6			_		5SY6 415-7		1	1 unit	001	0.620
6.6.6.6.	2			_		5SY6 402-7 5SY6 403-7		1 1	1 unit 1 unit	001 001	0.642 0.625
	4 6			 5SY6 406-6	001	5SY6 404-7 5SY6 406-7		1	1 unit 1 unit	001 001	0.615 0.612
	8			_		5SY6 408-7		1	1 unit	001	0.605
6.6.6.6	10 13			5SY6 410-6 5SY6 413-6	001 001	5SY6 410-7 5SY6 413-7		1 1	1/3 units 1 unit		0.603 0.628
	16 20			5SY6 416-6 5SY6 420-6	001 001	5SY6 416-7 5SY6 420-7		1	1/3 units 1/3 units	001 001	0.620 0.598
	25			5SY6 425-6	001	5SY6 425-7		1	1/3 units	001	0.625
	32 40			5SY6 432-6 5SY6 440-6	001 001	5SY6 432-7 5SY6 440-7		1	1/3 units 1/3 units	001 001	0.627 0.628
	50 63			5SY6 450-6 5SY6 463-6	001 001	5SY6 450-7 5SY6 463-7		1 1	1 unit 1/3 units	001 001	0.651 0.673
	•							•			

^{1) 1} MW (modular width) = 18 mm.

Supplementary Protection, High-Current Product Range

5SP4 70 mm mounting depth

Features

5SP4 designs have been certified to **UL 1077 and CSA 22.2 No. 235-M 89** and can therefore be used as "supplementary protectors" for applications of up to 277 V AC (1-pole designs) and 480 V AC (2-pole, 3-pole, and 4-pole designs).

Selection and ordering data

	I _n MV	Characteristic B Order No. List Price	Characteristic C Order No. List Price \$	Characteristic D Order No. List Price \$	Weight 1 item
	А	1 item	1 item	1 item	kg
	1-pole *1 80 1.5 100 125	5SP4 180-6 5SP4 191-6 5SP4 192-6	5SP4 180-7 5SP4 191-7 5SP4 192-7	5SP4 180-8 5SP4 191-8 -	0.258
	2-pole *1*3 80 3 100 125	5SP4 280-6 5SP4 291-6 5SP4 292-6	5SP4 280-7 5SP4 291-7 5SP4 292-7	5SP4 280-8 5SP4 291-8 -	0.516
3000	3-pole *1*3*5 80 4.5 100 125	5SP4 380-6 5SP4 391-6 5SP4 392-6	5SP4 380-7 5SP4 391-7 5SP4 392-7	5SP4 380-8 5SP4 391-8 -	0.762
300000 300000	4-pole \$1\frac{43}{5}\frac{57}{7}\frac{80}{100} \frac{6}{125}	5SP4 480-6 5SP4 491-6 5SP4 492-6	5SP4 480-7 5SP4 491-7 5SP4 492-7	5SP4 480-8 5SP4 491-8 -	1.032

1 MW = modular width of 18 mm.

Depth = 70 mm.

Supplementary Protection, AC/DC Product Range

5SY5 70 mm mounting depth

Features

- Operating voltage to EN 60898 and EN 60947-2
- 220 V DC/pole max. 440 V AC max.
- Standards: EN 60 898-1, DIN VDE 0641 Part 11, IEC 60 898
- Additional components can be retrofitted.
- · Devices do not comply with **UL1077**

Selection and ordering data

		I_{n}	MW ¹⁾	Characteristic B		Characteristic C		Weight
		n	10100	Order No.	List	Order No.	List	1 item
				01401140.	Price \$	Craoi ivo.	Price \$	1 110111
		Α			1 item		1 item	kg
	1-pole							
	*1	0.0				500/5 444 5		0.117
2	<u> </u>	0.3	1	•		5SY5 114-7		0.147
31 3-1-	_/	0.5 1		-		5SY5 105-7 5SY5 101-7		
12 第五社	12			•				
195-36		1.6		-		5SY5 115-7		
		2		5SY5 102-6		5SY5 102-7		
		3		•		5SY5 103-7		
2		4		-		5SY5 104-7		
		6		5SY5 106-6		5SY5 106-7		
		8		-		5SY5 108-7		
		10		5SY5 110-6		5SY5 110-7		
		13		5SY5 113-6		5SY5 113-7		
		16		5SY5 116-6		5SY5 116-7		
		20		5SY5 120-6		5SY5 120-7		
		25		5SY5 125-6		5SY5 125-7		
		32 ¹⁾		5SY5 132-6		5SY5 132-7		
		40		5SY5 140-6		5SY5 140-7		
		50		5SY5 150-6		5SY5 150-7		
		63		5SY5 163-6		5SY5 163-7		
9 9	2-pole							
0 9	* 1*3	0.3	2			5SY5 214-7		0.304
The state of	~\ [†] ~\ [†]	0.5		-		5SY5 205-7		
A Comment of	2 4	1		-		5SY5 201-7		
	12 14	1.6		-		5SY5 215-7		
		2				5SY5 202-7		
		3		-		5SY5 203-7		
10.0		4				5SY5 204-7		
-		6		5SY5 206-6		5SY5 206-7		
		8				5SY5 208-7		
		10		5SY5 210-6		5SY5 210-7		
		13		5SY5 213-6		5SY5 213-7		
		16		5SY5 216-6		5SY5 216-7		
		20		5SY5 220-6		5SY5 220-7		
		25		5SY5 225-6		5SY5 225-7		
		32		5SY5 232-6		5SY5 232-7		
		40		5SY5 240-6		5SY5 240-7		
		50		5SY5 250-6		5SY5 250-7		
		63		5SY5 263-6		5SY5 263-7		

¹⁾ MW = modular width of 18 mm. Depth = 70 mm.

Supplementary Protection

Additional components for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors

Features

- UL Recognized to UL 1077 (5ST3 010, 011, 012, 020, 021 & 022)
- Individual retrofitting possible
- · Assembly via factory-fitted clips
- Short-circuit protection via supplementary protectors of characteristic B or C and $I_{\rm n}$ = 6 A or 6 A gL fuses
- Low output versions in accordance with EN 61131-2 for controlling PLCs

Design

Auxiliary switches (AS) and fault signal contacts (FC) (5ST30.0, 5ST30.1, 5ST30.2)

- Min. contact load: 50 mA, 24 V
- Max. contact load: NO contacts: 2 A, 400 V AC, AC-14 6 A, 230 V AC, AC-14 1 A, 220 V DC, DC-13 1 A, 110 V DC, DC-13 3 A, 60 V DC, DC-13 6 A, 24 V DC, DC-13 NC contacts: 2 A, 400 V AC, AC-13 6 A, 230 V AC, AC-13 1 A, 220 V DC, DC-13 1 A, 110 V DC, DC-13 3 A, 60 V DC, DC-13
- Connectable to instabus EIB and AS-Interface bus via binary inputs

6 A, 24 V DC, DC-13

Auxilliary switches (AS) with low output

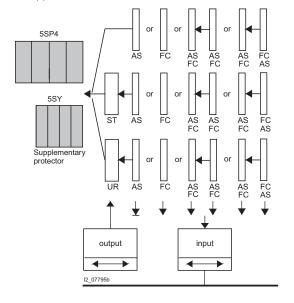
(5ST3013, 5ST3014, 5ST3015)

• Area of application: 1mA / 5 V DC to 50 mA / 30 V DC

Application

Indication of the supplementary protectors' switching state:
- AS: ON/OFF

- FC: tripped



Selection and ordering data

	MW	Order No.	List Price \$	Price group	Weight 1 item
			1 item		kg
1	Auxiliary switches (AS) for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors				
1-1	13	5ST3 010			0.050
37	1 NO + 1 NC, low output 1)	5ST3 013			
· Paralle	13 2 NO	5ST3 011			
	2 NO, low output 1)	5ST3 014			
	11 2 NC	5ST3 012			
	1 2 NC, low	5ST3 015			
	22 output 1)				
	Fault signal contacts (FC) for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors				
1 2	13 1 NO + 1 NC 0.5 	5ST3 020			0.050
	13 2 NO 	5ST3 021			
	11 2 NC 1	5ST3 022			

¹⁾Not UL Rated.

Supplementary Protection

Additional components for 5SY4, 5SY5, 5SY6 and 5SP4 supplementary protectors

Features

Shunt trips

- Response limits acc. to DIN VDE 0660 Part 100, 7.2.1.4
- Suitable for voltages: 110 to 415 V AC, 110 V AC, 24 to 48 V AC/DC

Application

Remote tripping of the supplementary protectors

Selection and ordering data

		MW	Order No.	List Price \$ 1 item	Price group	Weight 1 item kg
La de la composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della composition della com	Shunt trips (ST) for 5SY4, 5SY5, 5SY6 and	d 5SP4 supplementary protectors 1) 110-415 V AC 1 24-48 V AC/DC 1	5ST3 030 5ST3 031			0.098
	2 <u>1</u> - <u>1</u>					

Features

Undervoltage releases

 Response limits acc. to DIN VDE 0660 Part 100, 7.2.1.3

Suitable for voltages: 230 V AC 110 V DC 24 V DC

Connectable to *instabus EIB* and AS-Interface bus via binary inputs.

Application

- Applicable as remote trip in an EMERGENCY-OFF loop
- Assures disconnection of the control circuit acc. to EN 60 204
- In cases of interrupted or insufficient voltage, the undervoltage release trips the supplementary protector or prevents it from switching on.

Selection and ordering data

		MW	Order No.	List Price \$ 1 item	Price group	Weight 1 item kg
1-1-1-1	Undervoltage release 5SY4, 5SY5, 5SY6 and D1 13 23 U3	s (UR) for d 5SP4 supplementary protectors 1) 230 V AC 1 110 V DC 24 V DC	5ST3 040 5ST3 041 5ST3 042			0.115
	D1 U< D2	230 V AC 1 110 V DC 24 V DC	5ST3 043 5ST3 044 5ST3 045			

1) Not UL/CSA Rated.

Control Circuit ProtectionSupplementary Protection Accessories

Accessories for 5SY and 5SP supplementary protectors

Features

- For use with 5SY and 5SP supplementary protectors
- UL and CSA Certified to UL 508

Selection and ordering data



		For use with 59	Y		For use with 5	SP ³⁾	
	Length	Order No.	List Price \$	Weight 1 item	Order No.	List Price \$	Weight 1 item
	mm		1 item	kg		1 item	kg
Busbars ²⁾ without end caps (can be cut)							
1-pole	1000	5ST3 701-0HG		0.330	5ST3 701-2HG		0.450
1-pole + AS or FC ¹⁾		5ST3 703-0HG			-		
2-pole	1000	5ST3 705-0HG		0.508	5ST3 705-2HG		0.690
2-pole + AS or FC ¹⁾		5ST3 707-0HG			-		
3-pole	1000	5ST3 710-0HG		0.800	5ST3 710-2HG		1.090
3-pole + AS or FC ¹⁾		5ST3 712-0HG					
Busbar End Caps							
1-pole		5ST3 748-0HG		0.001	5ST3 748-0HG		0.001
2- & 3- pole		5ST3 750-0HG			5ST3 750-0HG		
Connection terminals	Wire size						
Infeed - MCBs	6 - 35 mm ² 10 - 1/0 AWG	5ST3 770-0HG		0.035	5ST3 770-0HG		0.035
Infeed - busbars	1.5 - 50 mm ² 14 - 1 AWG	5ST3 770-1HG		0.016	5ST3 770-1HG		0.016
Touch protection covers ²⁾		5ST3 655-0HG		0.003	5ST3 655-0HG		0.003
5 x 1 pin		3313 033-UNG		0.003	3313 033-UNG		0.003

- 1) Used with appropriate pole supplementary protector + 1 auxiliary switch (AS) or 1 fault signal contact (FC).
- 2) Always cover all exposed terminals with touch protection covers 5ST3655-0HG.
- 3) Maximum 100 A for infeed at the start of a busbar.

Technical Data

		5ST3 70HG	5ST3 72HG	5ST3 770-0HG	5ST3 770-1HG
Standards		UL 508, CSA C22.2 N	lo. 14-M 95,		
Certifications		UL 508 File No. E328	403		
		CSA			
Operational voltage					
• IEC	V AC	690			
• UL 508	V AC	600			
Rated current	Α	-	-	115	
Maximum busbar current I_s per phase					
 Infeed at the start of the busbar 	Α	80	100	-	-
 Infeed at the center of the busbar 	Α	160	200	-	-
Busbar cross-section	mm ² Cu	18	25	-	-
Conductor cross-sections	AWG	-	-	10-1/0	14-1
	mm ²	-	-	6-35	1.5-50
Terminals - terminal tightening torque	Nm	-	-	5	3.5
	lbs/in	-	-	50	35

4

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Supplementary Protection Accessories

Accessories for **5SY and 5SP supplementary protectors**

Technical Data

Busbar system 1)

- Acc. to DIN 57 606 and DIN 57 659
- Load for one-side/central infeed: 80 A/130 A for 16 mm²
- Pin-type connections
- Single and multi-phase
 Cu: 16 mm² and fully
- insulated
- Lug spacing: 18 mm
- No additional connection terminal required for stranded
- connections up to 35 mm²
 Excellent accessibility of the feeder cables
- Busbars do not comply with UL1077

0-1--4

		Length	Order No.	List	Price	Weight
		Lengin	Order No.	Price \$	group	1 item
		mm		1 item		kg
Accessories for 5SY4	I, 5SY5 miniature circuit-breakers					
44444444	Busbars 16mm ²					
d d d d d d d d d	Fully insulated (Do not cut):					
		214	5ST3 700			0.040
	1-phase + AS		5ST3 702			0.000
	2-phase 2-phase + AS		5ST3 704 5ST3 706			0.060
	3-phase		5ST3 708			0.100
	3-phase + AS 3 × (1-phase + AS)		5ST3 711 5ST3 713			
	4-phase		5ST3 715			0.150
	Without end caps (Can be cut):		3010713			0.100
	1-phase	1016	5ST3 701			0.190
	1-phase + AS	.0.0	5ST3 703			0.100
	2-phase		5ST3 705			0.290
	2-phase + AS		5ST3 707			
	3-phase		5ST3 710			0.430
	3-phase + AS		5ST3 712			
	3 × (1-phase + AS)		5ST3 714			
	4-phase		5ST3 716			0.700
	End caps for lateral insulation of cut-to-length but	sbars				
	1- phase		5ST3 748			0.001
	2- and 3-phase		5ST3 750			0.001
	4-phase		5ST3 718			0.001
						4.11
accessories for 5SY2	I, 5SY5, 5SP4 supplementary protectors			1 item		1 item
17700	Handle locking device					
The second secon	applicable with all types of poles;		5ST3 801			0.008
	applicable with all types of poles; sealable against unintended on- and off-switching	ng;	5ST3 801			0.008
T	applicable with all types of poles; sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm	ng;	5ST3 801			0.008
3	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm	ng;	5ST3 801			0.008
3	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles;	ng;	5ST3 801 5ST3 800			0.008
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings;					
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles;				H	
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar					
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock		5ST3 800			0.001
	sealable against unintended on- and off-switching padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable					
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device		5ST3 800			0.001
D 10.222/70	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device		5ST3 800 5ST3 802			0.001
10.222779	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of		5ST3 800			0.001
10.222/9	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism		5ST3 800 5ST3 802			0.001
10.22278	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of 5ST3 801 handle locking device and		5ST3 800 5ST3 802			0.001
10 appendix	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of 5ST3 801 handle locking device and 5ST3 802 padlock Inscription labels (white) for		5ST3 800 5ST3 802 5ST3 803			0.001 0.027 0.035
10.222/3	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of 5ST3 801 handle locking device and 5ST3 802 padlock		5ST3 800 5ST3 802			0.001
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of 5ST3 801 handle locking device and 5ST3 802 padlock Inscription labels (white) for 5SY4, 5SY5, 5SP4 miniature circuit-breakers 15 x 9 mm, 3 frames containing 44 labels each,		5ST3 800 5ST3 802 5ST3 803			0.001 0.027 0.035
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of 5ST3 801 handle locking device and 5ST3 802 padlock Inscription labels (white) for 5SY4, 5SY5, 5SP4 miniature circuit-breakers 15 x 9 mm, 3 frames containing 44 labels each, attachable to the lower casing collar		5ST3 800 5ST3 802 5ST3 803			0.001 0.027 0.035
	sealable against unintended on- and off-switchin padlock with a shackle of max. 3 mm Terminal cover applicable with all types of poles; as an additional cover for screw openings; prevents removal of the device from the standar sealable Padlock for handle locking device 5ST3 801 Locking mechanism consisting of 5ST3 801 handle locking device and 5ST3 802 padlock Inscription labels (white) for 5SY4, 5SY5, 5SP4 miniature circuit-breakers 15 x 9 mm, 3 frames containing 44 labels each,		5ST3 800 5ST3 802 5ST3 803			0.001 0.027 0.035

Control Circuit Protection Supplementary Protection

5SY and 5SP supplementary protectors

		5SY4	5SY6	5SY5	5SP4
Standards		EN60898 EN 60947-2 UL 1077; CSA C22.2 No. 235	EN60898 EN 60947-2 UL 1077; CSA C22.2 No. 235	EN60898 EN 60947-2	EN60898 EN 60947-2 UL 1077; CSA C22.2 No. 23
Certifications		cE; cURus, UL File No. E116386	cE; cURus, UL File No. E116386	Not UL/CSA Rated	cE; cURus, UL File No. E10658
Tripping characteristic		A, B, C, D	B, C	B, C	B, C, D
Number of poles		1, 1+N, 2, 3, 3+N, 4	1, 1+N, 2, 3, 3+N, 4	1, 2	1, 2, 3, 4
Operating voltage	Min. V AC/DC	24	24	24	24
- EN 60898, EN 60947-2	Max. V DC/pole	60 ¹⁾	60 ¹⁾	250	60 ¹⁾
	Max. V AC	400	400	400	400
– UL 1077 and CSA 22.2 No. 235	Max. V AC	480Y/277	480Y/277	_	480Y/277
0E 1017 and 00/(2E.E.140. 200	V DC/pole	_	1001/211		1001/211
Interrupting rating	* Borpole				
I _{co} to IEC/EN 60898-1	kA AC	10	6	10	10
I _{cn} to IEC/EN 60898-2	kA AC	10	10	10	10
- UL 1077 and CSA 22.2 No. 235	120/240, 240 V: kA AC	14	14	Not UL Rated	14
AC: Max. RMS Symmetrical	240 V: kA AC	7.5	7.5	Not OL Hated	7.5
AO. IVIAX. FIIVIO Gyminietricai	277 V: kA AC	5	5		5
	480 V: kA AC	5	5		5
Touch Protection to EN 50274-1	400 V. KA AC	Yes	5		5
Degree of protection to EN 60529		IP20, with connected c	and latera		
CFC and silicone free		Yes	Unductors		
Mounting		162			
- Snap-on mounting		Yes			
		res			_
- Standard mounting rail and mounting		70			Yes
Device Depth Terminals	mm	70			
- Tunnel Terminals at both ends					\/
					Yes
- Combined terminals at both ends	mm ²	Yes	Yes	Yes	_
 Terminal, solid, stranded or finely stranded with end sleeve 	mm-	0.75 to 25			
 Terminal tightening torque 	lb. in.	22 to 26			22 to 31
	Nm	2.5 to 3			2.5 to 3.5
Conductor cross sections					
- Solid and stranded	mm ²	0.75 to 35			0.75 to 50
- Finely stranded, with end sleeve	mm ²	0.75 to 25			0.75 to 35
	AWG	14 to 4			14 to 2
Calibration Base	°C	30 (EN 60898)			
Average service life, with rated load	Operations	20,000	20,000	20,000 (above 40A: 10, 000)	20,000
Ambient temperature	°C	-25 to 45, occassionally	+55, max. 95% humidity		
Storage Temperature	°C	-40 to +75			
Resistance to vibration to	m/s2	60 at 10 Hz to 150 Hz			

¹⁾ The operating voltage 60 V DC/pole takes into account a battery charging voltage with peak value of 72 V.

O

Supplementary Protection, General Data Tripping characteristics and

breaking capacity

Tripping characteristics

Tripping	performance at an ambie	nt temperatur	e of 30 °C					
Tripping character	Standards istic	Thermal release Test currents:				Electromaç Test currer	netic release	
		low	high	tripping time		hold	trips at the	tripping time
		test current	test current	63 A ≥ <i>I</i> _n	63A ≤ <i>I</i> _n		latest at	
		I_1	I_2	t		I_4	I_5	t
Α		1.13 × I _n		> 1 h	> 2 h	$2 \times I_n$		≥ 0.1 s
			$1.45 \times I_{n}$	< 1 h	< 2 h		$3 \times I_n$	< 0.1 s
В	IEC 60 898/EN 60 898	1.13 × I _n		> 1 h	> 2 h	$3 \times I_n$		≥ 0.1 s
	DIN VDE 0641 Part 11		$1.45 \times I_{n}$	< 1 h	< 2 h		$5 \times I_n$	< 0.1 s
С		$1.13 \times I_{n}$		> 1 h	> 2 h	$5 \times I_n$		≥ 0.1 s
			$1.45 \times I_{n}$	< 1 h	< 2 h		10 x <i>I</i> _n	< 0.1 s
D		1.13 × I _n		> 1 h	> 2 h	$10 \times I_n$		≥ 0.1 s
			1.45 x I _n	< 1 h	< 2 h		20 x I _n	< 0.1 s
							(IEC 60 898:	50 x I _{n)}

Breaking capacity

Breaking capacity ratings for UL1077 are broken down in four main line voltages that are tested. These voltages shown in the table below.

For IEC ratings, there are special requirements with regard to the breaking capacity.

The values are standardized and determined according to the testing conditions of EN 60 898 and DIN VDE 0641 Part 11.

The most usual values are 6 000 and 10 000.

For other test conditions, other values can be specified which lie above those of EN 60 898 and DIN VDE 0641 Part 11.

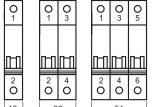
An example of another standard is EN 60 947-2 or DIN VDE 0660 Part 101 for MCBs.

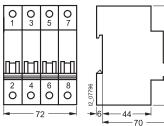
nterrupting Rati	ng				
		UL 1077 1-pole 120/240 V AC (in pairs) 240 V AC	1-pole 240 V AC	1-pole 277 V AC	2-, 3-, 4-pole 480 V AC (3-phase)
Rated current	$I_{n}\left[A\right]$	$I_{\rm cn}$ [kA]	I _{cn} [kA]	I _{cu} [kA]	I _{cu} [kA]
5SP4	80 - 125	14	7.5	5	5
5SY4	0.3 - 63	14	7.5	5	5
		UL 1077 1-pole 65 V DC	2-pole 125 V DC		
Rated current	$I_{n}\left[A\right]$	$I_{cn}[A]$	I _{cn} [A]		
5SP4	80 - 125	400	600		
5SY4	0.3 - 63	400	600		
		EN 60 898 (IEC 60 898) 1-pole 230 V AC	2-, 3-, 4-pole 400 V AC	EN 60 947-2 (IEC 60 1-pole 230 V AC	2-, 3-, 4-pole 400 V AC
Rated current	$I_{n}\left[A\right]$	I _{cn} [kA]	I _{cn} [kA]	I _{CU} [kA]	I _{cu} [kA]
5SP4	80 - 125	10	10	15	15
5SY4	0.36	10	10	35	35
	832	10	10	20	20
	4063	10	10	15	15
		EN 60 898-2 1-pole	2-pole	EN 60 898-2 1-pole	2-pole
		230 V AC	400 V AC	220 V DC	440 V DC
Rated current	$I_{n}\left[A\right]$	I _{cn} [kA]	I _{cn} [kA]	$I_{cn}[kA]$	I _{cn} [kA]
	11				

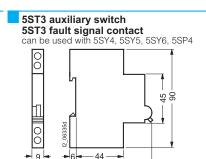
Supplementary Protection

Dimensions

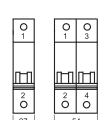
5SY4, 5SY5, 5SY6 supplementary protectors

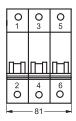


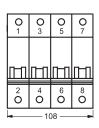


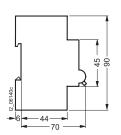


5SP4 supplementary protectors



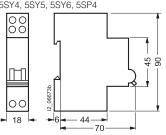






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General Data

3NW7 Cylindrical Fuse Holders

Key Common Features

- Meets a wide variety of fuse sizes
- Multi-pole configurations
- Standard 35 mm (DIN) rail mounting
- Housing material meets UL-94-V0, self-extinguishing
- Meets UL 512 and CSA C22.2, No. 39 certifications
- CE Mark
- No tools required for insertion or removal of fuses
- Finger safe design
- With or without Blown Fuse Indicator
- Draw design includes spare fuse holder

Description

Depending on the cylindrical* fuse size selected 3NW7 fuse holders are available in 1, 1 + N, 2, 3, 3 + N and 4 pole configurations. Fuse sizes include 13/32" x 1-1/2" (Class CC and Midget), 8 mm x 32 mm.

10 mm x 38 mm, 14 mm x 51 mm and 22 x 58 mm.

Class CC fuse holders are UL Listed for branch circuit protection according to UL 512 and CSA C22.2, No. 39. They incorporate a rejection feature that only allows Class CC fuses to be used.

Midget, 8 mm x 32 mm, 10 mm x 38 mm, 14 mm x 51 mm, and 22 x 58 mm fuse holders are UL Recognized (refer to Technical Data for specific fuse holder certifications) as supplementary protectors according to UL 512 and CSA C22.2, No. 39. Supplementary protectors are designed to provide additional protection

along with branch circuit protection devices. All fuse holders are equipped with either a fuse handle or draw mechanism for easy insertion and removal of cylindrical type fuses. During insertion and removal the fuses are isolated from the power/control circuit. Their compact size requires less space than typical open-type fuse holders and they mount directly onto standard 35 mm mounting rails.

Fuse holders for 8 mm x 32 mm, 10 mm x 38 mm fuses in the 1 + N draw design occupy the same mounting space as 1 pole designs. This unique design saves space when compared to the typical handle type fuse holder which requires two poles.

Selection and ordering data











Construction Type

Class CC Fuse Holders: UL Listed for Branch Circuit Protection3

	No. of Poles		Fuse Size	Without E	Without Blown Fuse Indicator			With Blown Fuse Indicator 2)			
ı					List		Weight		List		Weight
ı		In			Price \$	Construction	1 Item		Price \$	Construction	1 Item
l		Α	mm x mm	Order No.	1 Item	Type	kg	Order No.	1 Item	Type	kg
I	1		Class CC	3NW7513-0HG	_		0.056	_	_	_	_
ı	2	30	10.3 x 38.1	3NW7523-0HG		E1)	0.118	_	l —	_	_
l	3		(13/32" x 1-1/2")	3NW7533-0HG	_		0.172	_	_	_	_

Midget Class Fuse Holders: UL Recognized for Supplementary Protection

No. of Poles		Fuse Size	Without I	Without Blown Fuse Indicator			With Blown Fuse Indicator 2)			
	In A	mm x mm	Order No.	List Price \$ 1 Item	Construction Type	Weight 1 Item kg	Order No.	List Price \$ 1 Item	Construction Type	Weight 1 Item kg
1 1 + N 2 3 3 + N	30	Midget Class 10.3 x 38.1 (13/32" x 1-1/2")	3NW7013 3NW7053 3NW7023 3NW7033 3NW7063		C & D ¹⁾	0.056 0.069 0.118 0.172 0.185	3NW7014 3NW7054 3NW7024 3NW7034 3NW7064	_ _ _ _	C & D ¹⁾	0.059 0.072 0.123 0.180 0.193

Other Supplementary Protectors (Refer to page 16/26 for UL and CSA status)

	No. of Poles Fuse Size Without Blown Fuse Indicator With Blown Fuse Indicator 2									
No. of Poles		Fuse Size	Without I	Blown Fu	se Indicator		With Blo	own Fuse	Indicator 2)	
				List		Weight		List		Weight
	In			Price \$	Construction	1 Item		Price \$	Construction	1 Item
	Α	mm x mm	Order No.	1 Item	Type	kg	Order No.	1 Item	Type	kg
	20	8 x 32	3NW7313	_	С	0.056	3NW7314	_	С	0.059
	32	10 x 38	3NW7013	—	С	0.056	3NW7014	_	С	0.059
1	50	14 x 51	3NW7111	-	A	0.095	3NW7112	_	A	0.095
	100	22 x 58	3NW7211		А	0.145	3NW7212		А	0.145
	20	8 x 32	3NW7353		C & D ¹⁾	0.069	3NW7354	_	C & D1)	0.072
	32	10 x 38	3NW7053	l —	C & D ¹⁾	0.069	3NW7054	_	C & D ¹⁾	0.072
1 + N	50	14 x 51	3NW7151	l —	A & B ¹⁾	0.215	3NW7152	_	A & B ¹⁾	0.215
	100	22 x 58	3NW7251	_	A & B ¹⁾	0.330	3NW7252	_	A & B ¹⁾	0.330
	20	8 x 32	3NW7323		C & D ¹⁾	0.118	3NW7324	_	C & D ¹⁾	0.123
	32	10 x 38	3NW7023	l —	C & D ¹⁾	0.118	3NW7024	_	C & D ¹⁾	0.123
2	50	14 x 51	3NW7121	—	A & B ¹⁾	0.195	3NW7122	_	A & B ¹⁾	0.195
	100	22 x 58	3NW7221	_	A & B ¹⁾	0.300	3NW7222	_	A & B ¹⁾	0.300
	20	8 x 32	3NW7333	_	С	0.172	3NW7334	_	D	0.180
	32	10 x 38	3NW7033	l	Ď	0.172	3NW7034	_	Ď	0.180
3	50	14 x 51	3NW7131	_	B B	0.295	3NW7132	_	B B	0.295
	100	22 x 58	3NW7231	—	В	0.691	3NW7232	_	В	0.480
	20	8 x 32	3NW7363		C & D ¹⁾	0.185	3NW7364		C & D ¹⁾	0.193
	32	10 x 38	3NW7063		C & D ¹	0.185	3NW7064		C & D ¹	0.193
3 + N	50	14 x 51	3NW7161	_	A & B ¹⁾	0.315	3NW7162	_	A & B ¹⁾	0.315
	100		3NW7261	l —	A & B ¹⁾	0.475	3NW7262	_	A & B ¹⁾	0.475

¹⁾ Same Mechanical Design - Other Pole Types Not Shown

²⁾ LED is "ON" when fuse is blown (open)

³⁾ UL 508 busbar available; 5ST3701-0HG, 5ST3705-0HG, 5ST3710-0HG. See page 16/19.

General Data

3NW7 Cylindrical Fuse Holders

Technical data

Туре			Class CC 3NW75.3-0HG	Midget 3NW70.3, 3NW70.4	3NW73	3NW70	3NW71	3NW72
Fuse size		mm x mm	10.3 x 38.1	10.3 x 38.1	8 x 32	10 x 38	14 x 51	22 x 58
		inch x inch	13/32" x 1-1/2"	13/32" x 1-1/2"	-	-	-	-
Standards			UL512, CSA C22.2		IEC 60269-1 NF C 60-200 NF C 63-210 NBN C 6326 CEI 32-4, -1	0, 0, -211 69-2-1	UL512, CSA C22.2	IEC 60269-1, -2, -3 NF C 60-200, NF C 63-210, -211 NBN C 63269-2-1 CEI 32-4, -12
Certifications			UL Listed, Certified to Canadian Standards	UL Recognized, Certified to Canadian Standards	Not UL / CS	A Rated	UL Recognized, Certified to Canadian Standards	Not UL / CSA Rated
UL file no.			E171267		-		E171267	-
Rated voltage								
	U _n	V AC	-	-	400	690		
	UL/CSA	V AC	600	600	400	600		
	UL	V DC	-	600 ¹)	-	-		
Rated current		А	30	30	20	32	50	100
Rated breaking capacity		kA	Fuse Selection [Dependent	20	100		
Touch protection to BGV	AC		Yes					
Degree of protection to IE	EC 60529		IP20, with conne	ected conductors				
Operating temperature ra	inge	°C	-5 to +40; 90% r	max. humidity at +2	0			
Conductor cross sections	s							
Solid		mm^2	1.5 to 25	0.5 to 10	0.5 to 10		2.5 to 10	4 to 10
Stranded		mm ²	1.5 to 25	0.5 to 10	0.5 to 10		2.5 to 25	4 to 50
Finely Stranded		mm ²	-	0.5 to 10	0.5 to 10		2.5 to 16	4 to 35
UL/CSA		AWG	18 to 4	20 to 10	-	20 to 10	6 to 10	-
Terminal Tightening Torq	ue	Nm	-	-	1.2		2	2.5
		lb. in.	-	-	10.9		18.2	22.7

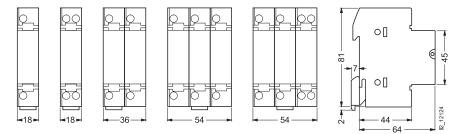
¹⁾ UL Recognized 600 V DC to meet the requirements of the US Solar Industry.

3NW7 Cylindrical fuse holders

Dimensional drawings

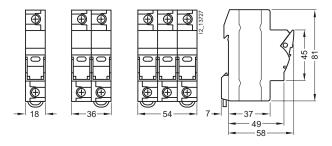
Typical Construction Type C & D

3NW73: Fuse Size 8 mm x 32 mm 3NW70: Fuse Size 10 mm x 38 mm



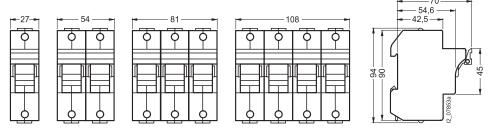
Typical Construction Type E

3NW75.3: Fuse Size 13/32" x 1-1/2", Class CC

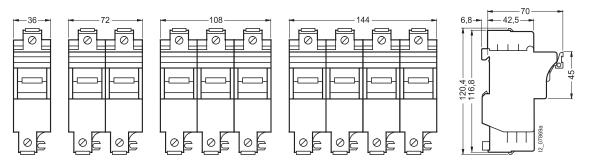


Typical Construction Type A & B

3NW71: 14 mm x 51 mm



3NW72: 22 mm x 58 mm



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Supplementary Protection

3NC10 Open Cylindrical Fuse Holders

Features

3NC1038 open fuse holders have been certified in accordance with UL 512 and can be used with 13/32" x 1/1-2" (10×38 mm) fuses up to 600 V AC, 30 Amperes maximum.

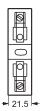
- Type M Supplementary Fuse Holder for use with 13/32" x 1-1/2" (10 x 38 mm) Fuses
- Typical Supplementary Fuses: Bussmann KTK, FNQ, FNM, BAF and BAN. Includes MIDGET Class Fuses
- Ampere Rating: 32AVoltage Rating: 600 V
- Withstand Rating: 10,000 RMS Symmetrical (or interrupting rating of the fuse used, whichever is lower)
- Wire Range: 18 to 4 AWG
- UL Recognized, UL 512, Fuse Holder
- UL Flammability: 94VO
- Holder Material: Thermoplastic
- Surface Mounted

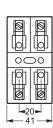


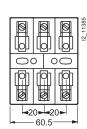
Selection and ordering

Description	Number of poles	Order Number	List Price \$	Weight Item kg
Cylindrical Fuse Holder	1	3NC1038-1		0.042
Type M, Supplementary Fuses	2	3NC1038-2		0.077
for 13/32" x 1-1/2" (10 x 38 mm)	3	3NC1038-3		0.113

Dimensions









BQ Breakers

BQ

Selection and ordering data

240V 10KAIC 22KAIC **BQH** HBQ 65KAIC

1-, 2- & 3-pole up to 125A for circuit protection up to 240 volt circuits (UL)

Information Page 17/9-17/10 General Data Accessories 17/105-17/112



QJ Breakers

Selection and ordering data

240V 10KAIC QJ2 QJH-2 22KAIC QJ2-H 42KAIC HQJ2 65KAIC

2- & 3-pole up to 225A for circuit protection up to 240 voltcircuits (UL)

Information Page General Data 17/11 Accessories 17/105-17/112

600/347V Circuit Breakers



CQD Breakers

Selection and ordering data

480/277V 600/347V CQD 14KAIC CQD-6 10KAIC

1-, 2- & 3-pole up to 100A for circuit protection up to 600/347V (CSA) & 480/277V (UL) circuits

Information Page General Data 17/12 Internal Accessories 17/14 External Accessories 17/105-17/112

600/347V Circuit Breakers



GG Breakers

Selection and ordering data

480V 600/347V NGG 25KAIC 14KAIC HGG 35KAIC 14KAIC LGG 65KAIC 14KAIC

1-, 2- & 3-pole up to 125A for circuit protection up to 600/347 volt circuits (UL/CSA/IEC)

Information Page General Data 17/13 Internal Accessories 17/14 External Accessories 17/105-17/112

600V Circuit Breakers



DG VL Breakers

Selection and ordering data

480V 600Y/347V NDG 35KAIC 18KAIC HDG 65KAIC 18KAIC LDG 100KAIC 18KAIC

2- & 3-pole up to 150A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page 17/17-17/19 Breakers & Trip Units Internal Accessories 17/23 External Accessories 17/43-17/57



FG VL Breakers

Selection and ordering data

480V 600V NFG 35KAIC 18KAIC 65KAIC 20KAIC 100KAIC 25KAIC **HFG** LFG

2- & 3-pole up to 150A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page General Data 17/20-17/22 Internal Accessories 17/23 External Accessories 17/43-17/57

Siemens Industry, Inc. Industrial Controls Catalog

600V Circuit Breakers



JG VL Breakers

Selection and ordering data

 480V
 600V

 NJG
 35KAIC
 25KAIC

 HJG
 65KAIC
 25KAIC

 LJG
 100KAIC
 25KAIC

2- & 3-pole up to 400A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page
General Data 17/24-17/26
Internal Accessories 17/30
External Accessories 17/43-17/57



LG VL Breakers

Selection and ordering data

 480V
 600V

 NLG
 35KAIC
 18KAIC

 HLG
 65KAIC
 18KAIC

 LLG
 100KAIC
 18KAIC

2- & 3-pole up to 600A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page
General Data 17/27-17/29
Internal Accessories 17/30
External Accessories 17/43-17/57



MG VL Breakers

Selection and ordering data

 480V
 600V

 NMG
 35KAIC
 25KAIC

 HMG
 65KAIC
 35KAIC

 LMG
 100KAIC
 50KAIC

2- & 3-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page
General Data 17/31-17/33
Internal Accessories 17/39
External Accessories 17/43-17/57

600V Circuit Breakers



NG VL Breakers

Selection and ordering data

 480V
 600V

 NNG
 35KAIC
 25KAIC

 HNG
 65KAIC
 35KAIC

 LNG
 100KAIC
 65KAIC

2- & 3-pole up to 1200A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page
General Data 17/34-17/36
Internal Accessories 17/39
External Accessories 17/43-17/57



PG VL Breakers

Selection and ordering data

 480V
 600V

 NPG
 35KAIC
 25KAIC

 HPG
 65KAIC
 35KAIC

 LPG
 100KAIC
 65KAIC

2- & 3-pole up to 1600A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page General Data 17/37-17/38 Internal Accessories 17/39 External Accessories 17/43-17/57

VL Circuit Breakers: Additional Information

Contents **Page** Table of Contents 17/1-17/4 Catalog Numbering System 17/5-17/8 Trip Unit Overview 17/15-17/16 Molded Case Switch 17/40 Molded Case Protector 17/41 600 Volt DC Circuit Breakers 17/42 Accessory Locations 17/58 Suffix for Internal Accessories 17/59 Technical Data 17/60-17/61 **Unusual Operating Conditions** 17/62 **Breaker Modifications** 17/104 400 Hz Systems 17/115

600V Circuit Breakers



Sentron ED Breakers

Selection and ordering data

	240V	480V	600V
ED2	10KAIC	_	_
ED4	65KAIC	18KAIC	_
ED6	65KAIC	25KAIC	18KAIC

1-, 2- & 3-pole up to 125A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page General Data 17/63 Internal Accessories 17/65 External Accessories 17/105-17/112



Sentron HED/CED Breakers

Selection and ordering data

	480V	600/V
HED4	42KAIC	

CED6 200KAIC 1Q0KAIC

1-, 2- & 3-pole up to 125A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page General Data 17/64 Internal Accessories 17/65 External Accessories 17/105-17/112



Sentron FD Breakers

Selection and ordering data

480V	600V
35KAIC	22KAIC
65KAIC	25KAIC
100KAIC	25KAIC
200KAIC	100KAIC
	35KAIC 65KAIC 100KAIC

2- & 3-pole up to 250A for circuit protection up to 600 volt circuits (UL/CSA/IEC)

Information Page
General Data 17/66-67
Internal Accessories 17/105-17/112
External Accessories 17/105-17/112

600V Circuit Breakers



Sentron JD Breakers

Selection and ordering data

	240V	480V	600V
JD2	65KAIC	_	_
JD6, SJD6-A	65KAIC	35KAIC	25KAIC
HHJD6	200KAIC	100KAIC	50KAIC
CJD6,SCJD6-A	200KAIC	150KAIC	100KAIC
HJD6, SHJD6-A	100KAIC	65KAIC	35KAIC

2- & 3-pole up to 400A for circuit protection up to 600 volt circuits (UL/CSA)

Information Page
General Data 17/69-17/71
Internal Accessories 17/72
External Accessories 17/105-17/112



Sentron LD Breakers

Selection and ordering data

	480V	600V
LD6, SLD6-A	35KAIC	25KAIC
HLD6, SHLD6-A	65KAIC	25KAIC
HHLD6	100KAIC	50KAIC
CLD6, SCLD6-A	150KAIC	100KAIC

2- & 3-pole up to 600A for circuit protection up to 600 volt circuits (UL/CSA)

Information	Page
General Data	17/73-17/75
Internal Accessories	17/76
External Accessories	17/105-17/112



Sentron LMD Breakers

Selection and ordering data

		_
	480V	600/V
LMD6	50KAIC	25KAIC
HLMD6	65KAIC	50KAIC

2- & 3-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA)

Information	Page
General Data	17/77-17/78
Internal Accessories	17/79
External Accessories	17/105-17/112

600V Circuit Breakers



Sentron MD Breakers

Selection and ordering data

	480V	600V
MD, SMD6	50KAIC	25KAIC
HMD, SHMD6	65KAIC	50KAIC
CMD, SCMD6	100KAIC	65KAIC

2- & 3-pole up to 800A for circuit protection up to 600 volt circuits (UL/CSA)

Information Page
General Data 17/80-17/82
Internal Accessories 17/105-17/112



Sentron ND Breakers

Selection and ordering data

	480V	600V
ND, SND6	50KAIC	25KAIC
HND, SHND6	65KAIC	50KAIC
CND, SCND6	100KAIC	65KAIC

2- & 3-pole up to 1600A for circuit protection up to 600 volt circuits (UL/CSA)

Information Page General Data 17/83-17/85 Internal Accessories 17/86 External Accessories 17/105-17/112



Sentron PD Breakers

Selection and ordering data

480V	600V
50KAIC	25KAIC
65KAIC	50KAIC
100KAIC	65KAIC
	50KAIC 65KAIC

2- & 3-pole up to 1600A for circuit protection up to 600 volt circuits (UL/CSA)

Information Page
General Data 17/87-17/88
Internal Accessories 17/90
External Accessories 17/105-17/112

600V Circuit Breakers



Sentron RD Breakers

Selection and ordering data

	480V	600V
RD	50KAIC	25KAIC
HRD	65KAIC	50KAIC

2- & 3-pole up to 2000A for circuit protection up to 600 volt circuits (UL/CSA)

Information Page General Data 17/89 Internal Accessories 17/90 External Accessories 17/105-17/112

Sentron Circuit Breakers: Additional Information

Contents	<u>Page</u>
Table of Contents	17/1–17/4
Catalog Numbering System	17/5–17/8
ETI Motor Circuit Protector	17/91-17/93
Adjustable Magnetic	
Trip Setting	17/94–17/96
Molded Case Switch	17/97
Internal Accessories-Combinations	
Sensitrip III Electronic	
Trip Breakers	17/98–17/99
Electronic & Communication	
Accessories	17/100
Lug Information	17/101-17/103
Unusual Operating Conditions	17/114
Breaker Modifications	17/115
400 Hz Systems	17/116

Introduction

Ordering

In the FD through RD frames, you may order molded case circuit breakers three basic ways:

- As separately ordered frames, trip units and lugs
- As frame, trip unit and lugs ordered as one catalog number and shipped unassembled or assembled
- As Frame and Trip Unit shipped assembled and with the trip unit made non-removable, in compliance with UL 489 requirements that to be reverse fed the circuit breaker must not have an interchangeable trip unit.

These two options are described in the following:

Components Ordered Separately

To get the components for a 3-pole, 400 Amp standard interrupting circuit breaker, you would order the frame (JD63F400), the trip unit (JD63T400) and six lugs (TA2J6500). This option is normally useful only if you stock and use large volumes of product and wish to reduce your inventory cost. You may stock, for example, a smaller number of frames (JD63F400) and a variety of trip units (JD63T300, JD63T350, etc.) and assemble breakers as you need them.

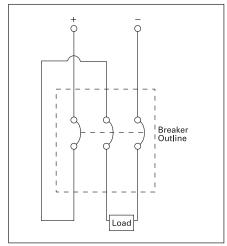
Frame, Trip Unit and Lugs Ordered Together

If you order the catalog number JD63B400, you will receive a frame, a trip unit and 6 lugs in separate packages. By suffixing this number with "L" (e.g. JD63B400L), you will receive frame, trip unit and lugs assembled in one container. Pursuant to UL 489, a product ordered thus will have the markings "LINE" and "LOAD", and may not be "reverse fed" (with power flowing from the "OFF" end of the breaker toward the "ON" end).

Non-Interchangeable Trip Breakers

If you place an "X" after the frame size designator (e.g. JXD63B400), you will receive a frame and trip unit assembled, with the trip unit made non-removable. If you suffix an "L" to this catalog number (e.g. JXD63B400L), you will receive the breaker, non-removable trip unit and lugs assembled. Unless you anticipate a specific need to change the breaker's ampere rating in the future, this is the preferred ordering method, as the products are assembled to Siemens' specifications in our factories. These breakers are suitable for use reverse fed according to UL 489, since the trip unit is not removable.

The smaller frames (QJ, ED and below) do not have removable trip units, and consequently are shipped only as assembled products. To add lugs, see the ordering instructions on each product's catalog page.



500V DC Wiring Configuration

Connecting Breakers for DC Application

Most Siemens thermal magnetic trip MCCBs are applicable on direct current (dc) systems. Generally, for 250 V dc systems a two pole breaker is used, with one pole on each leg of the supply circuit. For three pole breakers applied on 500 V undergrounded DC systems, it is important to connect the power supply "zig-zag" through the breaker as shown in the figure below. This assures that the Voltage between phases on the breaker terminals is uniformly distributed.

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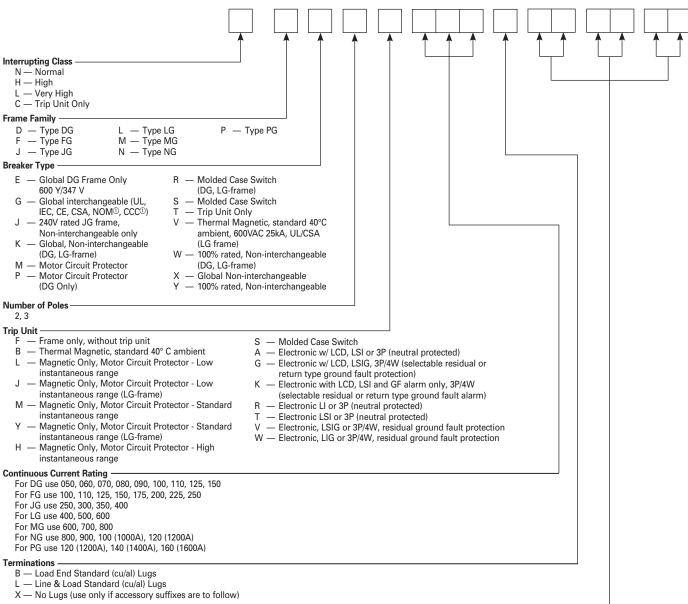
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Catalog Numbering System

Selection/Application



Accessories **Auxiliary and Alarm Switch Combinations**

Suffix Description

1 Alarm (includes 1NO & 1NC switch with a 2 Aux./1 Alarm Base, for frames DG to LG)

2 Aux (1NO & 1NC switch with a 3 Aux. Base, for frames DG to LG) 2 Aux + 1 Alarm (2NO & 2NC switches with a 2 Aux./1 Alarm Base, for frames DG to LG)

2 Aux + 2 Alarm (2NO & 2NC switches with a 2 Aux./2 Alarm Base, for frames MG to PG)

4 Aux (2NO & 2NC switches with a 4 Aux. Base, for frames MG to PG) A4

Shunt Trips

RB — 24 VDC RM - 48-60 VAC RC — 48-60 VDC RN - 110-127 VAC RD — 110-127 VDC RS — 208-277 VAC RF - 250 VDC RV - 380-600 VAC

Under Voltage Releases

UN — 110-127 VAC UA — 12 VDC **UB** — 24 VDC UP — 208 VAC $\mathrm{UC}-48\,\mathrm{VDC}$ UR - 220-250 VAC UD — 110-127 VDC US — 277 VAC UE — 220-250 VDC UT - 380-415 VAC $\mathrm{UG}-60~\mathrm{VDC}$ UU - 440-480 VAC UK — 24 VAC

Note: A1 and A3 include 1NO and 1NC switch for alarm purposes, only one of these switches may be used as there is only one space for an alarm.

LCD = Liquid Crystal Display

LI = Long Delay & Instantaneous trip functions

LSI = Long Delay, Short Delay, & Instantaneous trip functions

LSIG = Long Delay, Short Delay, Instantaneous, & Ground Fault trip functions

GF = Ground Fault

3P = 3-pole

4W = 4-wire

VL Circuit Breakers Catalog Numbering System

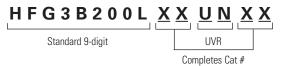
Selection

If ordering factory-installed accessories or special modifications, you must order a 15-digit catalog number. See the examples below for a detailed explanation. The 15 digit number is achieved by placing X's in positions not being occupied by an accessory/modification. Contact Siemens for circuit breakers configured with accessories.

Auxiliary Switch Example:



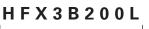
Shunt Trip / UVR Example:



Shunt Trip / Auxiliary Switch Example:



Non-Interchangeable Trip Breakers Example:



Standard 9-digit

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IU

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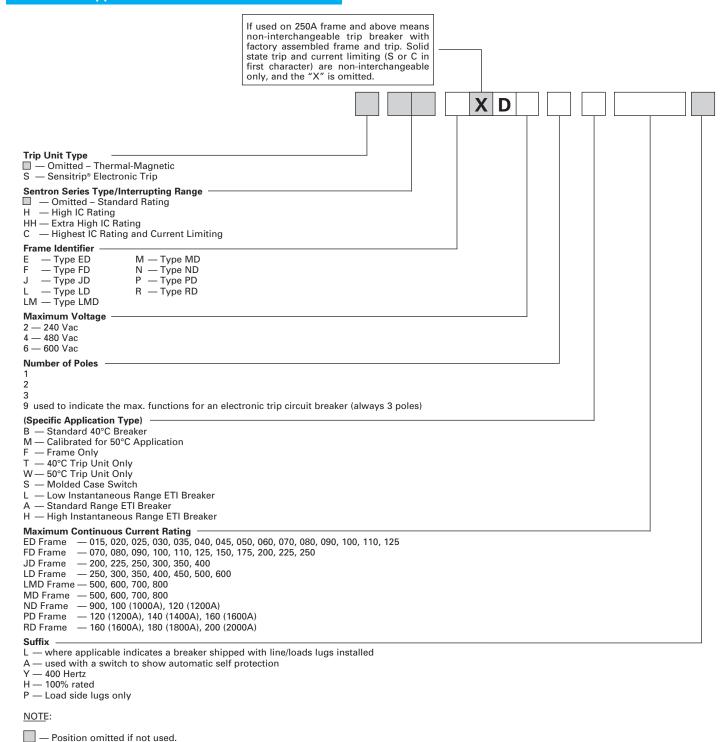
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Catalog Numbering System

Selection/Application



Lug-In/Lug-Out with INSTA-WIRE

Selection

All BQ/BQH/HBQ circuit breakers are supplied with load side lugs. If line side lugs are required, add suffix "L" to catalog number. Consult Siemens for any additional charge. All standard circuit breakers are calibrated for 40°C maximum ambient application.

Continuous Current Rating	Type BQ ^①	Туре ВОН	Type HBQ	
	10,000A IR	22,000A IR	65,000A IR	
@ 40° C	Catalog Number	Catalog Number	Catalog Number	
1-Pole (120V A	C)⑤			
15	BQ1B015 ⁴	BQ1B015H ⁴	HB1B015 ■ ^④	
20	BQ1B020 ^④	BQ1B020H ⁴	HB1B020 ■ ^④	
25	BQ1B025	BQ1B025H■	HB1B025■	
30	BQ1B030	BQ1B030H	HB1B030■	
35	BQ1B035■	BQ1B035H■	HB1B035■	
40	BQ1B040	BQ1B040H	HB1B040■	
45	BQ1B045■	BQ1B045H■	HB1B045■	
50	BQ1B050	BQ1B050H	HB1B050■	
60	BQ1B060■	BQ1B060H■	HB1B060■	
70	BQ1B070■	BQ1B070H■	HB1B070■	
2-Pole (Common-Trip 120/240V AC)®				

2-Pole (Common	-Trip	120/240V A	4C)@
15		BQ2B0)15	BQ2E

15	BQ2B015	BQ2B015H	HB2B015■
20	BQ2B020	BQ2B020H	HB2B020■
25	BQ2B025	BQ2B025H■	HB2B025■
30	BQ2B030	BQ2B030H	HB2B030■
35	BQ2B035	BQ2B035H■	HB2B035■
40	BQ2B040	BQ2B040H	HB2B040■
45	BQ2B045	BQ2B045H■	HB2B045■
50	BQ2B050	BQ2B050H	HB2B050■
60	BQ2B060	BQ2B060H	HB2B060■
70	BQ2B070	BQ2B070H■	HB2B070■
80	BQ2B080	BQ2B080H■	HB2B080
90	BQ2B090	BQ2B090H■	HB2B090■
100	BQ2B100	BQ2B100H	HB2B100
110	BQ2B110	BQ2B110H	HB2B110■
125	BQ2B125	BQ2B125H	HB2B125
	0/		

2-Pole (Common-Trip 240V AC)³⁶

2 1 010 (00111111011 1111p 2 10 1 710)				
15	BQ2H015	_	_	
20	BQ2H020	_	_	
30	BQ2H030	_	_	
40	BQ2H040■	_	_	
50	BQ2H050	_	_	
60	BQ2H060	_	_	
70	BQ2H070■	_	_	
80	BQ2H080■	_	_	
90	BQ2H090■	_	_	
100	BQ2H100■	_	_	

3-Pole (Common-Trip 240V AC)

		- •	
15	BQ3B015	BQ3B015H	HB3B015■
20	BQ3B020	BQ3B020H	HB3B020■
25	BQ3B025■	BQ3B025H■	HB3B025
30	BQ3B030	BQ3B030H	HB3B030
35	BQ3B035■	BQ3B035H	HB3B035
40	BQ3B040	BQ3B040H	HB3B040
45	BQ3B045■	BQ3B045H	HB3B045
50	BQ3B050	BQ3B050H	HB3B050
60	BQ3B060	BQ3B060H	HB3B060
70	BQ3B070	BQ3B070H	HB3B070■
80	BQ3B080	BQ3B080H■	HB3B080■
90	BQ3B090	BQ3B090H■	HB3B090■
100	BQ3B100	BQ3B100H	HB3B100

BQ / BQH / HBQ Internal Accessories

Description	Catalog Number	Field/Factory Installed
120V Shunt Trip	add suffix00S01■	Factory
24V Shunt Trip	add suffix00S07■	Factory
120V Auxiliary Switch	add suffix01■②	Factory

■ Built to order. Allow 2-3 weeks for delivery

② 1A and 1B contacts.
 ③ UL Listed for use on 3-phase grounded "B" systems — 10,000 for this application.
 ⑥ UL Listed for frequent switching applications (SWD). 120V AC Fluorescent Lighting.

Shipped 12 per sleeve.Shipped 6 per sleeve.Shipped 4 per sleeve.UL Listed 5KA IR.

1-Pole 2-Pole



Factory Modifications

Description	Catalog Number
Line Side Lugs	add suffixL
Quick Connect Lug	add suffixQX
400Hz Calibration	add suffixY ®
Marine 50° C Ambient Calibration	add suffixM
Fungus Proofing	add suffixF

For external accessories, please refer to page 17/106

Siemens Industry, Inc. Industrial Controls Catalog

① UL Listed for use with 60/75° wire through 40 amps, UL listed for use with 75° wire only for 50 amps and above, HACR rated.

General Application Molded Case Circuit Breakers DIN Rail Mounted Circuit Breakers

Interrupting Ratings (KA)

Selection/Dimensions

Breaker	Ampere	Catalog	Load Side	(RMS Symmet	
Туре	Rating	Number	Connector	120	120/240
1-Pole DIN	l Rail (120	V AC)			
	10	BQ1B010QLD	TC1Q1	10	
	15	BQ1B015QLD	TC1Q1	10	
	20	BQ1B020QLD	TC1Q1	10	
BQXD	25	BQ1B025QLD	TC1Q1	10	
1-Pole	30	BQ1B030QLD	TC1Q1	10	
120V	35	BQ1B035QLD	TC1Q1	10	
DIN Rail	40	BQ1B040QLD	TC1Q1	10	
	45	BQ1B045QLD	TA1Q1	10	
	50	BQ1B050QLD	TA1Q1	10	
	60	BQ1B060QLD	TA1Q1	10	
	10	BQ1B010QXD	Quick-Connect	10	
	15	BQ1B015QXD	Quick-Connect	10	
	20	BQ1B020QXD	Quick-Connect	10	
	25	BQ1B025QXD	Quick-Connect	10	
	30	BQ1B030QXD	Quick-Connect	10	
	35	BQ1B035QXD	Quick-Connect	10	
	40	BQ1B040QXD	Quick-Connect	10	
	45	BQ1B045QXD	Quick-Connect	10	
	50	BQ1B050QXD	Quick-Connect	10	
	60	BQ1B060QXD	Quick-Connect	10	

2-Pole DIN Rail (120/240V AC)

2 1 010 Bit Huii (120/240 V AO/				
	10	BQ2B010QLD	TC1Q1	10
	15	BQ2B015QLD	TC1Q1	10
	20	BQ2B020QLD	TC1Q1	10
BOXD	25	BQ2B025QLD	TC1Q1	10
2-Pole	30	BQ2B030QLD	TC1Q1	10
120/240V	35	BQ2B035QLD	TC1Q1	10
DIN Rail	40	BQ2B040QLD	TC1Q1	10
	45	BQ2B045QLD	TA1Q1	10
	50	BQ2B050QLD	TA1Q1	10
	60	BQ2B060QLD	TA1Q1	10
	10	BQ2B010QXD	Quick-Connect	10
	15	BQ2B015QXD	Quick-Connect	10
	20	BQ2B020QXD	Quick-Connect	10
	25	BQ2B025QXD	Quick-Connect	10
	30	BQ2B030QXD	Quick-Connect	10
	35	BQ2B035QXD	Quick-Connect	10
	40	BQ2B040QXD	Quick-Connect	10
	45	BQ2B045QXD	Quick-Connect	10
	50	BQ2B050QXD	Quick-Connect	10
	60	BQ2B060QXD	Quick-Connect	10

Lugs-For Use with BQ, BQH, HBQ[®]

Edgs 1 of Osc With Ba, Ban, 11Ba			
Circuit Breaker Amp. Rtg.	Cab. Per Lug	Lug Wire Range AWG	Catalog Number
Line Side			
10–40	1	#16-#6 Cu #12-#6 Al	TC1Q1 [©] 2
45–125	1	#8-#1 Cu #6-#1/0 Al	TA1Q1
Load Side	•		
10	2	#16 Cu	
15–20	1	#14-#10 Cu #12-#10 Al	
25–35	1	#14-#6 Cu #12-#10 Al	Connectors
40–50	1	#8-#6 Cu #8-#4 AI	Supplied with
55–70	1	#8-#4 Cu #8-#2 Al	Circuit Breaker
80–100	1	#4-#1/0 Cu #2-#1/0 Al	
110–125	1	#2-#1/0 Cu #1/0-#2/0 AI	

For inches / millimeters conversion, see Application Data section.

■ Built to order. Allow 2–3 weeks for delivery.

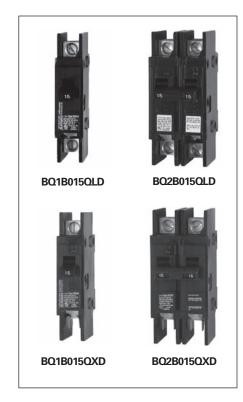
① UL Listed for use with 60/75° wire through 40 amps, UL listed for use with 75° wire only for 50 amps and above, HACR rated.

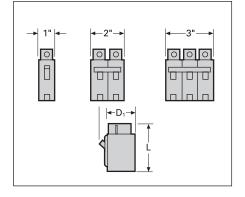
Finger Safe Terminal Shield

Protects against accidental contact with lugs-1 per lug. Fits line and load end.

Catalog Number	Qty
BQFS2	2
BQFS1K	1000
•	•

Enclosures	
Type	Catalog Number ⁴
1	EB3100S ³³
3R	WB3100





Breaker		Dimensions (inche		nches)
Туре	Amperes	L	D1	D2
ΒΩ, ΒΩΗ	15–50	3¾	2%	3
BQ, BQH	55–125	4	2%	3
HBQ	15-125	4	2%	3
BQXD	15–60	41/2	2%	3

For external accessories, please refer to pages 17/106, 17/108 to 17/113

[@]Connector has steel construction.

[®]Surface mounted indoor. If flush mounting is required, replace suffix "S" in catalog number with suffix "F".

[©]Enclosure will not accept circuit breakers with shunt trips or auxiliary switches installed.

[®] Type BQXD uses TA1Q1 or TC1Q1 lugs on line side of circuit breaker.

QJ 225A Frame

Selection/Dimensions

Continuous Current Rating @ 40°C	2-Pole 240V AC Catalog Number	3-Pole 240V AC Catalog Number
Type QJ2 ²		
60	QJ22B060■	QJ23B060
70	QJ22B070■	QJ23B070
80	QJ22B080■	QJ23B080■
90	QJ22B090 ■	QJ23B090 ■
100	QJ22B100	QJ23B100
110	QJ22B110■	QJ23B110
125	QJ22B125	QJ23B125
150	QJ22B150	QJ23B150
175	QJ22B175	QJ23B175
200	QJ22B200	QJ23B200
225	QJ22B225	QJ23B225

Type QJH2²

60	QJH22B060 ■	QJH23B060 ■
70	QJH22B070 ■	QJH23B070 ■
80	QJH22B080■	QJH23B080 ■
90	QJH22B090 ■	QJH23B090 ■
100	QJH22B100 ■	QJH23B100
110	QJH22B110 ■	QJH23B110
125	QJH22B125	QJH23B125
150	QJH22B150	QJH23B150
175	QJH22B175 ■	QJH23B175
200	QJH22B200	QJH23B200
225	QJH22B225	QJH23B225

Type QJ2H²

60	QJ22B060H■	QJ23B060H ■
70	QJ22B070H■	QJ23B070H■
80	QJ22B080H■	QJ23B080H■
90	QJ22B090H■	QJ23B090H ■
100	QJ22B100H■	QJ23B100H
110	QJ22B110H■	QJ23B110H■
125	QJ22B125H	QJ23B125H
150	QJ22B150H	QJ23B150H
175	QJ22B175H■	QJ23B175H
200	QJ22B200H	QJ23B200H
225	QJ22B225H	QJ23B225H

Type HO 122

1 ype 110320		
100	—	HQJ23B100▲
110	—	HQJ23B110▲
125	—	HQJ23B125▲
150	—	HQJ23B150▲
175	—	HQJ23B175▲
200	—	HQJ23B200▲
225	_	HQJ23B225▲

QJ2 Internal Accessories (Factory installed only) (3-pole only)³ Add suffix to catalog number.

The carries of carries					
			Auxiliary Swi	tches	Shunt Trip and 1A and
Control V	oltage	Shunt Trip	1A and 1B	2A and 2B	1B Auxiliary Switch
AC	DC	Suffix	Suffix	Suffix	Suffix
120/240		00S01 ■	A01■	A02■	01S01■
	24	00S07■	A01■	A02■	01S07■
	48	00S09 ■	A01■	A02■	01S09 ■

[■] Built to order. Allow 2–3 weeks for delivery.

① See Note: A page 17/42.

Note: QJ breakers are UL Listed for reverse feed applications.

@ HACR rated

Ordering Information

Load side TA1Q300 lugs are mounted and included when circuit breaker is ordered. For line and load lugs (TA1Q300) installed at no additional charge, add suffix "L" to catalog number.

50°C Calibration - See page 17/104. **400HZ**. - See page 17/104.

Shipping Weights

QJ2, QJH2, QJ2H, HQJ2				
Number of Poles Number per Shipping Weight (Ibs.)				
2 3	10 10	30 41		

Lugs For 75°C Wire¹

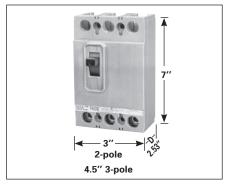
Catalog Number	Lug Body	Lug Wire Range
TA1Q300	Al	(1) #6—300 kcmil Cu (1) #4—300 kcmil Al
TC1Q250	Cu	(1) #6—250 kcmil Cu

Enclosures (Neutral Included)

Туре	Catalog Number
1	EB3225 (S)(F)
3R (2-pole)	WB2225
3R (3-pole)	WB3225

UL 489 Interrupting Ratings

Breaker	RMS Symmetrical Amperes (kA) Volts AC (50/60 Hz)		
Type	240	208Y/120	
QJ2	10	_	
QJH2	22	_	
QJ2H	42	_	
HQJ2	65	100	



For external accessories, please refer to pages 17/108 to 17/113

Siemens Industry, Inc. Industrial Controls Catalog

 $[\]blacktriangle$ Built to order. Allow 6–8 weeks for delivery.

³ Internal accessories are not available on 2-pole QJ

CQD 100A Frame

Selection/Dimensions

Type CQD (Cable In - Cable Out) DIN Rail Mount[®]

	1-Pole	2-Pole	3-Pole
Continuous	277V AC	480Y/277V AC	
Current Rating	125V DC	125/250V DC	480Y/277V AC
@ 40°C	Catalog Number	Catalog Number	Catalog Number
15	CQD115 [©] 2	CQD215 ²	CQD315 ²
20	CQD120 ①②	CQD220 ^②	CQD320 ²
25	CQD125 ^②	CQD225 ²	CQD325 ²
30	CQD130 ^②	CQD230 ²	CQD330 ²
35	CQD135 ^② ■	CQD235 ^② ■	CQD335 ²
40	CQD140 ^② ■	CQD240 ^②	CQD340 ²
45	CQD145 ^② ■	CQD245 ^② ■	CQD345 ^② ■
50	CQD150 ^② ■	CQD250 ²	CQD350 ²
60	CQD160■	CQD260	CQD360
70	CQD170■	CQD270	CQD370
80	CQD180■	CQD280	CQD380
90	CQD190■	CQD290■	CQD390
100	CQD1100■	CQD2100	CQD3100

Type CQD6 (Cable In - Cable Out) CSA Certified, not UL

,	1-Pole	2-Pole	3-Pole
Continuous	347V AC	600Y/347V AC	
Current Rating	125V DC	125/250V DC	600Y/347V AC
@ 40°C	Catalog Number	Catalog Number	Catalog Number
15	_	CQD6215■	CQD6315■
20	CQD6120②■	CQD6220■	CQD6320■
25	CQD6125②■	CQD6225■	CQD6325■
30	CQD6130 ^② ■	CQD6230■	CQD6330■
35	CQD6135■	CQD6235■	CQD6335■
40	CQD6140■	CQD6240■	CQD6340■
45	CQD6145■	CQD6245■	CQD6345■
50	CQD6150■	CQD6250■	CQD6350■
60	CQD6160■	CQD6260■	CQD6360■
70	CQD6170■	CQD6270■	_

Interrupting Ratings

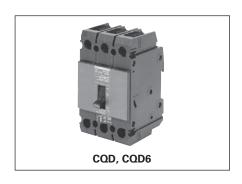
		RMS Symr	MS Symmetrical Amperes (KA)						
Breaker	Breaker Number		Volts AC (50/60 Hz)					Volts DC	
Туре	of Poles	120	240	277	480/277	600/347	125	125/250	
CQD	1	65	_	14	_	_	14	_	
(UL)	2	_	65	_	14	_	_	14	
(0L)	3	_	65	_	14	_	_	_	
CQD6	1	65	_	14	_	10	14	_	
(CSA)	2	_	65	_	l —	10	_	14	
(CSA)	3	_	65	_	_	10	_	_	

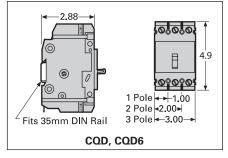
Shipping Weights

Number of Poles	Number per Carton	Shipping Weight lbs. (kg)
1	1	0.5 (0)
2	1	1.0 (0)
3	1	1.5 (1)

Lugs For 60/75°C Wire

Amps	Wire Size
15–40	#14–#6 AWG Cu #12–#6 AWG AI
45–100	#8-#1 AWG Cu #6-#1/0 AWG AI





For inches / millimeters conversion, see Application Data section.

■ Built to order. Allow 2–3 weeks for delivery. ① SWD rated.

@ HID rated. 3 HACR rated.

Note: CQD breakers are UL Listed for reverse feed

applications.

Accessories pages 17/14 and 17/108 to 17/113

GG 125A Frame

Selection/Dimensions

0000

<u>୬</u>ଡ©୍ଡଦ୍ 1 Pole **→** 1.00 2 Pole **◄2.00**► 3 Pole **←**3.00→

GG 125A Frame (Cable In - Cable Out)

Continuous	1-Pole	2-Pole	3-Pole
Current Rating @ 40°C	Catalog Number	Catalog Number	Catalog Number
15	NGG1B015L ^① ②	NGG2B015L ²	NGG3B015L ²
20	NGG1B020L®	NGG2B020L ²	NGG3B020L ²
25	NGG1B025L ²	NGG2B025L ²	NGG3B025L ²
30	NGG1B030L ²	NGG2B030L ²	NGG3B030L ²
35	NGG1B035L ²	NGG2B035L ²	NGG3B035L ²
40	NGG1B040L ²	NGG2B040L ²	NGG3B040L ²
45	NGG1B045L ²	NGG2B045L ²	NGG3B045L ²
50	NGG1B050L [®]	NGG2B050L ^②	NGG3B050L ²
60	NGG1B060L	NGG2B060L	NGG3B060L
70	NGG1B070L	NGG2B070L	NGG3B070L
80	NGG1B080L	NGG2B080L	NGG3B080L
90	NGG1B090L	NGG2B090L	NGG3B090L
100	NGG1B100L	NGG2B100L	NGG3B100L
110	NGG1B110L	NGG2B110L	NGG3B110L
125	NGG1B125L	NGG2B125L	NGG3B125L

Line and load lugs are included as standard. If no lugs are required, remove the "L" suffix.

Suitable for screws or DIN rail mounting.

Type HGG (Cable In - Cable Out)

. /	(00.00.00.11.1	0 0.10 . 0 0. 0,	
Continuous Current Rating	1-Pole	2-Pole	3-Pole
@ 40°C	Catalog Number	Catalog Number	Catalog Number
15	HGG1B015L [©] 2	HGG2B015L ²	HGG3B015L ²
20	HGG1B020L ^{①②}	HGG2B020L ²	HGG3B020L ²
25	HGG1B025L ²	HGG2B025L ²	HGG3B025L ²
30	HGG1B030L ²	HGG2B030L ²	HGG3B030L ^②
35	HGG1B035L ²	HGG2B035L ²	HGG3B035L ²
40	HGG1B040L ²	HGG2B040L ²	HGG3B040L ²
45	HGG1B045L ²	HGG2B045L ²	HGG3B045L ²
50	HGG1B050L ²	HGG2B050L ²	HGG3B050L ²
60	HGG1B060L	HGG2B060L	HGG3B060L
70	HGG1B070L	HGG2B070L	HGG3B070L
80	HGG1B080L	HGG2B080L	HGG3B080L
90	HGG1B090L	HGG2B090L	HGG3B090L
100	HGG1B100L	HGG2B100L	HGG3B100L
110	HGG1B110L	HGG2B110L	HGG3B110L
125	HGG1B125L	HGG2B125L	HGG3B125L

GG

2.9 _

[∠] Fits 35mm DIN Rail

Type LGG (Cable In - Cable Out)				
Continuous Current Rating	1-Pole	2-Pole	3-Pole	
@ 40°C	Catalog Number	Catalog Number	Catalog Number	
15	LGG1B015L [©]	LGG2B015L ²	LGG3B015L ²	
20	LGG1B020L ^{①②}	LGG2B020L ²	LGG3B020L ²	
25	LGG1B025L ²	LGG2B025L ²	LGG3B025L ²	
30	LGG1B030L ²	LGG2B030L ²	LGG3B030L ²	
35	LGG1B035L ²	LGG2B035L ²	LGG3B035L ²	
40	LGG1B040L ²	LGG2B040L ²	LGG3B040L ²	
45	LGG1B045L ²	LGG2B045L ²	LGG3B045L ²	
50	LGG1B050L ²	LGG2B050L ²	LGG3B050L ²	
60	LGG1B060L	LGG2B060L	LGG3B060L	
70	LGG1B070L	LGG2B070L	LGG3B070L	
80	LGG1B080L	LGG2B080L	LGG3B080L	
90	LGG1B090L	LGG2B090L	LGG3B090L	
100	LGG1B100L	LGG2B100L	LGG3B100L	
110	LGG1B110L	LGG2B110L	LGG3B110L	
125	LGG1B125L	LGG2B125L	LGG3B125L	

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight lbs. (kg)
1	1	.75 (0.34)
2	1	1.3 (0.59)
3	1	2.0 (0.98)

Lugs For 60/75°C Wire

	NGG				
Ampere Rating	Wire Size	Catalog Number			
15–30A	#14-#6 AWG Cu	TC1Q1 (qty. 1)			
	#12–#6 AWG AI	3TC1Q1 (qty. 3)			
35–125A	#8–1/0 AWG Cu #8–2/0 AWG AI	3TC1GG20 (qty. 3)			
15–125A	Nut Keeper plate w/ screw (for crimp terminals)	TNKG3 (qty. 3)			

Interrupting Ratings (max. RMS symmetrical amperes kA)

		UL489	JL489						IEC 60947-2 (lcs = 50%lcu)			
Breaker		Volts AC						Volts DC		Volts AC		Volts DC
Туре	Poles	120	240	277	347	480	600Y/347	125	125/250	240	415	125/250
NGG	1	65	_	25	14	_	_	14	_	25		
NGG	2,3	_	65	_	_	25	14	_	14 ^①	65		14
1100	1	65	_	35	14	_	_	14	_	_		
HGG	2,3	_	65	_	_	35	14	_	14①	_		14
100	1	65	_	65	14	_	_	14	_	_		
LGG	2,3	_	65	_	_	65	14	_	14 ^①	_		14

For inches / millimeters conversion, see Application Data section.

① SWD rated.

@ HID rated at 15-50A 1-pole @ 277 VAC; 2 & 3-pole @ 480 VAC

Accessories pages 17/14 and 17/108 to 17/113

General Application Molded Case Circuit Breakers Accessories^①

Selection

Shunt Trip

		T
		BQD, BQD6, CQD, CQD6,
0	14	NGG, HGG, LGG, NGB, HGB
Control Vo	ortage	and LGB
V AC	V DC	Catalog Number
120	_	CQDST120
240	–	CQDST240▲
277	-	CQDST277▲
480	l —	CQDST480▲
600	_	CQDST600
_	12	CQDST12
_	24	CQDST24
_	48	CQDST48
_	125	CQDST125

Auxiliary Switch

Maximum Voltage		Number of	BQD, BQD6, CQD, CQD6, NGG, HGG, LGG, NGB, HGB and LGB
AC	DC	Contacts	Catalog Number
240	125	1A-1B	CQDA1
240	125	2A-2B	CQDA2

Alarm Switch

Maximum Voltage		BQD, BQD6, CQD, CQD6, NGG, HGG, LGG, NGB, HGB and LGB
AC	DC	Catalog Number
240	125	CQDBA

Shunt Trip and Auxiliary Switch Combinations

Shunt Trip Voltage		BQD, BQD6, CQD, CQD6, NGG, HGG, LGG, NGB, HGB and LGB
AC DC		Catalog Number
24	_	CQDST24AAS▲
120	—	CQDST120AAS▲
240	—	CQDST240AAS▲
277	—	CQDST277AAS▲
480	_	CQDST480AAS▲
600	_	CQDST600AAS▲
_	12	CQDST12DAS▲
_	24	CQDST24DAS▲
_	48	CQDST48DAS▲
_	125	CQDST125DAS▲

Alarm and Auxiliary Switch Combinations

For Breaker	Catalog Number
BQD, BQD6, CQD, CQD6, NGG, HGG, LGG, NGB, HGB and LGB	CQDA1BA▲

CQD with Accessory Installed

[▲] Built to order. Allow 6–8 weeks for delivery. $\ensuremath{\mathbb{O}} Adds$ 1-pole space for accessory.

Trip Unit Overview

Selection

The interchangeability of the VL circuit breaker trip units allow for easy conversion from any of 3 types of protection. They are thermal-magnetic, electronic, or electronic with a built-in LCD. The thermal-magnetic trip unit features an adjustable magnetic trip setting. The electronic trip units are microprocessor based true RMS sensing devices and are available with a variety of adjustable trip settings, configurations, and infor-

mation menus. With precise control over the circuit beaker functions and access to system status, diagnostics, and information, these trip units allow for unsurpassed flexibility in circuit coordination.

An example of coordination is the out of the box Ground Fault function on the Model 555 trip units. The pick-up and time delay settings are set at the

factory for each frame and do not overlap with the settings on the other frames. Therefore, when VL breakers are used together in a system the GF protection is automatically coordinated. The user also has the ability to program a custom coordination scheme with adjustable settings on both the 555 and 586 trip units.

	VL Trip Units							
Trip Unit Functions	Model 525 Model 555					Model 586		
	Thermal- magnetic	Electronic LI	Electronic LIG	Electronic LSI	Electronic LSIG	Electronic with LCD LSI	Electronic with LCD LSIG	Electronic with LCD LSI + G alarm only
Continuous Current Setting (I _r)	Fixed	•	•	•	•	•	•	•
Long Time Delay (t _r)		•	•	•	•	•	•	•
Instantaneous Function	•	•	•	•	•	(ON/OFF)	(ON/OFF)	(ON/OFF)
Instantaneous Pickup (I _i)	•	•	•	•	•	•	•	•
Short Time Function				•	•	(ON/OFF)	(ON/OFF)	(ON/OFF)
Short Time Pick-up (I _{sd})				•	•	•	•	•
Short Time Delay (t _{sd})				•	•	•	•	•
Ground Fault Pick-up (I _g)			•		•		•	
Ground Fault Delay (t _g)			•		•		•	
Ground Fault Alarm Pick-up							•	•
Ground Fault Alarm Delay							•	•
Alarm & Status Indicator		•	•	•	•	•	•	•
Built-in Display (LCD)						•	•	•
Pre-Trip Alarm ^①		•	•	•	•	•	•	•
Last Trip Information		•0	•0	•0	•0	•	•	•
Zone Selective ^①		•	•	•	•	•	•	•
Communications ^①		•	•	•	•	•	•	•

- ◆ Adjustable setting
- This feature is included
- Feature is not included.
- Requires a COMPRO20 or COMMOD21 module in a communication system.

Continuous Amps Rating (Ir)

This setting is the continuous current that the breaker will carry without tripping. It can be set up to 100% of the tripunit's nominal rating (I_n) .

Long Time Delay (t_r)

Sometimes referred to as the "overload" position, this function controls the breaker's "pause-in-tripping" time. It allows low level, temporary inrush currents such as those encountered when starting a motor to pass without tripping. The time delay begins when the current reaches $6 \times I_r$.

Instantaneous Pick-up (Ii)

This function sets the breaker to trip instantaneously during high fault conditions. This function may be turned off on Model 586 trip units. Turning this function off will enable an instantaneous trip

override function to ensure self protection of circuit breaker.

Short Time Pick-Up (I_{sd})

This function controls the level of fault current the breaker will carry for a short time without tripping, thus allowing downstream devices to clear short circuits ahead of up-stream protection. It may be defeated (turned-off) on Model 586 trip units.

Short Time Delay (t_{sd})

This controls the interval of time the breaker will remain closed against a fault (at the Short Time Pick-up current level) without tripping. The time delay may be set at fixed points or at short time intervals based on I²t curves. This function is used with the Short Time Pick-up to achieve selectivity and better system coordination.

Ground Fault Pick-Up (Ia)

This setting controls the level of ground fault current that will cause the breaker to trip. Model 555 Electronic Trip Units act on the residual current to sense ground current. The Model 586 Electronic Trip Unit is programmable and allows the user to select either the residual current method or direct detection (via a separate current transformer) to detect ground current.

Ground Fault Time Delay (t_q)

This controls the interval of time the breaker will remain closed after a ground fault is detected (at the Ground Fault Pick-up current level) without tripping.

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General Information

Selection

Thermal-Magnetic trip units, Model 525, combine the inverse time element design for low level overloads, and instantaneous magnetic action for short circuit protection. The standard unit has preset overload protection and an adjustable instantaneous trip setting, with 6 set points. Thermal-Magnetic trip units are available throughout the VL family, from 50 to 1600A.



Electronic Trip Units

Electronic trip units are available through the VL family, from 60A (which can be set as low as 30A) up through 1600A. They are also available in four trip configurations (LI, LIG, LSI, LSIG) and features can include a built-in LCD display.

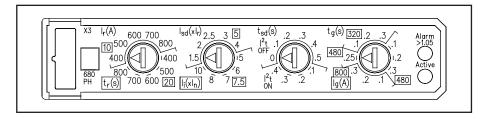
On the Model 555 Electronic Trip Unit a flashing LED confirms that the

microprocessor is in operating and another indicates an overload condition. For ease-of-use and to insure proper coordination, the set points for the continuous current are shown on the face of these trip units in amps.

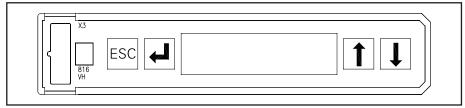
On the Model 586, the LCD version, the current in each phase is continuously shown on the display. Unlike many

displays, no secondary or auxiliary voltage is required as long as the breaker is energized and a minimal load current is present. These trip units can also indicate the "last trip" status (date, time, amps) when they're connected to a PC via one of our communications modules. Without being connected via a communication module, the last trip status can be viewed on Model 586 trip units (no time stamp).

Typical Trip Unit Labeling and Adjustment Positions



Model 555 Electronic Trip Unit with LSIG trip functions



Model 586 Electronic Trip Unit has an LCD display

DG 150A Frame, VL Series

Selection

Ordering Information

Complete Assembled Breaker

A complete factory assembled DG breaker includes the frame, trip unit, and standard line and load connectors, all factory installed and shipped as a complete breaker. Assembled breakers are only available with standard connectors.

For DC applications, use thermal magnetic trip unit only.

Breakers are suitable for reverse feed applications.

For special applications, refer to page 17/62.

Mounting hardware is included with each frame or complete breaker.

For 100% rated breakers with a non-interchangeable trip unit, change the 3rd character of the catalog number to "W". Available in electronic and electronic with LCD only.

HACR rated.

Interrupting Ratings

		RMS S	RMS Symmetrical Amperes (KA)									
		UL 48	UL 489			IEC 60	947-2					
		Volts	Volts AC (50/60 Hz) Volts DC			Volts	AC (50)	(60 Hz)				
Interrupting	Breaker			600Y			220/240 380/415 690					
Class	Туре	240	480	/347	250	500	Icu	Ics	lcu	Ics	I cu	Ics
N	NDGB	65	35	18	30	18	65	65	40	40	12	6
Н	HDGB	100	65	18	30	18	100	75	70	70	12	6
L	LDGB	200	100	18	30	18	200	150	100	75	12	6

Connectors for 75°C Wire

	Ampere	Wire	No. of cables			
Construction	Rating	Range	per connector	Catalog Number		
Steel	30-150	#8-1/0 Cu	1	3TW1DG20 ²		
Aluminum	30-150	#6-3/0 AI/Cu	1	3TA1DG30 [©]		
Copper	30-150	#6–3/0 Cu	1	3TC1DG30 ²		
Distribution Lugs						
	30-150	#14-#2 Al/Cu (3pcs. Max)	3	3TA3DG02 ^②		
	30-150	#14-#4 Cu, #14-#6 Al	6	3TA6DG04 ^②		
Compression Lugs						
	30-150	#14-2/0 kcmil Al/Cu	_	2CLD20 ³		
	30-150	#14-2/0 kcmil Al/Cu	_	3CLD20 ^②		

- ① Standard connector supplied with complete breakers.
- ② Kit consists of 3 terminal connectors.③ 2 Lugs for 2-pole breakers.
- Required for 100% rated DG breakers. Requires 90°C Cu cable sized at 75°C ampacity

DG Thermal-Magnetic, Instantaneous Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (_{Ii})		
Amp Rating (I _n)	Min.	Max.	
50	450	600	
60	450	600	
70	450	700	
80	450	800	
90	500	1000	
100	500	1000	
110	550	1100	
125	625	1250	
150	800	1600	

 $\textbf{Note:} \ \mathsf{Each} \ \mathsf{breaker} \ \mathsf{has} \ \mathsf{6} \ \mathsf{trip} \ \mathsf{settings} \ \mathsf{in} \ \mathsf{this} \ \mathsf{range}.$



Dimensions, inches (mm)

Number of Poles		Length		To Handle D1
2, 3	4.1 (105)	6.9 (175)	3.4 (81)	4.2(107)

Approx. Shipping Weight, lbs. (kg)

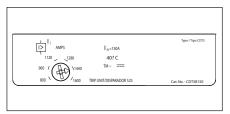
		Trip U	Complete	
Poles	Frame	Thermal-Mag.	Electronic	Breaker
2, 3	3.7 (1.7)	2.2 (1.0)	2.6 (1.2)	5.9 (2.7)

External Accessories pages 17/43 through 17/57

17/17

DG 150A Thermal-Magnetic Trip Unit

Selection



Model 525 Trip Unit

DG 150A Frame 2-Pole with Thermal-Magnetic Trip Unit

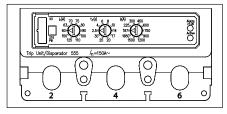
	COMPLE	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER				
Continuous	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
Ampere Rating	Catalog Number	Catalog Number	Catalog Number			
50	NDK2B050L	HDK2B050L	LDK2B050L			
60	NDK2B060L	HDK2B060L	LDK2B060L			
70	NDK2B070L	HDK2B070L	LDK2B070L			
80	NDK2B080L	HDK2B080L	LDK2B080L			
90	NDK2B090L	HDK2B090L	LDK2B090L			
100	NDK2B100L	HDK2B100L	LDK2B100L			
110	NDK2B110L	HDK2B110L	LDK2B110L			
125	NDK2B125L	HDK2B125L	LDK2B125L			
150	NDK2B150L	HDK2B150L	LDK2B150L			

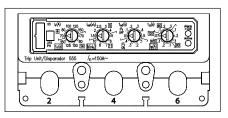
DG 150A Frame 3-Pole with Thermal-Magnetic Trip Unit

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	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER					
Continuous	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
Ampere Rating	Catalog Number	Catalog Number	Catalog Number			
50	NDK3B050L	HDK3B050L	LDK3B050L			
60	NDK3B060L	HDK3B060L	LDK3B060L			
70	NDK3B070L	HDK3B070L	LDK3B070L			
80	NDK3B080L	HDK3B080L	LDK3B080L			
90	NDK3B090L	HDK3B090L	LDK3B090L			
100	NDK3B100L	HDK3B100L	LDK3B100L			
110	NDK3B110L	HDK3B110L	LDK3B110L			
125	NDK3B125L	HDK3B125L	LDK3B125L			
150	NDK3B150L	HDK3B150L	LDK3B150L			

DG 150A Electronic Trip Units

Selection





Model 555 Trip Units

DG 150A Frame 3-Pole Electronic Trip Unit[®]

	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER					
Continuous	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
Ampere Rating	Catalog Number	Catalog Number	Catalog Number			
	ELECT	RONIC LI TRIP	-			
60	NDK3R060L	HDK3R060L	LDK3R060L			
100	NDK3R100L	HDK3R100L	LDK3R100L			
150	NDK3R150L	HDK3R150L	LDK3R150L			
	ELECTRONIC LSI TRIP					
60	NDK3T060L	HDK3T060L	LDK3T060L			
100	NDK3T100L	HDK3T100L	LDK3T100L			
150	NDK3T150L	HDK3T150L	LDK3T150L			
	ELECTR	ONIC LSIG TRIP				
60	NDK3V060L	HDK3V060L	LDK3V060L			
100	NDK3V100L	HDK3V100L	LDK3V100L			
150	NDK3V150L	HDK3V150L	LDK3V150L			
	ELECTF	ONIC LIG TRIP				
60	NDK3W060L	HDK3W060L	LDK3W060L			
100	NDK3W100L	HDK3W100L	LDK3W100L			
150	NDK3W150L	HDK3W150L	LDK3W150L			



Model 586 Trip Unit

DG 150A Frame 3-Pole Electronic LCD Trip Unit[®]

	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER					
Continuous	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
Ampere Rating	Catalog Number	Catalog Number	Catalog Number			
	LCD ELEC	TRONIC LSI TRIP				
60	NDK3A060L	HDK3A060L	LDK3A060L			
100	NDK3A100L	HDK3A100L	LDK3A100L			
150	NDK3A150L	HDK3A150L	LDK3A150L			
	LCD ELEC	TRONIC LSIG TRIP				
60	NDK3G060L	HDK3G060L	LDK3G060L			
100	NDK3G100L	HDK3G100L	LDK3G100L			
150	NDK3G150L	HDK3G150L	LDK3G150L			
	LCD ELECTRONIC LSI TRIP + GF ALARM ONLY					
60	NDK3K060L	HDK3K060L	LDK3K060L			
100	NDK3K100L	HDK3K100L	LDK3K100L			
150	NDK3K150L	HDK3K150L	LDK3K150L			

① Due to the location of the magnetic tripping solenoid, the left accessory pocket is not available for accessories.

17/19

FG 250A Frame, VL Series

Selection/Dimensions

Ordering Information

Complete Assembled Breaker

A complete factory assembled FG breaker includes the frame, trip unit, and standard line and load connectors, all factory installed and shipped as a complete breaker. Assembled breakers are available only with standard connectors.

For DC applications, use thermal magnetic trip unit only.

Breakers are suitable for reverse feed applications.

For special applications, refer to page 17/62.

Mounting hardware is included with each frame or complete breaker.

HACR rated.

Interrupting Ratings

				RI	VIS Syn	nmetrical	Amperes	(KA)			
			UL 48	89				IEC 60	947-2		
	Volts A	AC (50/6	0 Hz)	Volts	DC		Vo	olts AC (5	0/60 Hz)		
Breaker						220	/240	380	/415	6	90
Type	240	480	600 ^①	250	500	I cu	Ics	lcu	lcs	lcυ	Ics
NFG	65	35	18	30	18	65	65	40	40	12	6
HFG	100	65	20	30	25	100	75	70	70	12	6
LFG	200	100	25	30	30	200	150	100	75	12	6

Connectors for 75°C Wire

Construction	Ampere Rating	Wire Range	No. of cables per connector	Catalog Number
Steel	50-250	#4-350 kcmil Cu	1	3TW1FG350 ³
Aluminum ²	50-250	#4-350 kcmil Al/Cu	1	3TAW1FG350 [®]
Copper	50-250	#4-350 kcmil Cu	1	3TCW1FG350 ³
Distribution Lug	S			
	50-250 50-250	#12–2/0 Cu #14–#4 Cu	3 6	3TA3FG20 ³ 3TA6FG04 ³

- ① 2-pole FG breakers are rated 600Y/347.
- ② Standard connector supplied with complete breakers.
- ③ Kit consists of 3 terminal connectors.
- 4 2 Lugs for 2-pole breakers.
- © 3 Lugs for 3-pole breakers.

FG Thermal-Magnetic, Instantaneous Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (I _i)		
Amp Rating (I _n)	Min.	Max.	
100	625	1250	
110	800	1600	
125	800	1600	
150	800	1600	
175	1000	2000	
200	1000	2000	
225	1250	2500	
250	1250	2500	

Note: Each breaker has 6 trip settings in this range.



Dimensions, inches (mm)

Number of Poles	Width	Length		To Handle D1
2, 3	4.1 (105)	6.9 (175)	3.4 (81)	4.2 (107)

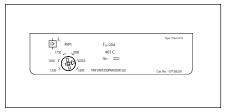
Shipping Weight, lbs. (kg)

		Trip	Complete	
Poles	Frame	Thermal-Mag.	Electronic	Breaker
2, 3	4.0 (1.8)	2.2 (1.0)	2.6 (1.2)	6.2 (2.8)

External Accessories pages 17/43 to 17/57

FG 250A Thermal-Magnetic Trip Unit

Selection



Model 525 Trip Unit

FG 250A Frame 2-Pole with Thermal-Magnetic Trip Unit

	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER				
Continuous	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
Ampere Rating	Catalog Number	Catalog Number	Catalog Number		
100	NFK2B100L	HFK2B100L	LFK2B100L		
110	NFK2B110L	HFK2B110L	LFK2B110L		
125	NFK2B125L	HFK2B125L	LFK2B125L		
150	NFK2B150L	HFK2B150L	LFK2B150L		
175	NFK2B175L	HFK2B175L	LFK2B175L		
200	NFK2B200L	HFK2B200L	LFK2B200L		
225	NFK2B225L	HFK2B225L	LFK2B225L		
250	NFK2B250L	HFK2B250L	LFK2B250L		

FG 250A Frame 3-Pole with Thermal-Magnetic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY	FRAME ONLY	
	NFG3F250	HFG3F250	LFG3F250	
Continuous Ampere Rating	COMPI	ETE FACTORY ASSEMBLED CIRC	UIT BREAKER	TRIP UNIT ONLY
100	NFG3B100L	HFG3B100L	LFG3B100L	CFT3B100
110	NFG3B110L	HFG3B110L	LFG3B110L	CFT3B110
125	NFG3B125L	HFG3B125L	LFG3B125L	CFT3B125
150	NFG3B150L	HFG3B150L	LFG3B150L	CFT3B150
175	NFG3B175L	HFG3B175L	LFG3B175L	CFT3B175
200	NFG3B200L	HFG3B200L	LFG3B200L	CFT3B200
225	NFG3B225L	HFG3B225L	LFG3B225L	CFT3B225
250	NFG3B250L	HFG3B250L	LFG3B250L	CFT3B250

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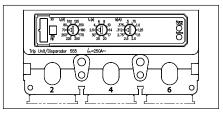
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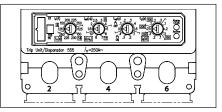
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FG 250A Electronic 3-Knob & LCD Trip Units

Selection





Model 555 Trip Units

FG 250A Frame 3-Pole Electronic Trip Unit[®]

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NFG3F250	HFG3F250	LFG3F250	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCUIT	IT BREAKER	TRIP UNIT ONLY
	-	ELECTRONIC LI TRIP		-
100	NFG3R100L	HFG3R100L	LFG3R100L	CFT3R100
150	NFG3R150L	HFG3R150L	LFG3R150L	CFT3R150
250	NFG3R250L	HFG3R250L	LFG3R250L	CFT3R250
		ELECTRONIC LSI TRIP		
100	NFG3T100L	HFG3T100L	LFG3T100L	CFT3T100
150	NFG3T150L	HFG3T150L	LFG3T150L	CFT3T150
250	NFG3T250L	HFG3T250L	LFG3T250L	CFT3T250
	_	ELECTRONIC LSIG TRIP		_
100	NFG3V100L	HFG3V100L	LFG3V100L	CFT3V100
150	NFG3V150L	HFG3V150L	LFG3V150L	CFT3V150
250	NFG3V250L	HFG3V250L	LFG3V250L	CFT3V250
	_			
100	NFG3W100L	HFG3W100L	LFG3W100L	CFT3W100
150	NFG3W150L	HFG3W150L	LFG3W150L	CFT3W150
250	NFG3W250L	HFG3W250L	LFG3W250L	CFT3W250



Model 586 Trip Unit

FG 250A Frame 3-Pole Electronic LCD Trip Unit[®]

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
		FRAME ONLY			
Continuous	NFG3F250	HFG3F250	LFG3F250		
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCUI	IT BREAKER	TRIP UNIT ONLY	
	LCD ELECTRONIC LSI TRIP				
100	NFG3A100L	HFG3A100L	LFG3A100L	CFT3A100	
150	NFG3A150L	HFG3A150L	LFG3A150L	CFT3A150	
250	NFG3A250L	HFG3A250L	LFG3A250L	CFT3A250	
		LCD ELECTRONIC LSIG TRIP			
100	NFG3G100L	HFG3G100L	LFG3G100L	CFT3G100	
150	NFG3G150L	HFG3G150L	LFG3G150L	CFT3G150	
250	NFG3G250L	HFG3G250L	LFG3G250L	CFT3G250	
	LCD ELE	CTRONIC LSI TRIP + GF ALARN	/I ONLY		
100	NFG3K100L	HFG3K100L	LFG3K100L	CFT3K100	
150	NFG3K150L	HFG3K150L	LFG3K150L	CFT3K150	
250	NFG3K250L	HFG3K250L	LFG3K250L	CFT3K250	

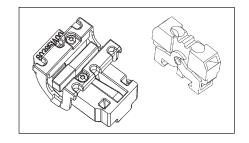
① Due to the location of the magnetic tripping solenoid, the left accessory pocket is not available for accessories.

Internal Accessories for DG 150A and FG 250A Frames

Selection

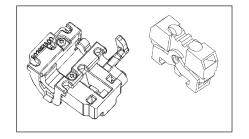
Auxiliary Switch and Alarm Switch Combination Kits

Description	Mounting Pocket ^①	Catalog Number
1 Alarm Switch		
1A/B ^③	Left, Right ^②	ASKL1
Bases AMBL2 & AMBL3		
2 Aux. Switches		
1A + 1B	Left, Right	ASKL2
Bases AMBL1		
2 Aux. + 1 Alarm Switches		
1A + 1B, 1A/B ³	Left, Right ^②	ASKL3
Bases AMBL2 & AMBL3		



Auxiliary/Alarm Switch Mounting Base Only

Description	Mounting Pocket	Catalog Number
Up to 3 Auxiliary Switches	Left, Right	AMBL1
2 Aux. + 1 Alarm Switch	Left Pocket Only	AMBL2
2 Aux. + 1 Alarm Switch	Right Pocket Only	AMBL3



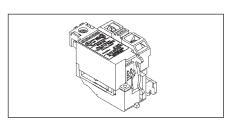
Auxiliary/Alarm Switch Only

Common to DG - PG Frames

Description	Catalog Number
1 Normally Open Contact (1A)	ASWPA
1 Normally Closed Contact (1B)	ASWPB

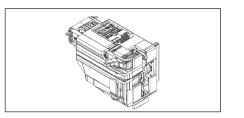
Shunt Trips

Description	Mounting Pocket	Catalog Number
24 VDC		STRLB24DC
48-60 VDC		STRLC60DC
110-127 VDC		STRLD125DC
220-250 VDC	Right Pocket Only	STRLE250DC
48-60 VAC		STRLM60
110-127 VAC		STRLN120
208-277 VAC		STRLS277
380-600 VAC		STRLV600



Undervoltage Release

Description	Mounting Pocket	Catalog Number
12 VDC		UVRLA12DC
24 VDC		UVRLB24DC
48 VDC		UVRLC48DC
60 VDC		UVRLG60DC
110-127 VDC		UVRLD125DC
220-250 VDC		UVRLE250DC
24 VAC	Right Pocket Only	UVRLL24
110-127 VAC		UVRLN120
220-240 VAC		UVRLR240
208 VAC		UVRLP208
277 VAC		UVRLS277
380-415 VAC		UVRLT415
440-480 VAC		UVRLU480



External Accessories pages 17/43 through 17/57

[®] Refer to the "Accessory Locations" chart on page 17/58 for guidelines and limitations about which pockets may be used for accessory combinations.

These kits include two bases, one for mounting switches in the left pocket and another for mounting in the right.
 Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time.

^{&#}x27;A' refers to a normally open contact (open when the breaker contacts are open).

^{&#}x27;B' refers to a normally closed contact (closed when the breaker contacts are open).

JG 400A Frame, VL Series

Selection/Dimensions

Ordering Information

Complete Assembled Breaker

A complete factory assembled JG breaker includes the frame, trip unit, and standard line and load connectors, all factory installed and shipped as a complete breaker. Assembled breakers are available only with standard connectors.

For any other configuration, order the frame, trip unit, and terminals as separate items.

For DC applications, use thermal magnetic trip unit only.

For reverse feed applications, select non-interchangeable trip breakers only. For non-interchangeable trip breakers, change the third digit of the catalog number to "X" for standard breakers.

For 100% rated breakers with a non-interchangeable trip unit, change the 3rd character of the catalog number to "Y".

For special applications, refer to page 17/62.

Mounting hardware is included with each frame or complete breaker.

HACR rated.

Interrupting Ratings

		RMS S	RMS Symmetrical Amperes (KA)									
		UL 489 AIR (File E10848)			IEC 60	947-2						
		Volts /	AC (50/	60 Hz)	Volts I	DC	Volts AC (50/60 Hz)					
Interrupting	Breaker						220/240 380/415 690					
Class	Туре	240	480	600	250	500	I cu	Ics	Icu	cs	Icu	I cs
N	NJGA	65	35	25	30	25	65	65	45	45	12	6
Н	HJGA	100	65	25	30	35	100	75	70	70	15	8
L	LJGA	200	100	25	30	35	200	150	100	75	15	8

Connectors for 75°C Wire

Construction	Ampere Rating	Wire Range	No. of cables per connector	Catalog Number
Steel	70-400	1/0-600 kcmil Cu	1	3TW1JG600 ²
Aluminum	70-400	3/0–250 kcmil Al/Cu	2	3TA2JG250 [©]
Aluminum	70-400	250–750 kcmil Al	1	3TA1JG750 ^②
Aluminum	70-400	3/0–600 kcmil Cu	1	3TA1JG750 ^②
Copper	70-400	3/0–600 kcmil Cu	1	TC1JG750 [®]
Copper	70-400	3/0–250 kcmil Cu	2	TC2JG250 ³
Distribution Lug	js			
	70-400	#14–4 Cu	12	3TA12JG04 ^②
	70-400	#14-2/0 Al/Cu	6	3TA6JG20 ^②
Compression Lu	igs			
	70-400	#6-350 kcmil	_	3CLJ350 ^②
	70-400	250-600 kcmil	_	3CLJ600 ^②
	70-400	250-750 kcmil	_	3CLJ750 ^②

① Standard construction supplied for each breaker.

JG Thermal-Magnetic, Instantaneous Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (I _i)		
Amp Rating (I _n)	Min.	Max.	
250	1250	2500	
300	1500	3000	
350	1750	3500	
400	2000	4000	

Note: Each breaker has 6 trip settings in this range.



Dimensions, inches (mm)

Number of Poles	Width	Length	Depth	To Handle D1
2, 3	5.5 (139)	11 (279)	4.2 (102)	5.4 (138)

Shipping Weight, lbs. (kg)

			Trip l	Jnit	Complete
l	Poles	Frame	Thermal-Mag.	Electronic	Breaker
	2, 3	9.3 (4.2)	4.0 (1.8)	4.0 (1.8)	12.6 (5.7)

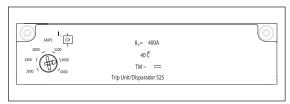
External Accessories pages 17/43 through 17/57

② Kit consists of 3 terminal connectors.

[®] Required for 100% rated JG breakers. Requires 90°C Cu cable sized at 75°C ampacity.

JG 400A Thermal-Magnetic Trip Unit

Selection



Model 525 Trip Unit

JG 400A Frame 2-Pole with Thermal-Magnetic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NJG2F400	HJG2F400	LJG2F400	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY
250	NJG2B250L	HJG2B250L	LJG2B250L	CJT2B250
300	NJG2B300L	HJG2B300L	LJG2B300L	CJT2B300
350	NJG2B350L	HJG2B350L	LJG2B350L	CJT2B350
400	NJG2B400L	HJG2B400L	LJG2B400L	CJT2B400

JG 400A Frame 3-Pole with Thermal-Magnetic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NJG3F400	HJG3F400	LJG3F400	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY
250	NJG3B250L	HJG3B250L	LJG3B250L	CJT3B250
300	NJG3B300L	HJG3B300L	LJG3B300L	CJT3B300
350	NJG3B350L	HJG3B350L	LJG3B350L	CJT3B350
400	NJG3B400L	HJG3B400L	LJG3B400L	CJT3B400

JJ 400A Frame 240V max., 2-pole with Thermal-Magnetic Non-Interchangeable Trip Unit®

	N-Interrupting Class
Continuous	Catalog Number
Ampere Rating	COMPLETE BREAKER
250	NJJ2B250
300	NJJ2B300
350	NJJ2B350
400	NJJ2B400

JJ 400A Frame 240V max., 3-pole with Thermal-Magnetic Non-Interchangeable Trip ${\rm Unit}^{\tiny{\textcircled{\tiny 0}}}$

	N-Interrupting Class
Continuous	Catalog Number
Ampere Rating	COMPLETE BREAKER
250	NJJ3B250
300	NJJ3B300
350	NJJ3B350
400	NJJ3B400

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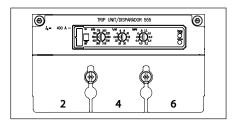
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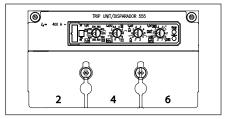
16

Terminal connectors must be ordered separately.
 Breaker Type NJJA.

JG 400A Electronic 3-Knob & LCD Trip Units

Selection

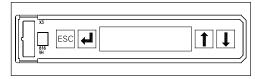




Model 555 Trip Units

JG 400A Frame 3-Pole Electronic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NJG3F400	HJG3F400	LJG3F400	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY
	•	ELECTRONIC LI TRIP		
250	NJG3R250L	HJG3R250L	LJG3R250L	CJT3R250
400	NJG3R400L	HJG3R400L	LJG3R400L	CJT3R400
		ELECTRONIC LSI TRIP		
250	NJG3T250L	HJG3T250L	LJG3T250L	CJT3T250
400	NJG3T400L	HJG3T400L	LJG3T400L	CJT3T400
		ELECTRONIC LSIG TRIP		
250	NJG3V250L	HJG3V250L	LJG3V250L	CJT3V250
400	NJG3V400L	HJG3V400L	LJG3V400L	CJT3V400
	·	ELECTRONIC LIG TRIP	·	·
250	NJG3W250L	HJG3W250L	LJG3W250L	CJT3W250
400	NJG3W400L	HJG3W400L	LJG3W400L	CJT3W400



Model 586 Trip Unit

JG 400A Frame 3-Pole Electronic LCD Trip Unit

		_ '				
	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
	Catalog Number	Catalog Number	Catalog Number	Catalog Number		
		FRAME ONLY				
Continuous	NJG3F400	HJG3F400	LJG3F400			
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCUI	T BREAKER	TRIP UNIT ONLY		
		LCD ELECTRONIC LSI TRIP				
250	NJG3A250L	HJG3A250L	LJG3A250L	CJT3A250		
400	NJG3A400L	HJG3A400L	LJG3A400L	CJT3A400		
		LCD ELECTRONIC LSIG TRIP				
250	NJG3G250L	HJG3G250L	LJG3G250L	CJT3G250		
400	NJG3G400L	HJG3G400L	LJG3G400L	CJT3G400		
	LCD ELECTRONIC LSI TRIP + GF ALARM ONLY					
250	NJG3K250L	HJG3K250L	LJG3K250L	CJT3K250		
400	NJG3K400L	HJG3K400L	LJG3K400L	CJT3K400		

LG 600A Frame, VL Series

Selection/Dimensions

Ordering Information

Complete Assembled Breaker

A complete factory assembled LG breaker includes the frame, trip unit, and standard line and load lugs, all factory installed and shipped as a complete breaker. Assembled breakers are available only with standard connectors.

For DC applications, use thermal magnetic trip unit only.

Breakers are suitable for reverse feed applications.

For special applications, refer to page 17/62.

Mounting hardware is included with each breaker.

For 100% rated breakers, change the 3rd character of the catalog number to "W". Available on 400/500 Amp only (3-pole only).

HACR rated.

Interrupting Ratings

			RMS Symmetrical Amperes (KA)									
			UL 489					IEC 60	947-2			
		Volts	Volts AC (50/60 Hz) Volts DC				Vo	lts AC	(50/60	Hz)		
Interrupting	Breaker						220	/240	380	/415	69	90
Class	Туре	240	480	600	250	500	I cu	cs	I cu	cs	I cu	cs
N	NLGB	65	35	18	30	25	65	65	45	45	12	6
Н	HLGB	100	65	18 ^①	30	35	100	75	70	70	15	8
L	LLGB	200	100	18	30	35	200	150	100	75	15	8

① Special 600Vac 25kA thermal-magnetic version (Type HLGC) available, see page 17/28.

Connectors for 75°C Wire

Construction	Ampere Rating	Wire Range	No. of cables per connector	Catalog Number③
Aluminum	150-600	#2-600 kcmil Al/Cu	2 (load side)	3TA2LG600LD ^②
Aluminum	150-600	#2-600 kcmil Al/Cu	2 (line side)	3TA2LG600LN ²
Copper	150-600	#2-600 kcmil Cu	2 (load side)	3TC2LG600LD®
Copper	150-600	#2-600 kcmil Cu	2 (line side)	3TC2LG600LN [®]
Compression Lu	ıgs			
	150-600	#6-350 kcmil Al/Cu	_	6CLL350 ^④
	150-600	250-750 kcmil Al/Cu	l —	3CLL750 ³
	150-600	250-600 kcmil Al/Cu	_	6CLL600 ^⑤

- ② Standard construction supplied for each breaker.
- 3 Kit consists of 3 terminal connectors.
- @ Kit consists of 6 lugs for Line or Load end.
- ® Required for 100% rated LG breakers. Requires 90°C Cu cable sized at 75°C ampacity.

LG Thermal-Magnetic, Instantaneous

Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (I _i)		
Amp Rating (I _n)	Min.	Max.	
400	2000	4000	
500	2500	5000	
600	2750	5500	

Note: Each breaker has 6 trip settings.



Dimensions, inches (mm)

Number of Poles	Width	Length	Depth	To Handle D1
2, 3	5.5 (139)	11 (279)	4.2 (102)	5.4 (138)
Ext. Shield		13.6 (345.5)		

Shipping Weight, lbs. (kg)

			Trip	Complete	
Pole	s	Frame	Thermal-Mag.	Electronic	Breaker
2, 3	3	17.4 (7.9)	3.5 (1.6)	4.2 (1.9)	20.9 (9.5)

External Accessories pages 17/43 through 17/57

LG 600A Thermal-Magnetic Trip Unit

Selection



Model 525 Trip Unit

LG 600A Frame 2-Pole with Thermal-Magnetic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
Continuous	Catalog Number	Catalog Number	Catalog Number			
Ampere Rating	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER					
400	NLK2B400L	HLK2B400L	LLK2B400L			
500	NLK2B500L	HLK2B500L	LLK2B500L			
600	NLK2B600L	HLK2B600L	LLK2B600L			

LG 600A Frame 3-Pole with Thermal-Magnetic Trip Unit®

_			•			
		N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
	Continuous	Catalog Number	Catalog Number	Catalog Number		
	Ampere Rating	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER				
	400	NLK3B400L	HLK3B400L	LLK3B400L		
Γ	500	NLK3B500L	HLK3B500L	LLK3B500L		
	600	NLK3B600L	HLK3B600L	LLK3B600L		

LG 600A Frame 2-Pole with Thermal-Magnetic Trip Unit , 600Vac 25kA only²

		•	,		
Continuous	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
	Catalog Number	Catalog Number	Catalog Number		
Ampere Rating					
400	_	HLV2B400L	_		
500	_	HLV2B500L	_		
600	_	HLV2B600L	_		

LG 600A Frame 3-Pole with Thermal-Magnetic Trip Unit , 600Vac 25kA only $^{\odot 2}$

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
Continuous	Catalog Number	Catalog Number	Catalog Number		
Ampere Rating	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER				
400	_	HLV3B400L	_		
500	_	HLV3B500L	_		
600	_	HLV3B600L	_		

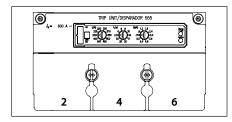
① For 100% rated 400A or 500A versions, change the third character of the catalog number to "Z".

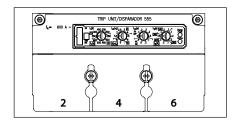
② Consult sales office for availability.

VL Circuit Breakers

LG 600A Electronic Trip Units

Selection





Model 555 Trip Unit

LG 600A Frame 3-Pole Electronic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
Continuous	Catalog Number	Catalog Number	Catalog Number		
Ampere Rating	COMPL	ETE FACTORY ASSEMBLED CIRCUIT BI	REAKER		
	ELECTRO	ONIC LI TRIP			
400	NLK3R400L	HLK3R400L	LLK3R400L		
600	NLK3R600L	HLK3R600L	LLK3R600L		
	ELECTRO	NIC LSI TRIP			
400	NLK3T400L	HLK3T400L	LLK3T400L		
600	NLK3T600L	HLK3T600L	LLK3T600L		
	ELECTRO	NIC LSIG TRIP			
400	NLK3V400L	HLK3V400L	LLK3V400L		
600	NLK3V600L	HLK3V600L	LLK3V600L		
ELECTRONIC LIG TRIP					
400	NLK3W400L	HLK3W400L	LLK3W400L		
600	NLK3W600L	HLK3W600L	LLK3W600L		



Model 586 Trip Unit

LG 600A Frame 3-Pole Electronic LCD Trip Unit

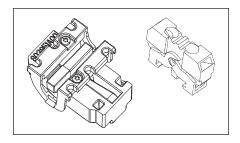
	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
Continuous	Catalog Number	Catalog Number	Catalog Number		
Ampere Rating	COMPL	ETE FACTORY ASSEMBLED CIRCUIT BI	REAKER		
	ELECTROI	NIC LSI TRIP			
400	NLK3A400L	HLK3A400L	LLK3A400L		
600	NLK3A600L	HLK3A600L	LLK3A600L		
	ELECTRON	IIC LSIG TRIP			
400	NLK3G400L	HLK3G400L	LLK3G400L		
600	NLK3G600L	HLK3G600L	LLK3G600L		
ELECTRONIC LSI TRIP + GF ALARM ONLY					
400	NLK3K400L	HLK3K400L	LLK3K400L		
600	NLK3K600L	HLK3K600L	LLK3K600L		

Internal Accessories for JG 400A and LG 600A Frames

Selection

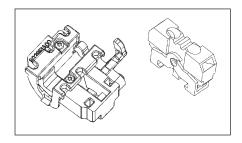
Auxiliary Switch and Alarm Switch Combination Kits

Description	Mounting Pocket ^①	Catalog Number
1 Alarm Switch		
1A/B ^③	Left, Right ^②	ASKL1
Bases AMBL2 & AMBL3		
2 Aux. Switches		
1A + 1B	Left, Right	ASKL2
Bases AMBL1		
2 Aux. + 1 Alarm Switches		
1A + 1B, 1A/B ³	Left, Right ^②	ASKL3
Bases AMBL2 & AMBL3		



Auxiliary/Alarm Switch Mounting Base Only

Description	Mounting Pocket	Catalog Number
Up to 3 Auxiliary Switches	Left, Right	AMBL1
2 Aux. + 1 Alarm Switch	Left Pocket Only	AMBL2
2 Aux. + 1 Alarm Switch	Right Pocket Only	AMBL3



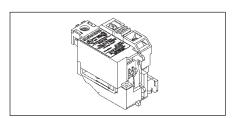
Auxiliary/Alarm Switch Only

Common to DG - PG Frames

Description	Catalog Number
1 Normally Open Contact (1A)	ASWPA
1 Normally Closed Contact (1B)	ASWPB

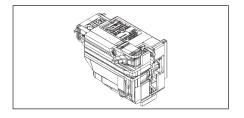
Shunt Trips

Description	Mounting Pocket Catalog Number	
24 VDC		STRLB24DC
48-60 VDC		STRLC60DC
110-127 VDC	Right Pocket Only	STRLD125DC
220-250 VDC		STRLE250DC
48-60 VAC		STRLM60
110-127 VAC		STRLN120
208-277 VAC		STRLS277
380-600 VAC		STRLV600



Undervoltage Release

Description	Mounting Pocket	Catalog Number
12 VDC		UVRLA12DC
24 VDC		UVRLB24DC
48 VDC		UVRLC48DC
60 VDC		UVRLG60DC
110-127 VDC		UVRLD125DC
220-250 VDC		UVRLE250DC
24 VAC	Right Pocket Only	UVRLL24
110-127 VAC		UVRLN120
220-240 VAC		UVRLR240
208 VAC		UVRLP208
277 VAC		UVRLS277
380-415 VAC		UVRLT415
440-480 VAC		UVRLU480



External Accessories pages 17/43 through 17/57

¹⁰ Refer to the "Accessory Locations" chart on page 17/58 for guidelines and limitations about which pockets may be used for

② Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time. 'A' refers to a normally open contact (open when the breaker contacts are open).

^{&#}x27;B' refers to a normally closed contact (closed when the breaker contacts are open).

MG 800A Frame, VL Series

Selection/Dimensions

Ordering Information

Complete Assembled Breaker

A complete factory assembled MG breaker includes the frame, trip unit, and standard line and load lugs, all factory installed and shipped as a complete breaker. Assembled breakers are available only with standard connectors.

For any other configuration, order the frame, trip unit, and terminals as separate items.

For DC applications, use thermal magnetic trip unit only.

For reverse feed applications, select non-interchangeable trip breakers only. For non-interchangeable trip breakers, change the third digit of the catalog number to "X" for standard breakers.

For 100% rated breakers with a non-interchangeable trip unit, change the 3rd character of the catalog number to "Y".

For special applications, refer to page 17/62.

Mounting hardware is included with each frame or complete breaker.

HACR rated.

Interrupting Ratings

			RMS Symmetrical Amperes (KA)									
		UL 489				•		0947-2				
		Volts AC (50/60 Hz) Volts DC			Vo	Its AC	(50/60	Hz)				
Interrupting	Breaker						220/240		380/4	15	690	
Class	Туре	240	480	600	250	500	Icu	Ics	lcυ	Ics	lcυ	Ics
N	NMG	65	35	25	22	35	65	65	50	50	20	10
Н	HMG	100	65	35	25	50	100	75	70	70	30	15
L	LMG	200	100	50	42	65	200	150	100	75	35	17

Connectors for 75°C Wire

Construction	Ampere Rating	Wire Range	No. of cables per connector	Catalog Number
Aluminum	200-800A	1/0-500 kcmil Al/Cu	3	3TA3MG500 [©]
Aluminum	200-800A	500-750 kcmil Al/Cu	2	3TA2MG750 ²
Copper	200-800A	1/0–500 kcmil Cu	3	TC3MG50035
Aluminum	200-800A	#2-600 kcmil Al/Cu	3	3TA3MG600 ² 4

- Standard connector supplied with complete breakers.
- ² Kit consists of 3 terminal connectors.
- 3 Consists of one terminal.
- 4 Includes extended terminal cover.
- ® Required for 100% rated MG breakers. Requires 90°C Cu cable sized at 75°C ampacity.

MG Thermal-Magnetic, Instantaneous Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (I _i)			
Amp Rating (I _n)	Min.	Max.		
600	3000	6000		
700	3250	6500		
800	3250	6500		

Note: Each breaker has 6 trip settings.



Dimensions, inches (mm)

Number of Poles	Width	Length	1	To Handle D1
2, 3	7.5 (190)	16 (406)	4.7 (119)	5.9 (151)

Shipping Weight, lbs. (kg)

Poles	Frame	Trip Unit	Complete Breaker
2, 3	31.3 (14.2)	4.0 (1.8)	35.3 (16.0)

External Accessories pages 17/43 through 17/57

11

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16

MG 800A Thermal-Magnetic Trip Unit

Selection



Model 525 Trip Unit

MG 800A Frame 2-Pole with Thermal-Magnetic Trip Unit

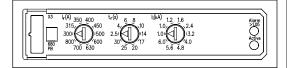
greate trip erric						
	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
	Catalog Number	Catalog Number	Catalog Number	Catalog Number		
		FRAME ONLY				
Continuous	NMG2F800	HMG2F800	LMG2F800			
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY		
600	NMG2B600L	HMG2B600L	LMG2B600L	CMT2B600		
700	NMG2B700L	HMG2B700L	LMG2B700L	CMT2B700		
800	NMG2B800L	HMG2B800L	LMG2B800L	CMT2B800		

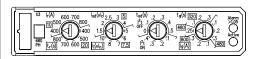
MG 800A Frame 3-Pole with Thermal-Magnetic Trip Unit

The edge of the trial tr						
	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class			
	Catalog Number	Catalog Number	Catalog Number	Catalog Number		
	FRAME ONLY					
Continuous	NMG3F800	HMG3F800	LMG3F800			
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY		
600 700 800	NMG3B600L NMG3B700L NMG3B800L	HMG3B600L HMG3B700L HMG3B800L	LMG3B600L LMG3B700L LMG3B800L	CMT3B600 CMT3B700 CMT3B800		

MG 800A Electronic 3-Knob & LCD Trip Units

Selection





Model 555 Trip Units

MG 800A Frame 3-Pole Electronic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
		FRAME ONLY			
Continuous	NMG3F800	HMG3F800	LMG3F800		
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCUI	IT BREAKER	TRIP UNIT ONLY	
		ELECTRONIC LI TRIP			
600	NMG3R600L	HMG3R600L	LMG3R600L	CMT3R600	
800	NMG3R800L	HMG3R800L	LMG3R800L	CMT3R800	
		ELECTRONIC LSI TRIP			
600	NMG3T600L	HMG3T600L	LMG3T600L	CMT3T600	
800	NMG3T800L	HMG3T800L	LMG3T800L	CMT3T800	
		ELECTRONIC LSIG TRIP			
600	NMG3V600L	HMG3V600L	LMG3V600L	CMT3V600	
800	NMG3V800L	HMG3V800L	LMG3V800L	CMT3V800	
		ELECTRONIC LIG TRIP			
600	NMG3W600L	HMG3W600L	LMG3W600L	CMT3W600	
800	NMG3W800L	HMG3W800L	LMG3W800L	CMT3W800	



Model 586 Trip Unit

MG 800A Frame 3-Pole Electronic LCD Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class						
	Catalog Number	Catalog Number	Catalog Number	Catalog Number					
		FRAME ONLY							
Continuous	NMG3F800	HMG3F800	LMG3F800						
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCUI	T BREAKER	TRIP UNIT ONLY					
		LCD ELECTRONIC LSI TRIP							
600	NMG3A600L	HMG3A600L	LMG3A600L	CMT3A600					
800	NMG3A800L	HMG3A800L	LMG3A800L	CMT3A800					
		LCD ELECTRONIC LSIG TRIP							
600	NMG3G600L	HMG3G600L	LMG3G600L	CMT3G600					
800	NMG3G800L	HMG3G800L	LMG3G800L	CMT3G800					
	LCD ELECTRONIC LSI TRIP + GF ALARM ONLY								
600	NMG3K600L	HMG3K600L	LMG3K600L	CMT3K600					
800	NMG3K800L	HMG3K800L	LMG3K800L	CMT3K800					

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NG 1200A Frame, VL Series

Selection/Dimensions

Ordering Information

Complete Assembled Breaker with Lugs

A complete factory assembled NG breaker includes the frame, trip unit, and standard line and load lugs, all factory installed and shipped as a complete breaker. Assembled breakers are available only with standard connectors.

For any other configuration, order the frame, trip unit, and terminals as separate items.

For DC applications, use thermal magnetic trip unit only.

For reverse feed applications, select non-interchangeable trip breakers only. For non-interchangeable trip breakers, change the third digit of the catalog number to "X" for standard breakers.

For 100% rated breakers with a non-interchangeable trip unit, change the 3rd character of the catalog number to "Y".

For special applications, refer to page 17/62.

Mounting hardware is included with each frame or complete breaker.

A Toggle Handle Extension is included with each frame or complete breaker. HACR rated.

Interrupting Ratings

ı												
			RMS Symme					nperes	(KA)			
			UL 489						IEC 6	0947-2		
		Volts	Volts AC (50/60 Hz) Volts					Vo	Its AC	(50/60	Hz)	
Interrupting	Breaker						220/2	40	380/4	15	690	
Class	Туре	240	480	600	250	500	I cu	Ics	I cu	Ics	Icu	Ics
N	NNG	65	35	25	22	35	65	35	50	25	20	10
Н	HNG	100	65	35	25	50	100	50	70	35	30	15
L	LNG	200	100	65	42	65	200	100	100	50	35	17

Connectors for 75°C Wire

Construction	Ampere Rating	Wire Range	No. of cables per connector	Catalog Number		
Aluminum	300-1200A	1/0-500 kcmil Al/Cu	4	3TA4NG500 ³ 4		
Aluminum	300-1200A	500-750 kcmil Al/Cu	3	3TA3NG750 ⁴		
Copper	300-1200A	1/0–500 kcmil Cu	4	3TC4NG500 ² 4		
Aluminum	300-1200A	1/0–500 kcmil Al/Cu	4	3TA4NG500H24		
Compression Lugs						
	300-1200A	1/0-500 kcmil Al/Cu	_	12CLN500 ^①		

- ① Total of 12 connectors (4 per phase Line or Load).
- @ For 100% rated NG breakers. Requires 90°C Cu cable sized at 75°C ampacity.
- 3 Standard connector provided with complete breakers
- 4 Kit consists of 3 terminal connectors.

NG Thermal-Magnetic, Instantaneous Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (I _i)					
Amp Rating (I _n)	Min.	Max.				
800	4000	8000				
900	5000	10000				
1000	5000	10000				
1200	7000	12000				

Note: Each breaker has 6 trip settings.



Dimensions, inches (mm)

Number of Poles	w	L	D	To Handle D1
2, 3	9 (229)	16 (406)	6 (152)	8.1 (207)

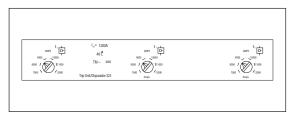
Shipping Weight, lbs. (kg)

Poles	Frame	Trip Unit	Complete Breaker
2, 3	46.3 (21.0)	8.8 (4.0)	55.1 (25.0)

External Accessories pages 17/43 through 17/57

NG 1200A Thermal-Magnetic Trip Unit

Selection



Model 525 Trip Unit

NG 1200A Frame 2-Pole with Thermal-Magnetic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NNG2F120	HNG2F120	LNG2F120	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY
800	NNG2B800L	HNG2B800L	LNG2B800L	CNT2B800
900	NNG2B900L	HNG2B900L	LNG2B900L	CNT2B900
1000	NNG2B100L	HNG2B100L	LNG2B100L	CNT2B100
1200	NNG2B120L	HNG2B120L	LNG2B120L	CNT2B120

NG 1200A Frame 3-Pole with Thermal-Magnetic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NNG3F120	HNG3F120	LNG3F120	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	T BREAKER	TRIP UNIT ONLY
800	NNG3B800L	HNG3B800L	LNG3B800L	CNT3B800
900	NNG3B900L	HNG3B900L	LNG3B900L	CNT3B900
1000	NNG3B100L	HNG3B100L	LNG3B100L	CNT3B100
1200	NNG3B120L	HNG3B120L	LNG3B120L	CNT3B120

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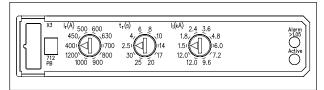
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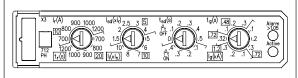
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NG 1200A Electronic Trip Units

Selection

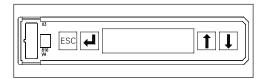




Model 555 Trip Units

NG 1200A Frame 3-Pole Electronic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NNG3F120	HNG3F120	LNG3F120	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	T BREAKER	TRIP UNIT ONLY
	•	ELECTRONIC LI TRIP		_
800	NNG3R800L	HNG3R800L	LNG3R800L	CNT3R800
1000	NNG3R100L	HNG3R100L	LNG3R100L	CNT3R100
1200	NNG3R120L	HNG3R120L	LNG3R120L	CNT3R120
		ELECTRONIC LSI TRIP		
800	NNG3T800L	HNG3T800L	LNG3T800L	CNT3T800
1000	NNG3T100L	HNG3T100L	LNG3T100L	CNT3T100
1200	NNG3T120L	HNG3T120L	LNG3T120L	CNT3T120
		ELECTRONIC LSIG TRIP		
800	NNG3V800L	HNG3V800L	LNG3V800L	CNT3V800
1000	NNG3V100L	HNG3V100L	LNG3V100L	CNT3V100
1200	NNG3V120L	HNG3V120L	LNG3V120L	CNT3V120
		ELECTRONIC LIG TRIP		
800	NNG3W800L	HNG3W800L	LNG3W800L	CNT3W800
1000	NNG3W100L	HNG3W100L	LNG3W100L	CNT3W100
1200	NNG3W120L	HNG3W120L	LNG3W120L	CNT3W120



Model 586 Trip Unit

NG 1200A Frame 3-Pole Electronic LCD Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NNG3F120	HNG3F120	LNG3F120	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY
	•	LCD ELECTRONIC LSI TRIP		•
800	NNG3A800L	HNG3A800L	LNG3A800L	CNT3A800
1000	NNG3A100L	HNG3A100L	LNG3A100L	CNT3A100
1200	NNG3A120L	HNG3A120L	LNG3A120L	CNT3A120
		LCD ELECTRONIC LSIG TRIP		
800	NNG3G800L	HNG3G800L	LNG3G800L	CNT3G800
1000	NNG3G100L	HNG3G100L	LNG3G100L	CNT3G100
1200	NNG3G120L	HNG3G120L	LNG3G120L	CNT3G120
	LCD ELE	CTRONIC LSI TRIP + GF ALARN	/ ONLY	
800	NNG3K800L	HNG3K800L	LNG3K800L	CNT3K800
1000	NNG3K100L	HNG3K100L	LNG3K100L	CNT3K100
1200	NNG3K120L	HNG3K120L	LNG3K120L	CNT3K120

PG 1600A Frame, VL Series & Thermal-Magnetic Trip Unit

Selection/Dimensions

Ordering Information

A complete factory assembled PG breaker includes the frame and trip unit only. The connectors must be ordered as separate items.

PG thermal-magnetic breakers sold as non-interchangeable only.

For any other configuration, order the frame, trip unit, and connectors as separate items.

Connectors require a Breaker Lug Mounting Assembly or Breaker Mounting Base and must be ordered as a seperate item.

For DC applications, use Thermal magnetic trip unit only.

For reverse feed applications select non-interchangeable trip breakers only. Change the third digit of the catalog number to "X" for non-interchangeable trip breakers.

For 100% rated breakers with a non-interchangeable trip unit, change the 3rd character of the catalog number to "Y".

For special applications, refer to page 17/62.

Mounting hardware is included with each frame or complete breaker.

A Toggle Handle Extension is included with each frame or complete breaker.

Interrupting Ratings

					RMS S	ymmet	trical Amperes (KA)						
			UL 489						IEC 6	0947-2			
		Volts	Volts AC (50/60 Hz) V			s DC	OC Volts AC (50/60 Hz)			Hz)			
Interrupting	Breaker						220/2	220/240 380/415		690			
Class	Туре	240	480	600	250	500	Icu	Ics	I cu	Ics	I cu	cs	
N	NPG	65	35	25	22	35	65	35	50	25	20	10	
Н	HPG	100	65	35	25	50	100	50	70	35	30	15	
L	LPG	200	100	65	42	65	200	100	100	50	35	17	

Connectors for 75°C Wire

C	Construction	Ampere Rating	Wire Range	No. of cables per phase	Catalog Number
1	Aluminum	1200-1600A	1/0-750 kcmil Al/Cu	6	3TA6PG750 ^① 3
1	Aluminum	1200-1600A	300–600 kcmil Al/Cu	5	TA5P600 ² 4
1	Aluminum	1200-1600A	600–750 kcmil Al/Cu	4	TA4P750 ² 4
1	Aluminum	1200-1600A	300-600 kcmil Al/Cu	6	TA6R600 ² 4
(Copper	1200-1600A	300–600 kcmil Cu	5	TC5R600 ² 4 ⁵

- ① Requires Lug Mounting Assembly LMAP1600.
- ② Requires Breaker Mounting Base MBPG1600 Kit or MBPG1601.
- 3 Consists of 3 connectors.4 Consists of 1 connector.
- © Required for 100% rated PG breakers. Requires 90°C cable sized at 75°C ampacity.

Mounting Arrangement

Description	Catalog Number
Lug Mounting Assembly	LMAP1600
Breaker Mounting Base (Front Connect)	MBPG1600
Breaker Mounting Base (Rear Connect)	MBPG1601

Dimensions, inches (mm)

Number of Poles	w	L	D	To Handle D1
2, 3	9 (229)	16 (406)	6 (152)	8.1 (207)

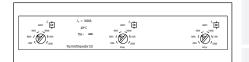
Shipping Weight, lbs. (kg)

Poles	Frame	Trip Unit	Complete Breaker
2, 3	60.2 (27.3)	8.8 (4.0)	69.0 (31.3)

PG Thermal-Magnetic, Instantaneous Trip Adjustment Range

Trip Unit Continuous	Instantaneous Overcurrent Setting (I _i)	
Amp Rating (I _n)	Min.	Max.
1200	7000	12000
1400	7000	12000
1600	7000	12000

Note: Each breaker has 6 trip settings in this range.



Model 525 Trip Unit

PG 1600A Frame 3-Pole with Thermal-Magnetic Trip Unit

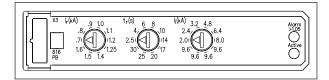
	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
Continuous	Catalog Number	Catalog Number	Catalog Number	
Ampere Rating	COMPLETE FACTORY ASSEMBLED CIRCUIT BREAKER			
1200 1400 1600	NPX3B120 NPX3B140 NPX3B160	HPX3B120 HPX3B140 HPX3B160	LPX3B120 LPX3B140 LPX3B160	

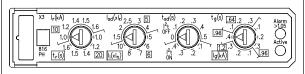
External Accessories pages 17/43 through 17/57

Siemens Industry, Inc. Industrial Controls Catalog

PG 1600A Electronic Trip Units

Selection





Model 555 Trip Unit

PG 1600A Frame 3-Pole Electronic Trip Unit

	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class	
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
		FRAME ONLY		
Continuous	NPG3F160	HPG3F160	LPG3F160	
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCU	IT BREAKER	TRIP UNIT ONLY
	-	ELECTRONIC LI TRIP		
1200	NPG3R120	HPG3R120	LPG3R120	CPT3R120
1600	NPG3R160	HPG3R160	LPG3R160	CPT3R160
		ELECTRONIC LSI TRIP		
1200	NPG3T120	HPG3T120	LPG3T120	CPT3T120
1600	NPG3T160	HPG3T160	LPG3T160	CPT3T160
		ELECTRONIC LSIG TRIP		
1200	NPG3V120	HPG3V120	LPG3V120	CPT3V120
1600	NPG3V160	HPG3V160	LPG3V160	CPT3V160
		ELECTRONIC LIG TRIP		
1200	NPG3W120	HPG3W120	LPG3W120	CPT3W120
1600	NPG3W160	HPG3W160	LPG3W160	CPT3W160



Model 586 Trip Unit

PG 1600A Frame 3-Pole Electronic LCD Trip Unit

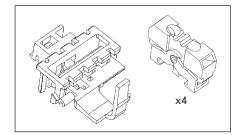
	N-Interrupting Class	H-Interrupting Class	L-Interrupting Class		
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
	FRAME ONLY				
Continuous	NPG3F160	HPG3F160	LPG3F160		
Ampere Rating	COMPLETE	FACTORY ASSEMBLED CIRCUI	T BREAKER	TRIP UNIT ONLY	
	LCD ELECTRONIC LSI TRIP				
1200	NPG3A120	HPG3A120	LPG3A120	CPT3A120	
1600	NPG3A160	HPG3A160	LPG3A160	CPT3A160	
	LCD ELECTRONIC LSIG TRIP				
1200	NPG3G120	HPG3G120	LPG3G120	CPT3G120	
1600	NPG3G160	HPG3G160	LPG3G160	CPT3G160	
	LCD ELECTRONIC LSI TRIP + GF ALARM ONLY				
1200	NPG3K120	HPG3K120	LPG3K120	CPT3K120	
1600	NPG3K160	HPG3K160	LPG3K160	CPT3K160	

Internal Accessories for MG 800A, NG 1200A, and PG 1600A Frames

Selection

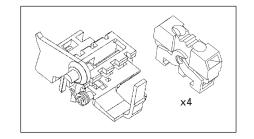
Auxiliary Switch and Alarm Switch Combination Kits

Description	Mounting Pocket ^①	Catalog Number
2 Aux. + 2 Alarm Switches 2A + 2B Base AMBP2	Left Pocket Only	ASKP3
4 Aux. Switches 2A + 2B Base AMBP1	Left, Right	ASKP4



Auxiliary/Alarm Switch Mounting Base Only

Description	Mounting Pocket ^①	Catalog Number
Up to 4 Auxiliary Switches	Left, Right	AMBP1
2 Aux. + 2 Alarm Switches	Left Pocket Only	AMBP2



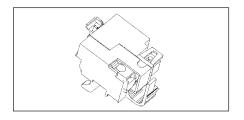
Auxiliary/Alarm Switch Only

Common to DG-PG Frames

Description	Catalog Number
1 Normally Open Contact (1A)	ASWPA
1 Normally Closed Contact (1B)	ASWPB

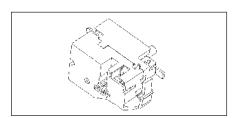


Description	Mounting Pocket	Catalog Number
24 VDC		STRPB24DC
48-60 VDC		STRPC60DC
110-127 VDC		STRPD125DC
220-250 VDC	Right Pocket Only	STRPE250DC
48-60 VAC		STRPM60
110-127 VAC		STRPN120
208-277 VAC		STRPS277
380-600 VAC		STRPV600



Undervoltage Release

Description	Mounting Pocket	Catalog Number
12 VDC		UVRPA12DC
24 VDC		UVRPB24DC
48 VDC		UVRPC48DC
60 VDC		UVRPG60DC
110-127 VDC	Right Pocket Only	UVRPD125DC
220-250 VDC		UVRPE250DC
110-127 VAC		UVRPN120
220-240 VAC		UVRPR240
208 VAC		UVRPP208
277 VAC		UVRPS277
380-415 VAC		UVRPT415
440-480 VAC		UVRPU480



External Accessories pages 17/43 through 17/57

¹⁰ Refer to the "Accessory Locations" chart on page 17/58 for guidelines and limitations about which pockets may be used for accessory combinations. 'A' refers to a normally open contact (open when the breaker contacts are open).
'B' refers to a normally closed contact (closed when the breaker contacts are open).

Molded Case Switch

Selection

General

Typically a molded case switch is used when a compact load-break switch is needed for disconnect purposes. The VL line of molded case switches from Siemens is made of the same materials and components as the VL circuit breakers but do not provide overcurrent protection. Each molded case

switch has a fixed instantaneous selfprotecting trip element which may open the switch under high fault conditions.

Application Note

Overcurrent protection must be provided by an appropriate overcurrent protective device located upstream from

the molded case switch. Also, the short-circuit current rating of the switch is limited to the interrupting rating of the upstream protective device or the ratings in the table below, whichever is less.

Ordering Information

Each type VL molded case switch accepts the same terminals and accessories as the equivalent VL circuit breakers. All type VL molded case switches are suitable for reverse feed applications.

Mounting hardware and standard line and load terminals are included on ratings through 250A. For 400 – 1600A ratings, order the lugs separately.

All ratings are UL listed and CSA certified.

Molded Case Switch

Maximum Ampere	2-Pole	3-Pole	Short-Circuit Current Rating ^①			Self Protective
Rating / Frame	Catalog Number	Catalog Number	240V	480V	600V	Override
150A / DG	HDR2S150L	HDR3S150L	100k	65k	20k	2,500A
250A / FG	HFS2S250L	HFS3S250L	100k	65k	20k	3,500A
400A / JG	HJS2S400	HJS3S400	100k	65k	25k	4,400A
600A / LG	HLR2S600	HLR3S600	100k	65k	18k	5,500A
800A / MG	HMS2S800	HMS3S800	100k	65k	35k	6,500A
1200A / NG	HNS2S120	HNS3S120	100k	65k	35k	12,000A
1600A / PG	_	HPS3S160	100k	65k	35k	14,000A

Maximum	3-Pole	Short-Circuit Current Rating ^①			Self Protective	
Ampere Rating / Frame	Catalog Number	240V	480V	600V	Instantaneous Override	
250A / FG	LFS3S250L	200k	100k	25k	3,500A	
400A / JG	LJS3S400	200k	100k	25k	4,400A	
600A / LG	LLR3S600	200k	100k	18k	5,500A	
800A / MG	LMS3S800	200k	100k	65k	6,500A	
1200A / NG	LNS3S120	200k	100k	65k	12,000A	
1600A / PG	LPS3S160	200k	100k	65k	14,000A	

OThe Short-Circuit Current Rating is the maximum available current of the circuit where the switch is used, when protected by an appropriate overcurrent protective device.

VL Molded Case Circuit Breakers Motor Circuit Protectors

Selection

General

Protection of Motor Circuits

Molded case circuit breakers are used in motor circuits as a disconnecting means and for short-circuit protection. They should be used in conjunction with motor-running, over-current protection devices, and should permit the motor to start without nuisance tripping from motor-inrush current. The circuit breaker should have a continuous current rating of not less than 115% of the motor fullload current.

The recommended motor circuit protectors listed have continuous-current ratings of at least 115% of motor full-load currents. The trip setting positions are approximately 11 times motor full-load current. The suggested trip settings may need to be adjusted upward to no higher than 1300% of full-load current for non-design E type motors, and no greater than 1700% of full-load current for design E motors, to allow for motor startup due to in-rush current.

Breaker Mounted Immediately Ahead of Motor Starter

Siemens motor circuit protectors are recommended for use in combination motor starters to provide selective short-circuit protection for the motor branch circuit. The adjustable instantaneous trip feature of the Siemens motor circuit protector provides for a trip setting slightly above the peak motor in-rush current. With this setting, no delay is introduced in opening the circuit when a fault occurs. This circuit breaker has no time-delay trip element. Therefore it must be used in conjunction with, and immediately ahead of, the motor-running overcurrent protection device.

Important: The information below does not apply to all motor applications: it is recommended that the user refer to the National Electrical Code (NEC) for specific needs.

Motor Full

96-139

Load Amperes

Table 1 (When Breaker is Mounted Immediately Ahead of Motor Starter)

3-Phase Induction Type Motors (Siemens motor circuit protectors for branch circuit use with alternating-current combination, full voltage motor starters)

Notor Full oad Amperes	Trip Setting (A)	Catalog Number ^①
35-50	450	
2-60	540	
8-70	630	HDP3L150L
55-80	720	
62-90	810	
9-100	900	
58-83	750	
9-100	900	
31-117	1050	HDP3M150L
02-133	1200	
04-150	1350	7
15-150②	1500	
06-139	1250	
15-150 ^②	1500	
35-150 ^②	1750	HDP3H150L
35-150②	2000	
35-150②	2250	
35-150 ²	2500	
6-67	600	
55-80	720	
55-93	840	HFM3L250L
4-107	960	
33-120	1080	7
92-133	1200	
77-111	1000	
02-133	1200	
08-156	1400	HFM3M250L
23-178	1600	
38-200	1800	7
54-222	2000	
35-194	1750	
62-210	2100	7
88-220	2450	HFM3H250L
215-241	2800	
242-250②	3150	\dashv
242-250②	3500	

	1200	
	1500	115-167
HJM3L400	1750	135-194
\neg	2000	154-222
\neg	2250	173-250
	2500	192-278
	2000	154-222
	2400	185-267
HJM3M400	2800	215-311
	3200	246-356
	3600	277-400
	4000	308-400②
	2000	154-222
	2400	185-267
HLM3J600	2800	215-311
	3200	246-356
	3600	277-400
	4000	308-444
	2750	212-306
	3300	254-367
HLM3Y600	3850	296-428
	4400	338-489
	4950	381-550
	5500	423-600
	3250	250-361
	3800	292-422
HMM3M800	4350	335-483
	5000	385-556
\neg	5740	442-638
	6500	500-722
	5000	385-556
	6000	462-667
HNM3M120	7000	538-778
\neg	8000	615-889
\neg	9000	692-1000
	10,000	769-1111

Trip Setting (A)

1250

Catalog Number^①

Siemens Industry, Inc. Industrial Controls Catalog

① Motor circuit protectors rated 150A and 250A are supplied with line and load lugs installed. If lugs are required on 400A to 1200A motor circuit breakers, order required lugs separately.

[®] These settings are provided for starting currents greater than 11X but not to exceed 17X. Full Load Amps (FLA) not to exceed ampere rating of MCP.

600 Volt DC Circuit Breakers

Selection

General

Siemens UL Listed non-interchangeable trip DC Thermal/magnetic Molded Case Circuit Breakers shown below are for use in grounded & ungrounded general DC circuits and ungrounded battery supply circuits of UPS systems. These breakers are rated at 600Vdc closed circuit and feature rated interruption levels from 42,000 to 65,000 amperes as indicated in

the table. This family of circuit breakers is rated from 50 to 1600 Amperes.

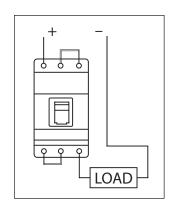
Types HDGD through HPGD circuit breakers are provided with an adjustable magnetic over-current function located on the face of the circuit breaker. Contact Siemens for specific magnetic over-current values.

To properly use these UL Listed circuit breakers at 600Vdc and the indicated

interruption level, it is necessary to connect the terminals of the 3 pole circuit breaker in a series configuration as shown in the diagram below.

Types HDGD through HPGD use the same internal and external accessories as the standard DG through PG frames and associated types. Consult the individual frame section for accessory information.

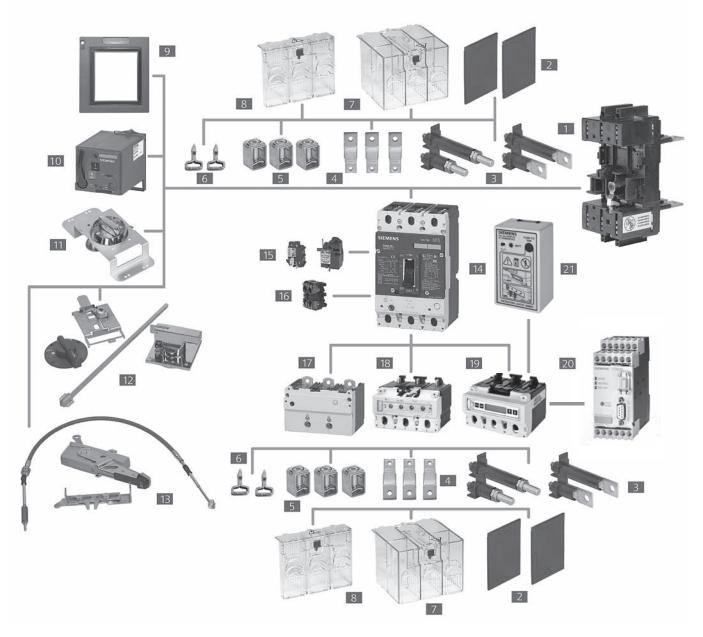
Frame	Туре	Continuous Ampere Rating	Catalog Number (3-pole) ^①	Short-Circuit Current Rating 600VDC ^②
		50	HDC3B050	42K
		60	HDC3B060	42K
		70	HDC3B070	42K
		80	HDC3B080	42K
DG	HDGD	90	HDC3B090	42K
		100	HDC3B100	42K
		110	HDC3B110	42K
		125	HDC3B125	42K
		150	HDC3B150	42K
		100	HFC3B100	42K
FG	HFGD	150	HFC3B150	42K
		250	HFC3B250	42K
		250	HJC3B250	65K
10	11100	300	HJC3B300	65K
JG	HJGD	350	HJC3B350	65K
		400	HJC3B400	65K
1.0	III CD	400	HLC3B400	65K
LG	HLGD	600	HLC3B600	65K
		600	HMC3B600	65K
MG	HMGD	700	HMC3B700	65K
		800	HMC3B800	65K
		800	HNC3B800	65K
NC	LINCD	900	HNC3B900	65K
NG	HNGD	1000	HNC3B100	65K
		1200	HNC3B120	65K
		1200	HPC3B120	65K
PG	HPGD	1400	HPC3B140	65K
		1600	HPC3B160	65K



① Terminal connectors must be ordered separately; see page 17/90.

[®] Standard VL breakers DG - PG feature DC ratings up to 500V for ungrounded UPS applications. Consult the individual frame section for more information.

Modularity To Support All Your Application Needs Modules and More: VL Circuit Breakers with Optional Accessories

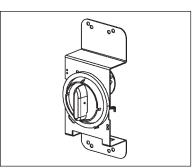


- 1 Base for Plug-In or Draw-Out
- 2 Interphase Barriers
- Rear Terminals Flat and Round 11 Rotary Handle Operator
- 4 Bus Extensions
- 5 Terminal Connectors
- 6 Plug-In Terminal Blades
- 7 Extended Terminal Shield
- 8 Standard Terminal Shield

- 9 Cover Frame for Door Cutout
- 10 Stored Energy Operator
- 12 Variable Depth Rotary Operator
- 13 Max Flex Operator
- 14 Circuit Breaker
- 15 Shunt Trip or Undervoltage Releases
- 16 Auxiliary/Alarm Switches

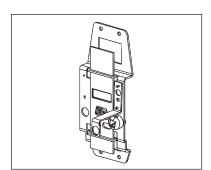
- 17 Thermal Magnetic Trip Unit (525)
- 18 Electronic Trip Unit (555)
- 19 Elec. Trip Unit with LCD (586)
- 20 Communication Module with ZSI
- 21 Electronic Trip Unit Tester and **LCD Power Supply**

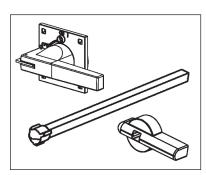
Operating Mechanisms











	For DG to FG Frame 150 to 250 A	For JG to LG Frame 400 A to 600 A
Description	Catalog Number	Catalog Number
Through-Door Rotary Handle Operator Kit Fixed depth and the handle is mounted directly on the circuit breaker. Lockable knob (for up to 3 padlocks). NEMA 1, 12 Red Handle Version with red knob, yellow indicator plate	RHFF	RHFL
NEMA 1, 12	RHFFEM	RHFLEM
Door-Mounted Rotary Handle Operator Kit		
Variable depth, door mounted handle. Includes knob with masking frame, indicator plate, detachable door coupling, 12" shaft, and breaker mounted rotary operator. Lockable knob (for up to 3 padlocks). NEMA 1, 12	RHVF12	RHVL12
Auxiliary Switch Kits		
For Direct or Extended Rotary Handle Operators (RHF and RHV). Form C, Early Break type2 Aux. Switch Kit [®] Includes 1 switch with 5' wire For Door-Mounted Operator For Through-Door Operator Includes 2 switches with 5' wire For Door-Mounted Operator For Through-Door Operator	RHSFA1F RHSFA2F	RHSLA1 RHSLA1F RHSLA2 RHSLA2F
Door-Mounted Rotary Operator Mechanism		
Breaker mechanism only	RHVFBM	RHVLBM
Door-Mounted Rotary Handle Only		
Standard version NEMA 1, 12 NEMA 3R NEMA 4X Red Handle version	RHVM12H RHVM3RH RHVM4XH RHVMEMH	RHVM12H RHVM3RH RHVM4XH RHVMEMH
NFPA-79 Handle Kit		
Intermediate handle for NFPA-79 compliance with door-mounted rotary operator	RHVF79H	RHVM79H
Extension Shaft Only, for Door Mounted Operator		
2 inches (50.8mm) 3 inches (76.2mm) 12 inches (304.8 mm) 16 inches (406.4 mm) 24 inches (609.6mm) w/ support bracket	RHVMS02 — — — — — — — — — — — — — — — — — — —	RHVMS02 — — — — — — — — — — — — — — — — — — —

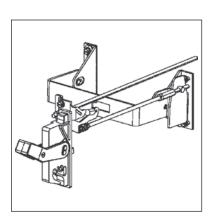
① During manual operation, Early Break auxiliary switch contacts open before the breaker opens.

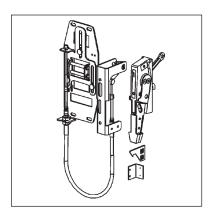
Operating Mechanisms

			Selection
	For MG Frame 800 A	For NG to PG Frame 1200 to 1600 A	
Description	Catalog Number	Catalog Number	
Through-Door Rotary Handle Operator Kit Fixed depth, breaker mounted. For direct fitting to the circuit breaker. Lockable with up to 3 padlocks. NEMA 1, 12 Red Handle version with red knob, yellow indicator plate NEMA 1, 12	RHFM —		
Door-Mounted Rotary Handle Operator Kit			
Variable depth, door mounted handle. Includes knob with masking frame, indicator plate, detachable door coupling, 12" shaft, and breaker mounted rotary operator. Lockable knob (for up to 3 padlocks). NEMA 1, 12	RHVM12		
Auxiliary Switch Kits			
For Direct or Extended Rotary Handle Operators (RHF and RHV). Early Break type2 Aux. Switch Kit Includes 1 switch with 5' wire For Door-Mounted Operator For Through-Door Operator Includes 2 switches with 5' wire For Door-Mounted Operator For Through-Door Operator	RHSMA1 — — RHSMA2 — —	RHSPA1 — — RHSPA2 — —	
Door-Mounted Rotary Operator Mechanism			
Breaker mechanism only	RHVMBM	RHVPBM	
Door-Mounted Rotary Handle Only Standard version NEMA 1, 12 NEMA 3R NEMA 4X Red Handle version	RHVM12H RHVM3RH RHVM4XH RHVMEMH	RHVP3RH RHVP3RH RHVP4XH RHVPEMH	
NFPA-79 Handle Kit			
Intermediate handle for NFPA-79 compliance with door-mounted rotary operator	RHVM79H	RHVP79H	
Extension Shaft Only, for Door Mounted Operator			
2 inches (50.8mm) 3 inches (76.2mm) 12 inches (304.8 mm) 16 inches (406.4 mm) 24 inches (609.6mm) w/ support bracket	RHVMS02 — — — — — — — — — — — — — — — — — — —	RHVPS03 RHVPS12 — — — — — — — — — — — — — — — — — — —	

17/45

Operating Mechanisms





	For DG and FG Frame 150 to 250 A	For JG and LG Frame 400 to 600 A
Description	Catalog Number	Catalog Number
Variable Depth Flange Mounted Operator Kit Adjustable from 8" to 16" Complete kit, includes handle and variable depth operator. NEMA 1, 3R, 12 NEMA 4X IEC Black Handle NEMA 1, 3R, 12 NEMA 4X	FHVF3R FHVF4X FHVF3RB FHVF4XB	FHVL3R FHVL4X FHVL3RB FHVL4XB
Max-Flex™, Variable Depth Flange Mounted Operator Kit Complete kit, includes plastic handle, breaker operator, and cable. NEMA 1, 3R, 12 For DG and FG operators, the cable is 36″, all others are 48″ May be right- or left-hand mounted	MFKF3R	MFKL3R
Handle Only, for Max-Flex™ Variable Depth NEMA 1, 3R, 12 Plastic NEMA 1, 3R, 12 Steel - epoxy coated NEMA 4, 4X Steel - chrome plated Solid color (all gray) Plastic [©] NEMA 1, 3R, 12 Solid color (black handle) Steel epoxy coated [©] NEMA 1, 3R, 12	MFHM3R MFHM3RS MFHM4X MFHM3RB MFHM3RSB	MFHM3R MFHM3RS MFHM4X MFHM3RB MFHM3RSB
Breaker Operator Mechanism Only, for Max-Flex™	MFMF	MFML
Cable Only, for Max-Flex™ Variable Depth 36" 48" 60" 72" 84" 96" 120" 144"	MFCF036 MFCF048 MFCF060 MFCF072 MFCF084 MFCF096 MFCF120 MFCF144	MFCM036 MFCM048 MFCM060 MFCM072 MFCM084 MFCM096 MFCM120 MFCM144
Handle Auxiliary Switch Form C (1NO - 1NC), early break [®] 1 Aux. switch 2 Aux. switch	MFSFA1 MFSFA2	MFSLA1 MFSLA2

① Max-Flex™ handles are available with solid gray or black handles instead of the customary "Red for On" flange handle.
 The black handle is preferred for IEC markets, where red handles have a specific meaning.
 ② During manual operation, Early Break aux. contacts open before the breaker opens.

Operating Mechanisms

Selection

	_		
	For MG Frame 800 A	For NG Frame 1200 A	For PG Frame 1600 A
Description	Catalog Number	Catalog Number	Catalog Number
Variable Depth Flange Mounted Operator Kit Adjustable from 8" to 16" Complete kit, includes handle and variable depth operator. NEMA 1, 3R, 12 NEMA 4X IEC Black Handle NEMA 1, 3R, 12	Ξ	Ξ	
NEMA 4X	_	_	
Max-Flex™, Variable Depth Flange Mounted Operator Kit Complete kit, includes plastic handle, breaker operator, and cable. NEMA 1, 3R, 12 For DG and FG operators, the cable is 36", all others are 48" May be right- or left-hand mounted	MFKM3R	MFKP3RS	MFKP3RS
Handle Only, for Max-Flex™ Variable Depth NEMA 1, 3R, 12 Plastic NEMA 1, 3R, 12 Steel - epoxy coated NEMA 4, 4X Steel - chrome plated Solid color (all gray) Plastic ^① NEMA 1, 3R, 12 Solid color (black handle) Steel epoxy coated ^① NEMA 1, 3R, 12	MFHM3R MFHM3RS MFHM4X MFHM3RB MFHM3RSB	— MFHP3RS MFHP4X — MFHP3RSB	— MFHP3RS MFHP4X — MFHP3RSB
Breaker Operator Mechanism Only, for Max-Flex™	MFMM	MFMP	MFMP
Cable Only, for Max-Flex™ Variable Depth 36" 48" 60" 72" 84" 96" 120" 144"	MFCM036 MFCM048 MFCM060 MFCM072 MFCM084 MFCM096 MFCM120 MFCM144	— MFCP048 MFCP060 MFCP072 MFCP084 MFCP096 MFCP120 MFCP144	— MFCP048 MFCP060 MFCP072 MFCP084 MFCP096 MFCP120 MFCP144
Handle Auxiliary Switch Form C (1NO - 1NC), early break [®] 1 Aux. switch 2 Aux. switch	MFSPA1 MFSPA2	MFSPA1 MFSPA2	MFSPA1 MFSPA2

Product Category: MCCB

Siemens Industry, Inc. Industrial Controls Catalog

17/47

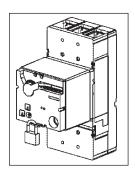
Max-Flex™ handles are available with solid gray or black handles instead of the customary "Red for On" flange handle. The black handle is preferred for IEC markets, where red handles have a specific meaning.

② During manual operation, Early Break aux. contacts open before the breaker opens.

Operating Mechanisms

Selection

For DG to FG Frame 150 to 250 A

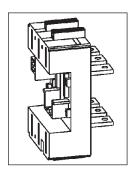


Description		Catalog Number	
Stored Energy	and Motor Operators		
Lockable with u	p to 3 padlocks.		
AC Voltage	DC Voltage	Stored Energy Type	
_	24	SEAFB	
42-48	42-48	SEAFM	
60	60	SEAFY	
110-127	110–127	SEAFN	
220-250	220–250	SEAFR	
Cylinder Locks for	r Field Installation	CLKF	

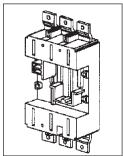
Plug-In and Draw-Out Bases

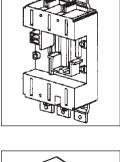
For DG Frame 150 A

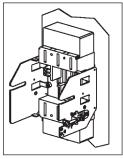
For FG Frame 250 A



לענ שמטכט		
Description	Catalog Number	Catalog Number
Plug-in Mounting Base Assembly		
Includes base, terminal blade kit, sec. terminal block assembly, base trip interlock, and mounting hardware.		
Rear Connected		
3-pole	PCBDRC3	PCBFRC3
Front Connected		
3-pole	PCBDFC3	PCBFFC3
Draw-out Assembly		
Includes base, position indicator switch, socket, base trip interlock, crank handle, connectors, and necessary shields.		
Rear Connected		
3-pole	DCADRC3	DCAFRC3







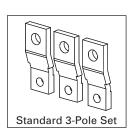
Includes base, position indicator switch, socket, base trip interlock, crank handle, connectors, and necessary shields.		
Rear Connected		
3-pole	DCADRC3	DCAFRC3
Front Connected	DCADRGS	DCAFRCS
3-pole	DCADFC3	DCAFFC3
(Draw-out assembly includes side plates and all hardware)	DOADI 03	DOAI1 C3
(Draw-out assembly includes side plates and an nardware)		
Hex Wrench for racking draw-out assembly and position indicator	DCHP	DCHP
Position Indicator Switch	DCIP	DCIP
Form "C" switch to indicate breaker engaged/de-engaged		
position. $^{\odot}$		
Secondary Terminal Block Assy.	PCTF83	PCTF83
Accessory connections for plug-in or draw-out breakers. Pre-wired plug		
and block with 8 terminal points. ^②		
Plug-In Spare Breaker Kit	PCXD3	PCXF3
Set of 6 terminal blades, 2 terminal shield, & 1 trip interlock		
Draw-out Spare Breaker Kit	DCXD3	DCXF3
Set of 6 terminal blades, & 1 trip interlock		
Spare Breaker Trip Interlock	PCXFT	PCXFT

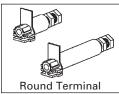
① Up to 2 position indicator switches may be mounted per plug-in or draw-out base.
 ② Up to 2 plugs per breaker (16 terminal points) may be mounted on DG, and FG breakers. Up to 3 plugs per breaker (24 terminal points) may be mounted on JG, LG, MG, NG, and PG breakers.

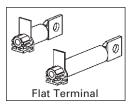
Operating Mechanisms

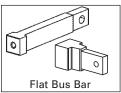
				Selection	
For JG to LG Frame 400 to 600 A	For MG Frame 800 A	For NG to PG Frame 1200 to 1600 A			
Catalog Number	Catalog Number	Catalog Number		_	
Stored Energy Type SEALB SEALM SEALY SEALN SEALR	Stored Energy Type SEAMB SEAMM SEAMY SEAMN SEAMN	Motor Operator Type MTRPB MTRPM MTRPY MTRPN MTRPR			
CLKP	CLKP	CLKP			
For JG Frame 400 A	For LG Frame 600 A	For MG Frame 800 A	For NG Frame 1200 A	For PG Frame 1600 A	
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
PCBJRC3	PCBLRC3	PCBMRC3	PCBNRC3	_	
PCBJFC3	PCBLFC3	-	_	_	
DCAJRC3	DCALRC3	DCAMRC3	DCANRC3	_	
DCAJFC3	DCALFC3	DCAMFC3	DCANFC3	-	
DCHP	DCHP	DCHP	DCHP	_	
DCIP	DCIP	DCIP	DCIP	_	
PCTL83	PCTL83	PCTM83	PCTN83	_	
PCXJ3	PCXL3	PCXM3	PCXN3	_	
DCXJ3	DCXL3	DCXM3	DCXN3	_	
PCXLT	PCXLT	PCXMT	РСХРТ	_	
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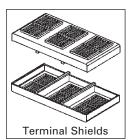
Connections

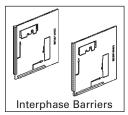












	For DG Frame 150 A	For FG Frame 250 A
Description	Catalog Number	Catalog Number
Front Bus Bar Connections Includes nut keeper plates and shield. Standard (straight) 3-Pole Set Bus Bar Connection Strap Kit Includes 6 - Bus Bars, 6 Nut Keepers & Shields 100% rated applications	FBCD3 — —	FBCF3 — —
Rear-Connecting Studs Short length round term. (1piece) Long length round term. (1piece) 3-Pole round term. kit, 2 short + 1 long Short length flat term. (1piece) Long length flat term. (1piece) 3-Pole flat term. kit, 2 short + 1 long Flat bus bar type (1 piece) 3-Pole set of flat bus bar	RTLDSR RTLDLR SRTDR3 RTLDSF RTLDLF SRTDF3 — —	RTLFSR RTLFLR SRTFR3 RTLFSF RTLFLF SRTFF3 — —
Terminal Shields Includes 2 terminal shields. 3-Pole Standard Shield 3-Pole Extended Shield	TSSF3 TSLF3	TSSF3 TSLF3
Interphase Barriers Set of 2 barriers Also fits plug-in and draw-out bases.	IPBF	IPBF
Lug Mounting Assy.	-	_
Breaker Mounting Base Front connected Rear connected	Ξ	Ξ

Connections

For JG Frame 400 A	For LG Frame 600 A	For MG Frame 800 A	For NG Frame 1200 A	For PG Frame 1600 A
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
FBCJ3 —	FBCL3	FBCM3 —	SSBP SSBPH	SSBP SSBPH
RTLJSR RTLJLR SRTJR3 RTLJSF RTLJLF SRTJF3 —		— — — — — — RTLMSF SRTMF3	 RTLNSF SRTNF3	- - - - - -
TSSL3 TSLL3	TSSL3 [©] TSLL3 [©]	TSSM3 TSLM3	TSSP3 TSLP3	TSSP3 TSLP3
ІРВМ	ІРВМ	ІРВМ	IPBP	IPBP
-	_	_	-	LMAP1600 [©]
Ξ	Ξ	Ξ	Ξ	MBPG1600 MBPG1601

① Not for use with standard AI terminals. Use Standard Shield for rear connection and Extended Shield for busbar connection.

② Kit includes connection for one side of breaker only. Order quantity 2 if connecting line and load side.

Connections

		For DG Frame 150 A	For FG Frame 250 A
	Description	Catalog Number	Catalog Number
	Nut Keeper Plates For ring/tongue terminal or bus bar connections. (For metric threads on other than the JG frame, change "TNK" to "TMK") 1 Nut Keeper Plate Kit of 3	TNKD TNKD3	TNKF TNKF3
	Mechanical Lugs Steel Wrap Around Body (Cu Wire Only) Cable Size; (cables per phase) Single Lug Kit of 3	#8-1/0; 1-hole TW1DG20 3TW1DG20	#4-350 kcmil; 1-hole TW1FG350 3TW1FG350
	Aluminum Body (Al or Cu Wire) Cable Size; (cables per phase) Single Lug Kit of 2	#6-3/0; 1-hole TA1DG30	#4-350 kcmil; 1-hole TAW1FG350
	Kit of 3	3TA1DG30	3TAW1FG350
	Cable Size; (cables per phase)	_	_
	Single Lug Kit of 2 Kit of 3	Ξ	=
00	Cable Size; (cables per phase) Single Lug	=	Ξ
	Copper Body (Cu Wire Only)	_	-
	Cable Size; (cables per phase) Single Lug Kit of 2	#6-3/0; 1-hole TC1DG30 ^①	#4-350 kcmil; 1-hole TCW1FG350 [©]
	Kit of 3	3TC1DG30 ^①	3TCW1FG350 [©]
90	Cable Size; (cables per phase) Single Lug	=	Ξ
	Compression Lugs Cable Size; (cables per phase) Kit of 2 Kit of 3 Cable Size; (cables per phase)	#14-2/0; 1-cable 2CLD20 3CLD20	#4-350 kcmil; 1-cable
	Kit of 2 Kit of 3	_	Ξ
	Cable Size; (cables per phase) Kit of 3	=	Ξ
	Distribution Lugs (Cu Wire Only) Cable Size; (cables per phase) Single Lug Kit of 3 Cable Size; (cables per phase) Single Lug Kit of 3	#14-#2; 3-hole TA3DG02 3TA3DG02 #14-#4; 6-hole TA6DG04 3TA6DG04	#14-#1; 2-hole and #14-2/0; 1-hole TA3FG20 3TA3FG20 #14-#4; 6-hole TA6FG04 3TA6FG04
Note: pictures provide graphical representaions only.	Control Wire Terminals Control Wire Terminal (Single) Control Wire Terminal (Kit of 3)	Ξ	Ξ

① Required for 100% rated breakers. Requires 90°C cable sized at 75°C ampacity.

Connections

				Selection
For JG Frame 400 A	For LG Frame 600 A	For MG Frame 800 A	For NG Frame 1200 A	For PG Frame 1600 A
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
TMKJ TMKJ3 metric only	TNKL TNKL3	TNKM TNKM3	TNKP TNKP3	TNKP TNKP3
1/0 600 kamili 1 hala				
1/0-600 kcmil; 1-hole TW1JG600	_	_	_	_
3TW1JG600	_	_	_	_
3/0-250 kcmil; 2-hole TA2JG250	#2-600 kcmil; 2-hole	1/0-500 kcmil, 3-hole TA3MG500 3TA3MG500	1/0-500 kcmil; 4-hole — 2TA4NG500	1/0-750 kcmil; 6-hole —
3TA2JG250		J. Adili Good	3TA4NG500	
31A230230	3TA2LG600LN [©]		3TA4NG500H®	STAGE G750°
AL: 250-750 kcmil CU: 3/0-600 kcmil; 1-hole TA1JG750	AL: 250-750 kcmil CU: 3/0-600 kcmil; 1-hole TA1JG750 (400A max)	500 -750 kcmil; 2-hole TA2MG750	500 -750 kcmil; 3-hole	600-750 kcmil; 4-hole TA4P750 ©
 3TA1JG750	— 3TA1JG750 (400A max)	3TA2MG750	2TA3NG750 3TA3NG750	_
=	_	#2-600 kcmil; 3-hole —		300-600 kcmil; 5; 6-hole TA5P600 [©]
_	_	3TA3MG600 [®] (Kit of 3)	_	TA6R600® —
3/0-250 kcmil; 2-hole TC2JG250 [®]	#2-600 kcmil; 2-hole — —	1/0-500 kcmil; 3-hole TC3MG500 [®]	1/0-500 kcmil; 4-hole —	=
_	3TC2LG600LD ^① 3 3TC2LG600LN ^② 3	_	3TC4NG500 ³	_
3/0-750 kcmil; 1-hole TC1JG750 [®]	Ξ	=	Ξ	300-600 kcmil; 5-hole TC5R600 3®
#6-350 kcmil; 1-cable	#6-350 kcmil; 2-cable		1/0-500 kcmil; 4-cable	_
	 6CLL350 (kit of 6)	=	12CLN500 (kit of 12)	Ξ
250-600 kcmil; 1-cable 3CLJ600	250-750 kcmil; 1-cable 3CLL750	_	=	=
		_	_	_
3CLJG750 —	6CLL600 (kit of 6)	_	=	=
#14-#4; 12-hole TA12JG04 3TA12JG04 #14-2/0; 6-hole TA6JG20 3TA6JG20			_ _ _ _	
TA2JG250PT	3TA2LG600LNPT	TA3MG500PT		=

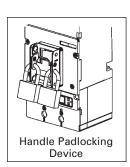
All lug kits include the nut keepers.

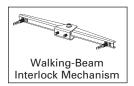
① Mounted on Load Side Only.
② Mounted on Line Side Only. Required for 100% rated breakers. Requires 90°C cable sized at 75°C ampacity.
 Requires extended modified shield.

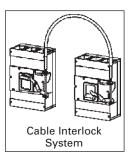
Used only with LMAP1600 mounting base.Used only with MBPG1600 or MBPG1601 mounting

base.

Selection







	150 A	250 A
Description	Catalog Number	Catalog Number
Handle Padlocking Device To padlock breaker toggle in the "OFF" position. Accepts up to 3 padlocks with 5–8 mm shackles.	HPLF	HPLF
Handle Blocking Device For holding the handle in the "ON" position. Not a lockout/tagout device.	HBDF	HBDF
Walking-Beam Interlock Mechanism Provides mechanical interlocking between two adjacent circuit breakers. Fixed mounted breakers Note: Both breakers must be of the same frame size.	WBMFFM	WBMFFM
Cable Interlock Mechanism Provides mechanical interlocking between 2 circuit-breakers - includes operator mechanism for one circuit breaker only.	CBTF	CBTF
Combination with the next larger or smaller frame size is possible. Interlock Cable Cable only, to connect 2 circuit breakers. Cable length 18 in46m (recommended up to 250A) Cable length 36 in91m (recommended from 400–800A) Cable length 54 in. 1.37m (recommended from 1200–1600A)	CBCF18 CBCM36 CBCP54	CBCF18 CBCM36 CBCP54
Mounting Screw Kit Includes the necessary hardware to mount a circuit breaker to the user's prepared surface Kit with 2 screws (SAE thread) Kit with 4 screws (SAE thread)	MSKF2 MSKF4	MSKF2 MSKF4
Trip Adjustment Sealing Cover Includes a trip unit cover to prevent tampering or adjustment of trip settings. Seal not included. Thermal-Magnetic Trip Units	TSCFTM	TSCFTM

For DG Frame

For FG Frame

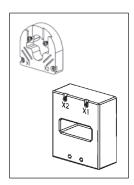
General

•	el	$\boldsymbol{\circ}$	31	$\overline{}$	м	

For JG Frame 400 A	For LG Frame 600 A	For MG Frame 800 A	For NG Frame 1200 A	For PG Frame 1600 A
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
HPLL	HPLL	HPLM	HPLP	HPLP
HBDL	HBDL	нвом	HBDP	НВДР
WBMLFM	WBMLFM	WВММFM	WBMPFM	WBMPFM
CBTL	CBTL	СВТМ	СВТР	СВТР
— CBCM36 CBCP54	— CBCM36 CBCP54	— CBCM36 CBCP54	— — CBCP54	— — CBCP54
— MSKL4	— MSKL4	— MSKM4	_ MSKP4	— MSKP4
TSCLTM	TSCLTM	тѕсмтм	-	_

Ground Sensors & Electronic Accessories

Selection



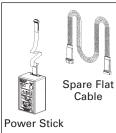
Description	Catalog Number	Catalog Number
Neutral Current Transformer (Ground Sensor, N-pole)		
Neutral = 35/60A	NGSD060	_
Neutral = 100A	NGSF100	NGSF100
Neutral = 150A	NGSF150	NGSF150
Neutral = 250A	_	NGSJ250
Neutral = 400A	_	_
Neutral = 600A	_	_
Neutral = 800A	_	_
Neutral = 1000/1200A	_	_
Neutral = 1600A	_	_

For DG Frame

150 A

For FG Frame

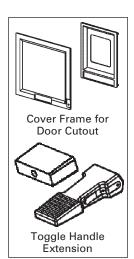
250 A





Communications & Electronics		
Power Stick - Hand held, battery operated power supply for LCD trip units. (Requires two 9V batteries.) Trip testing for both 555 & 586 trip units.	EPSP18V	EPSP18V
Spare flat cable for Power Stick.	СОМРСА	СОМРСА
COM20 Profibus Communications Module with ZSI for electronic trip units (order cable separately)	COMPRO20	COMPRO20
COM21 Modbus Communications Module with ZSI for electronic trip units (order cable separately)	COMMOD21	COMMOD21
Cable for COM20/21, 1.5 m (4.9 ft)	СОМКІТЗ	сомкітз
Cable for COM20/21, 3.0 m (9.8 ft)	СОМКІТ6	СОМКІТ6
Addressing Plug - assigns a field bus address without a PC by plugging into COM20/21	3UF79100AA000	3UF79100AA000

Door Cutouts & Extensions



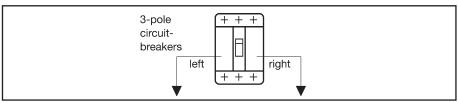
CONOIONO		
Cover Frame for Door Cutout For fixed or plug-in mounted circuit breakers. (IP30) 2-Pole & 3-Pole	BZLF3	BZLF3
For breakers with stored energy operator. (IP40)	BZLFRHSE	BZLFRHSE
Circuit-breaker draw-out mounted and toggle handle operated. Kit includes cover frame (bezel) and escutcheon as needed. (IP40)		
(not for use with rotary handle or stored energy operator)	BZLFBDC	BZLFBDC
Toggle Handle Extension For spare or replacement. (One is included with each NG - PG frame.)	_	_

Ground Sensors & Electronic Accessories

For JG Frame 400 A	For LG Frame 600 A	For MG Frame 800 A	For NG Frame 1200 A	For PG Frame 1600 A
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
	 NGSL400 NGSM600 		 NGSN800 NGSP120	 NGSP120 NGSP160
EPSP18V	EPSP18V	EPSP18V	EPSP18V	EPSP18V
COMPCA	COMPCA	COMPCA	COMPCA	COMPCA
COMPRO20	COMPRO20	COMPRO20	COMPRO20	COMPRO20
COMMOD21	COMMOD21	COMMOD21	COMMOD21	COMMOD21
COMKIT4	COMKIT4	СОМКІТ5	COMKIT5	COMKIT5
COMKIT7	СОМКІТ7	СОМКІТВ	COMKIT8	COMKIT8
3UF79100AA000	3UF79100AA000	3UF79100AA000	3UF79100AA000	3UF79100AA000
BZLL3	BZLL3	BZLM3	BZLP3	BZLP3
BZLLRHSE	BZLLRHSE	BZLMRHSE	BZLPRHSE	BZLPRHSE
BZLLBDC	BZLLBDC	BZLMBDC	BZLPBDC	BZLPBDC
THEL	THEL	THEM	THEP	THEP

Accessory Locations

Selection



Locations of Internally Mounted Accessories

Frame Family	Left Pocket	Right Pocket
DG*, FG*, JG, LG	Up to 3 Auxiliary Switches	Shunt Trip or UVR or up to 3 Auxiliary Switches or up to 2 Auxiliary Switches + 1 Alarm Switch
150 to 600A	Up to 2 Auxiliary Switches + 1 Alarm Swich	Shunt Trip or UVR or up to 3 Auxiliary Switches or up to 2 Auxiliary Switches + 1 Alarm Switch
MG, NG, PG	Up to 4 Auxiliary Switches	Shunt Trip or UVR or up to 4 Auxiliary Switches
800 to 1600A	Up to 2 Auxiliary Switches + 2 Alarm Swiches	Shunt Trip or UVR or up to 4 Auxiliary Switches

^{*} Except DG and FG breakers with Electronic Trip Units. Due to the location of the Magnetic Latch, the Left Pocket is not available for accessories.

Accessory Information

- Aux. Switch is an Auxiliary Switch, 1A or 1B contact
- Alarm Switch has 1A or 1B contact
- UVR is an Undervoltage Release
- The standard location for factory mounted Auxiliary and Alarm Switches is the Left Pocket

Accessory Maximums

DG, FG, JG, LG Maximum Accessories:

- Maximum of six (6) switches total
- DG, FG Maximum of two (2) Alarm Switches, one each in the Left and Right Pockets. JG, LG Max. of 1 Alarm, Left only

MG, NG, PG Maximum Accessories:

- Maximum of eight (8) switches total
- Maximum of two (2) Alarm Switches, Left Pocket only

For applications using COMMOD20 and COMMOD21 for communication using Modbus or Profibus

DG FG

COMKIT3 & COMKIT6 provide auxiliary contact kit. May add only one or two contact blocks for Alarm or Auxiliary function.

JG, LG

COMKIT4 & COMKIT7 provide auxiliary contact kit mounted in left pole pocket. One contact block can be added for Auxiliary function. Right pole pocket available for other release or an additional Auxiliary contact kit.

MG, NG, PG

COMKIT5 & COMKIT8 provide auxiliary contact kit mounted in Left pole pocket. Two contact blocks can be added for Auxiliary function and one for Alarm function. Right pole pocket available for other release or an additional Auxiliary Contact kit.

Selection

If the frame is:	And you need these functions:	Then add this suffix:	Device Catalog Number
DG, FG, JG or LG	1 Alarm Switch 1 NO Alarm 1 NC Alarm	A1	ASKL1
DG, FG, JG or LG	2 Aux. Switches 1 NO + 1 NC Aux. Contacts	A2	ASKL2
DG, FG, JG or LG	2 Aux. + 1 Alarm Switches 1NO + 1NC Aux. and 1NC Alarm 2NO Aux. and 1NC Alarm	A3	ASKL3
MG, NG or PG	2 Aux. + 2 Alarm Switches 1NO + 1NC Aux. and 1NO + 1NC Alarm 2NO Aux. and 2NC Alarm 2NC Aux. and 2NO Alarm	A3	ASKP3
MG, NG or PG	4 Aux. Switches 2NO + 2NC Aux.	A4	ASKP4

Suffix for factory mounted Shunt Trips

If the frame is:	And you need these functions:	Then add this suffix:	Device Catalog Number
	24V DC	RB	STRLB24DC
	48-60V DC	RC	STRLC60DC
	110-127V DC	RD	STRLD125DC
DG, FG, JG or LG	220-250V DC	RE	STRLE250DC
DG, 1 G, 3 G O LG	48-60V AC	RM	STRLM60
	110-127V AC	RN	STRLN120
	208-277V AC	RS	STRLS277
	380-600V AC	RV	STRLV600
	24V DC	RB	STRPB24DC
	48-60V DC	RC	STRPC60DC
	110-127V DC	RD	STRPD125DC
MC NC av DC	220-250V DC	RE	STRPE250DC
MG, NG or PG	48-60V AC	RM	STRPM60
	110-127V AC	RN	STRPN120
	208-277V AC	RS	STRPS277
	380-600V AC	RV	STRPV600

Suffix for factory mounted Undervoltage Releases

If the frame is:	And you need these functions:	Then add this suffix:	Device Catalog Number
	12V DC	UA	UVRLA12DC
	24V DC	UB	UVRLB24DC
	48V DC	ÜC	UVRLC48DC
	60V DC	UG	UVRLG60DC
	110-127V DC	UD	UVRLD125DC
	220-250V DC	ÜE	UVRLE250DC
DG, FG, JG or LG	24V AC	ÜL	UVRLL24
	110-127V AC	UN	UVRLN120
	220-240V AC	UR	UVRLR240
	208V AC	UP	UVRLP208
	277V AC	US	UVRLS277
	380-415V AC	UT	UVRLT415
	440-480V AC	UU	UVRLU480
	12V DC	UA	UVRPA12DC
	24V DC	UB	UVRPB24DC
	48V DC	ÜC	UVRPC48DC
	60V DC	UG	UVRPG60DC
	110-127V DC	UD	UVRPD125DC
	220-250V DC	ÜE	UVRPE250DC
MG, NG or PG	110-127V AC	UN	UVRPN120
	220-240V AC	UR	UVRPR240
	208V AC	UP	UVRPP208
	277V AC	US	UVRPS277
	380-415V AC	UT	UVRPT415
	440-480V AC	UU	UVRPU480

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Technical Data

		DG	FG	JG	LG	MG	NG	PG
Max rated continuous current		150	250	400	600	800	1200	1600
Rated operational voltage								
NEMA	V AC	600	600	600	600	600	600	600
IEC	V AC	690	690	690	690	690	690	690
Rated Impulse Withstand Voltage								
Main conducting paths	kV	8	8	8	8	8	8	8
Auxiliary circuits	kV	4	4	4	4	4	4	4
Ambient Temperature Range	°C	-25 to +75	-25 to +75	-25 to +75	-25 to +75	-25 to +75	-25 to +75	-25 to +75
High Ambient Derating (thermal-mag.)	50°C	93%	93%	93%	93%	95%	95%	95%
	60°C	86%	86%	86%	86%	86%	86%	80%
	70°C	80%	80%	80%	80%	80%	80%	74%
Operating Cycles		20,000	20,000	20,000	10,000	5,000	3,000	3,000
Max switching rate (per hour)		120	120	120	60	60	30	30
Power loss (at max. rated current)								
Thermal-magnetic	W	15 – 48	32 – 80	60 – 175	85 – 230	170 – 250	150 – 220	200 – 260
Electronic trip unit	W	40	60	90	160	250	210	260
IEC ①								
Time constant t = 10 ms								
1 current path 2 current paths 3 curre	nt paths							
in series in seri								
Up to 250V DC 440V DC 600V D	C	_	_	_	_	_	_	_
NEMA								
Time constant $t = 8 \text{ ms}$								
2 poles switching 1 current path								
250V DC Max. ^②		30	30	30	30	42	42	42
3 poles switching 2 current paths in ser	ies	10	25	25	25	65	65	C.F.
500V DC Max. ^②		18	25	35	35	65	65	65
Accessories								
Auxiliary/ Alarm Switch								
Current rating (1 or 2 switches)		10	10	10	10	10	10	10
Current rating (3 or 4 same switch)	Α	5	5	5	5	5	5	5
Shunt Trip								
Pick-up voltage	V	0.7 – 1.1	0.7 - 1.1	0.7 - 1.1	0.7 – 1.1	0.7 – 1.1	0.7 - 1.1	0.7 – 1.1
Power Consumption (short-time) at:								
48 – 60 V AC	VA	401 – 501	401 – 501	401 – 501	401 – 501	401 – 501	401 – 501	401 – 501
110 – 127 V AC	VA	424 – 489	424 – 489	424 – 489	424 – 489	424 – 489	424 – 489	424 – 489
208 – 277 V AC	VA	533 – 736	533 – 736	533 – 736	533 – 736	533 – 736	533 – 736	533 – 736
380 – 600 V AC	VA	408 – 645	408 – 645	408 – 645	408 – 645	408 – 645	408 – 645	408 – 645
24 V DC	W	594	594	594	594	594	594	594
48 – 60 V DC	W	740 – 925	740 – 925	740 – 925	740 – 925	740 – 925	740 – 925	740 – 925
110 –127 V DC	W	559 – 648	559 – 648	559 – 648	559 – 648	559 – 648	559 – 648	559 – 648
220 – 250 V DC	W	722 – 820	722 – 820	722 – 820	722 – 820	722 – 820	722 – 820	722 – 820
Max. Operating time	ms	50	50	50	50	50	50	50

① Consult Siemens for short circuit values.

② Review individual frame and type values.

Technical Data

Selection

		DG	FG	JG	LG	MG	NG	PG
Undervoltage Trip								
Drop voltage (percentage)	V	35% - 70%	35% - 70%	35% - 70%	35% - 70%	35% - 70%	35% - 70%	35% - 70%
Pick-up voltage (percentage)	V	70% - 85%	70% - 85%	70% - 85%	70% - 85%	70% - 85%	70% - 85%	70% - 85%
Power consumption (continuous) at:								
110 – 127 V AC	VA	1	1	1	1	1.1	1.1	1.1
220 – 250 V AC	VA	2.1	2.1	2.1	2.1	2.1	2.1	2.1
208 V AC	VA	1.2	1.2	1.2	1.2	1.2	1.2	1.2
277 V AC	VA	1.4	1.4	1.4	1.4	1.4	1.4	1.4
380 – 415 V AC	VA	1.9	1.9	1.9	1.9	1.9	1.9	1.9
440 – 480 V AC	VA	2.2	2.2	2.2	2.2	2.2	2.2	2.2
500 – 525 V AC	VA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
600 V AC	VA	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Max. opening time	ms	50	50	50	50	50	50	50
Motorized Operating Mechanism								
Motor with stored energy mechanism								
(synchronizable)		X	Χ	X	Χ			
Motor Operator						X	X	Χ
Max. switching rate (per hour)		120	120	120	60	60	30	30
Command duration	ms	20 – 50	20 – 50	20 - 50	20 – 50	20 – 50	_	_
Closing time	ms	<100	<100	<100	<100	<100	<5,000	<5,000
Charging time	S	<5	<5	<5	<5	<5	<5	<5
Break time	S	<5	<5	<5	<5	<5	<5	<5
Power consumption	VA/W	<500						
Investor (A)								

Inrush (A)

Control Voltages 110 – 127 V AC

220 – 250 V AC

24 V DC 48 V DC

60 V DC

Operating Range 85 – 110% of rated control voltage

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Unusual Operating Conditions

Reference

Note: The information provided on this and the next page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data below is based less on controlled testing, than on experience and engineering judgment. Contact Siemens for further information on special conditions and treatment.

High Ambient Temperatures

Because thermal-magnetic trip breakers are temperature sensitive and calibrated for a specific ambient of 40° C (104° F) (average enclosure temperature), a higher ambient will cause the breaker to trip at lower current than its nameplate rating, in other words, causing the breaker to "derate" (see Table 1). Similarly, the current carrying capacity of a circuit conductor is based upon a certain ambient temperature, a higher ambient will reduce its current carrying capacity, causing it to "derate." Thus, with a fluctuating temperature, a thermal-magnetic breaker will derate nearly parallel with its connected circuit conductors and maintain close circuit protection. If the application temperature exceeds 40° C (104° F) and is known, either a breaker specially calibrated for the higher ambient or one oversized according to Table 1 may be selected. In a case such as this, the circuit conductors should be oversized as well.

Siemens Electronic Trip Unit Breakers are insensitive to temperature changes. However, they do include circuitry to protect the components from abnormally high temperatures.

Altitude

Reduced air density at altitudes greater than 6600 ft. (2000 meters) affects the ability of a molded case circuit breaker to transfer heat and interrupt faults. Therefore, circuit breakers applied at these altitudes should have interrupting, insulation and continuous currents derated as indicated in Figure 1.

Table 1 - Temperature derating data for thermal-magnetic breakers

Reference Ampere	Ampere Ra	ating at:								
Rating at 40° C (104° F)	25° C (77° F)	50°C (122° F)	60° C (140° F)	Siem	ens Br	eaker l	rames	s		
50	55	46	42							
60	66	56	52							
70	77	65	60							
90	99	84	78	DG						
100	110	94	87							
125	137	114	100							
150	165	136	120							
175	192	159	140		FG					
200	220	182	160							
225	247	205	180							
250	275	235	220							
300	330	276	252			JG				
350	385	325	301							
400	440	372	340							
500	550	468	435				LG			
600	660	564	525							
700	770	658	613					MG		
800	880	754	704							
900	990	828	749						NG	
1000	1100	900	825						IVG	
1200	1320	1090	1000							
1400	1540	1304	1148							PG
1600	1760	1500	1320							

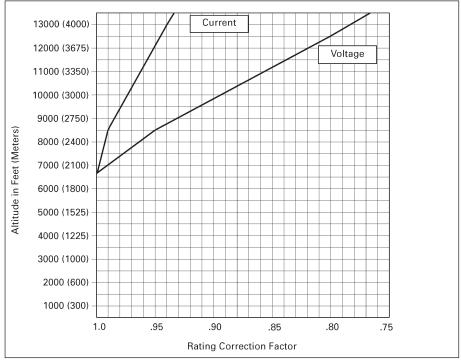


Figure 1 – Altitude adjustment

ED 125A Frame, Sentron Series

Selection

Ordering Instructions

■ All ED Frame Sentron circuit breakers are supplied with load side lugs. If line side lugs are required, add "L" suffix to catalog number. Consult Siemens sales office for any addditional charge

■ 50°C Calibration, 400HZ - see page 17/104. All ED frame circuit breakers may be reverse connected

Type ED2 ^⑤					Blue Label
	1-Pole		2-Pole		3-Pole
Continuous Current Rating	120V AC	125V DC	240V AC	125V DC 250V DC	240V AC
@ 40°C	Catalog Number	er	Catalog Num	ber	Catalog Number
15	ED21B015@I		ED22B015		ED23B015
20	ED21B020@I		ED22B020		ED23B020
25	ED21B025■		ED22B025■		ED23B025■
30	ED21B030■		ED22B030		ED23B030
35	ED21B035■		ED22B035		ED23B035■
40	ED21B040■		ED22B040		ED23B040
45	ED21B045■		ED22B045		ED23B045■
50	ED21B050■		ED22B050		ED23B050
60	ED21B060■		ED22B060		ED23B060
70	ED21B070■		ED22B070	•	ED23B070
80	ED21B080■		ED22B080		ED23B080
90	ED21B090■		ED22B090		ED23B090■
100	ED21B100■		ED22B100		ED23B100

Type ED4®			Blue Label
	1-Pole	2-Pole	3-Pole
Continuous Current Rating	120V AC 277V AC 125V DC	480V AC 250V DC	480V AC
@ 40°C	Catalog Number	Catalog Number	Catalog Number
15	ED41B015 [®]	–	ED43B015
20	ED41B020 [@]	ED42B020	ED43B020
25	ED41B025	ED42B025	ED43B025
30	ED41B030	ED42B030	ED43B030
35	ED41B035■	ED42B035■	ED43B035
40	ED41B040	ED42B040	ED43B040
45	ED41B045■	ED42B045■	ED43B045
50	ED41B050	ED42B050	ED43B050
60	ED41B060	ED42B060	ED43B060
70	ED41B070	ED42B070	ED43B070
80	ED41B080■	ED42B080■	ED43B080
90	ED41B090■	ED42B090■	ED43B090
100	ED41B100	ED42B100	ED43B100
110	_	ED42B110■	ED43B110
125	_	ED42B125	ED43B125

Type ED6®			Blue Label	
	1-Pole ^①	2-Pole	3-Pole	
Continuous Current Rating	347V AC	600V AC 250V DC	600V AC 500V DC	
@ 40°C	Catalog Number	Catalog Number	Catalog Number	
15	ED61B015	_	ED63B015	
20	ED61B020	ED62B020	ED63B020	
25	ED61B025	ED62B025■	ED63B025	
30	ED61B030	ED62B030	ED63B030	
35	ED61B035	ED62B035■	ED63B035	
40	ED61B040	ED62B040■	ED63B040	
45	ED61B045■	ED62B045■	ED63B045	
50	ED61B050	ED62B050■	ED63B050	
60	ED61B060	_	ED63B060	
70	ED61B070■	_	ED63B070	
80	ED61B080	_	ED63B080	
90	ED61B090	_	ED63B090	
100	ED61B100■	_	ED63B100	
110	_	_	ED63B110	
125	_	_	ED63B125	

Note: ED frame circuit breakers qualified to UL 489 Supplement SB "Naval"— See page 17/104 for additional information

■ Built to order. Allow 2–3 weeks for delivery. ①CSA Certified only (Not UL) ©For CED types and all 110–125 ampere ED frames.

3See **Note**: **A,** page 17/101.

Not for use with HHED6 breakers.

Shipping Weights

Number of Poles						
ED2, ED4, ED6, HED4, HHED6						
1	30	38				
2	10	25				
3	10	38				
CED6						
2	5	20				
3	5	30				

Lugs

Lago					
Ampere Rating	No. of Poles	Catalog Number	Wire Range		
Aluminum B	ody Lug	s			
All 15–25A	1, 2, 3	Line/Load SA1E025	#14#10 Cu #12#10 Al		
All 30–100A	1, 2, 3	Line Side LN1E100	#10-1/0 Cu/Al		
ED2, 4, CED6 30–60A	1	Load Side LD1E060	#10#4 Cu/Al		
ED2, 4, CED6 70–100A	1	Load Side LD1E100	#6#1/0 Cu/Al		
ED2, 4, HED4, HHED6 30–100A	2, 3	Load Side LN1E100	#10-1/0 Cu/Al		
ED6 20-50A	2, 3	Line Side LN1E100	#10-1/0 Cu/Al		
All 110, 125A	2, 3	Line/Load TA1E6125	#3-3/0 Cu #1-2/0 Al		
Copper Bod	y Lugs				
AII 30-125A	1, 2, 3	Line/Load TC1ED6150 ³	#10–1/0 Cu only		
Compression Lugs					
All ED, HHED,	CED	CCE125	2/0		

Enclosures (Neutral Included)[®]

Туре	Catalog Number
1 (Surface)	E2N1S (15-100A)
1 (Flush)	E2N1F (15–100A)
3R	E2N3R (15-100A)
4–4X	ED6SS4 (15-100A)
7–9	EA (15–60A)
7–9	EB (70-100A)
12	E2N12 (15-100A)
1 (Surface)	CED6N1S ^②
1 (Flush)	CED6N1F ^②
3R	CED6N3R ^②
12	CED6N12 ²

Modifications page 17/104 Accessories pages 17/65 and 17/108 to 17/113

17/63

ED 125A Frame Sentron Series

Selection/Dimensions

Type HED4[®]

Black Label

	1-Pole		2-Pole		3-Pole
Continuous Current Rating	277V AC	125V DC	480V AC	250V DC	480V AC
@ 40°C	Catalog Num	ber	Catalog Nur	mber	Catalog Number
15	HED41B015	①	HED42B01	5	HED43B015
20	HED41B020	①	HED42B02	20	HED43B020
25	HED41B025	i	HED42B02	25■	HED43B025
30	HED41B030	1	HED42B03	80	HED43B030
35	HED41B035		HED42B03	85■	HED43B035
40	HED41B040	1	HED42B04	10	HED43B040
45	HED41B045		HED42B04	5■	HED43B045
50	HED41B050		HED42B05	60	HED43B050
60	HED41B060		HED42B06	60■	HED43B060
70	HED41B070		HED42B07	′0■	HED43B070
80	HED41B080		HED42B08	80■	HED43B080
90	HED41B090		HED42B09	00	HED43B090
100	HED41B100		HED42B10	00	HED43B100
110	_		HED42B11	0	HED43B110
125	_		HED42B12	25■	HED43B125

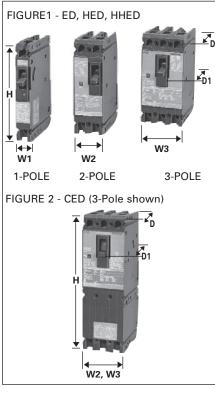
Fuseless Current Limiting

Type HHED6® Black Label

Type CED6[®]

- 1		
- 1	Rad	Label
_	MAKE	Lauci

1,0011112200	Diack Laber	1900 0200	rica Labei
Continuous	3-Pole	2-Pole	3-Pole
Current Rating	600V AC	600V AC, 250V DC	600V AC, 500V DC [©]
@ 40°C	Catalog Number®	Catalog Number	Catalog Number
15	HHED63B015A	CED62B015	CED63B015
20	HHED63B020	CED62B020■	CED63B020
25	HHED63B025	_	-
30	HHED63B030	CED62B030■	CED63B030
35	HHED63B035	_	_
40	HHED63B040	CED62B040■	CED63B040
45	HHED63B045	_	_
50	HHED63B050	CED62B050■	CED63B050
60	_	CED62B060■	CED63B060
70	_	CED62B070■	CED63B070
80	_	CED62B080■	CED63B080
90	_	CED62B090■	CED63B090
100	_	CED62B100■	CED63B100
110	_	_	CED63B110■
125	_	CED62B125■	CED63B125



Dimensions (in inches)

Breaker Type	W1	W2	W3	Н	D	D1
Figure 1 ED2, ED4, ED6, HED4, ED6 ETI ⁴	1	2	3	6.35	3.92	4.56
Figure 1 HHED6	_	2	3	6.53	3.92	4.56
Figure 2 CED6, CED6 ETI®	_	2	3	9.58	3.92	4.56

Interrupting Ratings

UL 489 AIR (File #E10848) RMS Symmetrical Amperes (KA)							IEC 947-2 Volts AC (50/60Hz)								
Breaker	Volts	AC						Volts DC		220/240		380/415		500	
Туре	120	240	277	347	480	600	125	250	500 ^②	lcu	lcs	lcu	lcs	lcu	lcs
ED2 (1-P) ED2 (2, 3-P)	10 —	 10	_	_	_	_	5 —	5 (2-P)	_	_	_	_	_	_	=
ED4 (1-P) ED4 (2, 3-P)	65 —	— 65	22 —	_	— 18	_	30	30 (2-P)	_	_	_	_	_	_	
ED6 (1P) ED6 (2, 3-P)		— 65	_	30 ^⑤	 25	— 18	_	_	 18 (3-P)	— 65	 17	 35	9	_ 18	<u> </u>
HED4 (1-P) (15–30A) HED4 (1-P)	100	_	65	_	_	_	30	_	_	_	_	_	_	_	_
(35–100A) HED4 (2, 3-P) ^③	100	100	25	_	— 42	_	30	30 (2-P)	_	_	_	_	_	_	_
HHED6 (2, 3-P) ³	_	100	_	_	65	18 ^⑦	_	_	_	_	_	_	_	_	I —
CED6 (2, 3-P)	_	200	_	_	200	100	_	50 (2-P)	50 (3-P)	_	_	_	_	_	I —

[■] Built to order. Allow 2–3 weeks for delivery.

①SWD rated.

②When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems.

HED4 and HHED6 type circuit breakers meet the UL criteria for "current limiting" at 240V AC.
 ED6-ETI, CED6-ETI, see page 17/91 for ordering

information.

[©] Single Pole 15-30A 30KA @ 347V non-UL. 35-100A 18KA @ 347V non-UL.

HACR rated.

Accessories

Selection

Accessories for:

ED 125A Frame



Combinations

Available only when ordered together. Only one module can be added to a breaker. Additional accessories, which always attach to the left pole, cannot be added to the combination later. Adds 1 inch pole space.

Equipment Ground Sensing

A field addable kit containing 30mA or 5 mA ground fault accessory module, current transformer with 24 inch leads, and current transformer mounting equipment. Current transformer to mount in gutter of lighting panel or any control panel. Accessory module operates from separate 120V control power source.

Both 30MA and 5MA devices are equipment protection devices only. Do not use for personnel protection.



Shunt Trip Combinations

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch	1 Shunt Trip 1 Auxiliary Switch and 1 Alarm Switch	1 Shunt Trip and 1 Alarm Switch	1 Shunt Trip and 2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
24		S17ED60	_	_	_	_
48		S18ED60	–	_	_	-
120		S01ED60	S01ED62A	S01ED62AB	S01ED62B	S01ED62AA
208		_	S02ED62A▲	S02ED62AB▲	S02ED62B▲	S02ED62AA▲
240		S03ED60	S03ED62A	S03ED62AB	S03ED62B▲	S03ED62AA▲
277		S15ED60▲	S15ED64A▲	S15ED64AB▲	S15ED64B▲	-
480		S04ED60	S04ED64A▲	S04ED64AB▲	S04ED64B▲	-
	12	S16ED60▲	S16ED62A▲	_	_	_
	24	S07ED60	S07ED62A	S07ED62AB▲	S07ED62B▲	S07ED62AA▲
	48	S09ED60▲	S09ED62A▲	S09ED62AB▲	S09ED62B▲	S09ED62AA▲
	125	S11ED60▲	S11ED62A▲	S11ED62AB▲	S11ED62B▲	S11ED62AA▲
	250	S13ED60▲	S13ED62A▲	S13ED62AB▲	S13ED62B▲	S13ED62AA▲

Undervoltage Trip Combinations

				1 Undervoltage Trip		
			1 Undervoltage	and 1 Auxiliary	1 Undervoltage	1 Undervoltage
Cont	rol	1 Undervoltage	Trip and	Switch and	Trip and	Trip and 2
Volta	age	Trip	1 Auxiliary Switch	1 Alarm Switch	1 Alarm Switch	Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
120		U01ED60	U01ED62A	U01ED62AB▲	U01ED62B▲	U01ED62AA▲
208		U02ED60▲	U02ED62A▲	U02ED62AB▲	U02ED62B▲	U02ED62AA▲
240		U03ED60	U03ED62A▲	U03ED62AB▲	U03ED62B▲	U03ED62AA▲
277		U16ED60▲	U16ED64A▲	U16ED64AB▲	U16ED64B▲	
480		U06ED60▲	U06ED64A▲	U06ED64AB▲	U06ED64B▲	
600		U08ED60▲	—	_	_	—
	24	U13ED60	U13ED62A▲	U13ED62AB▲	U13ED62B▲	U13ED62AA▲
	48	U14ED60▲	U14ED62A▲	U14ED62AB▲	U14ED62B▲	U14ED62AA▲
	125	U10ED60▲	U10ED62A▲	U10ED62AB▲	U10ED62B▲	U10ED62AA▲
	250	U12ED60▲	U12ED62A▲	_	_	U12ED62AA▲

Auxiliary Switch Combinations

Maximum Voltage		1 Auxiliary Switch	1 Alarm Switch and 1 Auxiliary Switch	2 Auxiliary Switches	1 Alarm Switch and 2 Auxiliary Switches	
AC	DC	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
240	250	A01ED62	A01ED62B	A02ED62	A02ED62B	
480		A01ED64	A01ED64B	_	_	

Maxi Volta	imum age	1 Auxiliary Switch	
AC	DC	Catalog Number	
	12	A01EDLV	Gold Plated Contacts—for PLC use

Alarm Switch Only

Maximum Voltage		1 Alarm Switch
AC	DC	Catalog Number
240	250	B00ED62
480		B00ED64

Ground Fault Sensing Relay Kit — Equipment Protection Only

For Use With	Number of		Catalog Number	
Breaker Frame	Poles	Description	30mA	5mA
		Basic Kit	GF01ED60	GF01ED65
CED6, ED2, ED4 ED6, EFC, EFF,	1, 2, 3	Basic Kit with Normally Open Bell Alarm	GF01ED60B0	GF01ED65B0▲
HED4, HHED6		Basic Kit with Normally Closed Bell Alarm	GF01ED60BC	GF01ED65BC▲

▲ Built to order. Allow 6–8 weeks for delivery.

Siemens Industry, Inc.

Industrial Controls Catalog

Revised 07/20/14

Selection

Type FXD6-A®	Blue Label						
Non-Interchangeable Trip (Assem	Non-Interchangeable Trip (Assembled Circuit Breaker – Without Lugs)						
Continuous Current Rating	2-Pole	3-Pole					
@ 40°C	Catalog Number	Catalog Number					
70	FXD62B070■	FXD63B070					
80	FXD62B080■	FXD63B080					
90	FXD62B090■	FXD63B090					
100	FXD62B100	FXD63B100					
110	FXD62B110■	FXD63B110					
125	FXD62B125	FXD63B125					
150	FXD62B150	FXD63B150					
175	FXD62B175	FXD63B175					
200	FXD62B200	FXD63B200					
225	FXD62B225	FXD63B225					
250	FXD62B250	FXD63B250					

Type FD6-A	7		Blue Label						
Interchangeable Trip									
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only						
@ 40°C	Catalog Number	Catalog Number	Catalog Number						
2-Pole 600V AC	2,250V DC ②								
70	FD62B070■		FD62T070■						
80	FD62B080■		FD62T080■						
90	FD62B090■		FD62T090■						
100	FD62B100■		FD62T100■						
110	FD62B110■		FD62T110■						
125	FD62B125■	FD62F250	FD62T125■						
150	FD62B150		FD62T150						
175	FD62B175■		FD62T175■						
200	FD62B200		FD62T200						
225	FD62B225■		FD62T225■						
250	FD62B250■		FD62T250■						
3-Pole 600V AC	, 500V DC ³								
70	FD63B070■		FD63T070■						
80	FD63B080■		FD63T080■						
90	FD63B090■		FD63T090■						
100	FD63B100		FD63T100						
110	FD63B110■		FD63T110■						
125	FD63B125	FD63F250	FD63T125						
150	FD63B150		FD63T150						
175	FD63B175		FD63T175						

Interrupting Ratings

200

225

	RMS S	RMS Symmetrical Amperes (KA)									
	UL 489 AIR (File E10848)					IEC 947-2					
	Volts AC (50/60Hz) Volts DC			Volt	s AC (50/60	Hz)				
Breaker	240	480	600	250	500 ³	220/	240	380/	415	500	
Туре						lcu	lcs	lcu	lcs	lcu	lcs
FXD6-A, FD6-A	65	35	22	30 (2-P)	18 (3-P)	65	33	35	9	_	_
HFXD6 [®] , HFD6 [®]	100	65	25	30 (2-P)	25 (3-P)	100	50	65	33	_	_
HHFD6 [®] , HHFXD6 [®]	200	100	25	_	_	_	_	_	_	_	_
CFD6	200	200	100	30 (2-P)	50 (3-P)			_			_

Instantaneous Adjustment Trip Range

FD63B200

FD63B225

	Nominal I	ominal Instantaneous Values						
Breaker Ampere Rating	±20% Tolerance Low	2	3	4	5	6	7	±20% Tolerance High
70-90 100-110 125-150	600 700 800	640 770 900	690 840 1000	730 920 1100	770 990 1200	810 1060 1300	850 1140 1400	900 1200 1500
175-200 225-250	900 1100	1060 1300	1210 1500	1370 1700	1520 1900	1780 2100	1930 2300	2000 2500

Note: FD frame qualified to UL489 supplement SB "NAVAL". See page 7-91 for additional information.

Ordering Information

Complete Breaker Unassembled with Lugs

Prices of FD6, HFD6, and HHFD6 breakers includes frame, trip and both line and load lugs (TA1FD350A). When ordered by these catalog numbers, the customer will receive the frame, trip, and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of FXD6, HFXD6, HHFXD6, and CFD6 includes frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA1FD350A) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

50°C Applications see page 7-91. 400 Hz Applications see page 7-91.

Luas For 75°C Wire®

Catalog Number	Wire Range	
TA1FD350A	#6—350 kcmil Cu #4—350 kcmil Al	
TC1FD350	#6—350 kcmil Cu	
Compression Lug		
CCF250	350 kcmil Cu/Al	

Enclosures

Туре	Catalog Number
1	F6N1S(F)
3R	F6N3R
4-4X	FD6SS4
7-9	EC2
12	F6N12
Neutral [®]	N250

Modifications page 7-91 **Enclosures Section 6** Accessories pages 7-50 and 7-95 to 7-100

- Built to order. Allow 2–3 weeks for delivery.
- ①Type FXD6-A circuit breakers are UL Listed for reverse fed applications.
- 22-pole units are 3-pole width.
- When wired as shown on page 7-4, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.

 4 Order neutral as separate item.
- © See Note: A, page 7-88.
- ® HFD6 and HHFD6 type circuit breakers meet the UL criteria for "current limiting" at 240 and 480V AC.

@ HACR rated.

FD63T200

FD63T225 FD63T250

FD 250A Frame Sentron Series

Selection/Dimensions

Type HFD6,	Black Label				
Interchangeable Trip					
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only		
@ 40°C	Catalog Number	Catalog Number	Catalog Number		
2-Pole 600V AC, 250V DC (3-Pole Width)					
70	HFD62B070■		FD62T070■		
80	HFD62B080■		FD62T080■		
90	HFD62B090■		FD62T090■		
100	HFD62B100■		FD62T100■		
110	HFD62B110■		FD62T110■		
125	HFD62B125■	HFD62F250	FD62T125■		
150	HFD62B150■		FD62T150■		
175	HFD62B175■		FD62T175■		
200	HFD62B200■		FD62T200■		

250	HFD62B250■		FD62T250■				
3-Pole 600V AC, 500V DC ^①							
70	HFD63B070■		FD63T070■				
80	HFD63B080■		FD63T080■				
90	HFD63B090■		FD63T090■				
100	HFD63B100		FD63T100				
110	HFD63B110■		FD63T110 ■				
125	HFD63B125	HFD63F250	FD63T125				
150	HFD63B150		FD63T150				
175	HFD63B175		FD63T175				
200	HFD63B200		FD63T200				
225	HFD63B225		FD63T225				
250	HFD63B250		FD63T250				

Type HHFD, HHFXD62346 3-Pole 600V AC, Extra High Interrupting

HFD62B225■

70	HHFD63B070■		FD63T070■	
80	HHFD63B080■		FD63T080■	
90	HHFD63B090■		FD63T090■	
100	HHFD63B100		FD63T100	
110	HHFD63B110■		FD63T110■	
125	HHFD63B125	HHFD63F250	FD63T125	
150	HHFD63B150		FD63T150	
175	HHFD63B175		FD63T175	
200	HHFD63B200		FD63T200	
225	HHFD63B225		FD63T225	
250	HHFD63B250		FD63T250	

Type CFD6-A36

225

Fuseless Current Limiting	Red Label					
Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)						
Continuous Current Rating	3-Pole 600V AC/500V DC					
@ 40°C	Catalog Number					
70	CFD63B070■					
80	CFD63B080■					
90	CFD63B090■					
100	CFD63B100■					
110	CFD63B110■					
125	CFD63B125■					
150	CFD63B150					
175	CFD63B175					
200	CFD63B200					
225	CFD63B225					
250	CFD63B250					

- Built to order. Allow 2–3 weeks for delivery.
- ① When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems.
- © For non-interchangeable trip 3-pole HFD6 type circuit
- breaker, change prefix identifier from HFD6 to HFXD6. Price equals frame and trip prices combined, e.g. price of HFXD63B250 equals price of HFD63F250 plus price of FD63T250. Order lugs separately.

FD62T225■

3 Type HFXD6, HHFXD6, CFD6 are UL Listed for reverse feed applications.

DT.	W → N
Figure 1	Figure 2
Dimensions (in	inches)

Dimensions (in inches)

,				
Breaker Type	w	L	D	D1 (to handle)
Figure 1 FXD6-A, FD6-A, HFD6, HFXD6, HHFD6, FD6-ETI [®]	4.50	9.50	4	5.25
Figure 2 CFD6, CFD6-ETI [®]	4.50	14.25	4	5.25

Shippina Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)			
FD6-A, HFD6, HHFD6, FXD6-A Assembled Circuit Breaker (less connectors)					
2	1	8.6			
3	1	10			
FD6-A, HFD6, HHFD6 Frame Only					
2	1	7.5			
3	1	8.7			
FD6 Trip Unit Only					
2	1	1.1			
3	1	1.3			
CFD6 Assembled Circuit Breaker (less terminals)					
3	1	16			

ordering information.

Siemens Industry, Inc. Industrial Controls Catalog

⁴ Type HFXD6, HFD6, HHFD6, HHFXD6 meet the UL criteria for "Current Limiting" at 240 VAC and 480V AC.

§ FXD6, ETI, CFD6, ETI — See page 17/91 for

[®] HACR rated.

Internal Accessories

Selection

Accessories: for FD, FFC & FFF 250A Frames



Shunt Trip Combinations

Control V	oltage	1 Shunt Trip
AC	DC	Catalog Number
24		S17FD60
120		S01FD60
240		S03FD60
277		S15FD60▲
480		S04FD60
600		S06FD60▲
	12	S16FD60▲
	24	S07FD60
	48	S09FD60▲
	125	S11FD60
	250	S13FD60▲

Undervoltage Trip Combinations

Control Voltage		1 Undervoltage Trip	1 Undervoltage Trip and 1 Auxiliary Switch		
AC DC		Catalog Number	Catalog Number		
120		U01FD60	W01FD64		
208		U02FD60▲	W02FD64▲		
240		U03FD60	W03FD64▲		
277		U16FD60▲	W16FD64▲		
480		U06FD60▲	W06FD64▲		
600		U08FD60▲	_		
	24	U13FD60	W13FD64		
	48	U14FD60▲	W14FD64▲		
	125	U10FD60▲	W10FD64▲		
	250	U12FD60▲	W12FD64▲		

Auxiliary Switch Combinations

Voltage		1 Auxiliary Switch	2 Auxiliary Switches		
AC DC		Catalog Number	Catalog Number		
240		A01FD62	A02FD62		
480		A01FD64	A02FD64		
	12	A01FDLV	Gold Plated Contacts - for PLC use		

Alarm Switch Combinations

Maximum Voltage		1 Alarm Switch	1 Alarm Switch and 1 Auxiliary Switch	
AC DC		Catalog Number	Catalog Number	
480	250	B00FD64	C01FD64	

Note: Old F-frame accessories cannot be used in new Sentron line. Likewise, new FD-frame accessories cannot be used on old F-frame circuit breakers.

JD 400A Frame Sentron Series

Selection

Type JXD2-A®

240V AC, 2-Pole 250V DC Only

Blue Label

Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)									
Continuous Current									
Rating @ 40°C	Catalog Number	Catalog Number							
200	JXD22B200■	JXD23B200							
225	JXD22B225 ■	JXD23B225							
250	JXD22B250■	JXD23B250							
300	JXD22B300	JXD23B300							
350	JXD22B350■	JXD23B350							
400	JXD22B400	JXD23B400							
T 1)/D0 100	•								

Type JXD6-A🕫

600V AC, 2-Pole 250V DC, 3-Pole 500V DC 2

Blue Label

	Bido Edboi					
Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)						
200	JXD62B200 ■	JXD63B200				
225	JXD62B225 ■	JXD63B225				
250	JXD62B250 ■	JXD63B250				
300	JXD62B300	JXD63B300				
350	JXD62B350 ■	JXD63B350				
400	JXD62B400	JXD63B400				

Type JD6-A^⑤

Blue Label

Interchangeable Trip							
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only				
@ 40°C	Catalog Number	Catalog Number	Catalog Number				
0. PL. (2007) A.O. (2007) P.O. (2. PL. M. 1417)							

2-Pole 600V AC, 250V DC (3-Pole Width)

200	JD62B200 ■		JD62T200■
225	JD62B225■		JD62T225■
250	JD62B250■	JD62F400	JD62T250■
300	JD62B300■		JD62T300■
350	JD62B350■		JD62T350■
400	JD62B400		JD62T400

3-Pole 600V AC, 500V DC2

200 225	JD63B200 JD63B225		JD63T200 JD63T225
250	JD63B225	JD63F400	JD63T250
300	JD63B300		JD63T300
350	JD63B350		JD63T350
400	JD63B400		JD63T400

Interrupting Ratings

	RMS Symmetrical Amperes (KA)											
	UL 489	UL 489 AIR (File E10848) IEC							947-2			
	Volts AC			Volts DC	Volts AC (50/60Hz)							
Breaker	(50/601	Hz)		220/240 3			380/)/415 500				
Туре	240	480	600	250	500 ²	lcu	lcs	lcu	lcs	lcu	lcs	
JXD2-A	65	_	_	30 (2-P)	_	_	_	_	_	_	<u> </u>	
JXD6-A, JD6-A	65	35	25	30 (2-P)	25 (3-P)	65	33	40	20	_	<u> </u>	
HJD6-A, HJXD6-A	100	65	35	30 (2-P)	35 (3-P)	100	50	65	33	_	<u> </u>	
HHJD6, HHJXD6®	200	100	50	_	_	_	_	_	_	_	_	
CJD6-A	200	150	100	30 (2-P)	50 (3-P)	_	_	_	_	_	<u> </u>	

Instantaneous Adjustment Trip Range

	Nominal Ins	Nominal Instantaneous Values						
Breaker Ampere Rating	±20% Tolerance Low	2	3	4	5	6	7	±20% Tolerance High
200-300	1250	1430	1610	1790	1960	2140	2320	2500
350-400	2000	2290	2570	2860	3140	3430	3710	4000

- Built to order. Allow 2–3 weeks for delivery.
- ①Type JXD2 and JXD6 circuit breakers are UL Listed for reverse feed applications.
- ②When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
- 3See Note: A, page 17/101
- @HHJD6 type circuit breakers meet the UL criteria for "current limiting" at 240 and 480V AC.
- ⑤ HACR rated.

Note: JD frame qualified to UL489 supplement B "NAVAL." See page 17/104 for additional information.

Ordering Information

Complete Breaker Unassembled with Lugs

Prices of JD6, HJD6, and HHJD6 breakers include frame, trip and both line and load lugs (TA2J6500). When ordered by these catalog numbers, the customer will receive the frame, trip, and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of JXD6, HJXD6, HHJXD6, and CJD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA2J6500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

100% Rated (3-pole only)

Types JXD6 and HJXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price.■ 100% rated JD breakers require the use of 90°C Cu cable sized at 75°C ampacity and lugs TC1J6600 or TC2J6500.

50°C Applications see page 17/104. 400Hz Applications see page 17/104.

Lugs For 75°C Wire®

Catalog Number	Cables per Lug	Wire Range
TA2J6500	1, 2 2	#3/0-500 kcmil Cu #4/0-500 kcmil Al
TA1L6750	1 1	500-750 kcmil Al 500-600 kcmil Cu
TC1J6600	1	#3/0-600 kcmil Cu
TC2J6500	1, 2	#3/0-500 kcmil Cu
Compression	n Lug	
CCL600	1	500 kcmil Cu/Al

Modifications page 17/104

Accessories pages 17/72 and 17/108 to 17/113

Siemens Industry, Inc. Industrial Controls Catalog

JD 400A Frame Sentron Series

Selection/Dimensions

Type HJD6-A	Black Label								
Interchangeable Trip									
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only						
@ 40°C	Catalog Number	Catalog Number	Catalog Number						
2-Pole 600V AC	2-Pole 600V AC, 250V DC (3-Pole Width)								
200	HJD62B200■		JD62T200■						
225	HJD62B225 ■		JD62T225■						
250	HJD62B250■	HJD62B250■ HJD62F400■							
300	HJD62B300■		JD62T300■						
350	HJD62B350■		JD62T350■						
400	HJD62B400 ■		JD62T400						
3-Pole 600V AC	, 500V DC ^{①②⑤}								
200	HJD63B200		JD63T200						
225	HJD63B225		JD63T225						
250	HJD63B250	HJD63F400	JD63T250						
300	HJD63B300		JD63T300						
350	HJD63B350		JD63T350						
400	HJD63B400		JD63T400						

			Black Label		
Type HHJD6	Type HHJD6, HHJXD6@@				
2-Pole 600V AC	2-Pole 600V AC (3-Pole Width)				
200	HHJD62B200■		JD62T200■		
225	HHJD62B225■		JD62T225■		
250	HHJD62B250■	HHJD62F400■	JD62T250■		
300	HHJD62B300■		JD62T300■		
350	HHJD62B350■		JD62T350■		
400	HHJD62B400 ■		JD62T400		
3-Pole 600VAC					
200	HHJD63B200		JD63T200		
225	HHJD63B225		JD63T225		
250	HHJD63B250	HHJD63F400	JD63T250		
300	HHJD63B300		JD63T300		
350	HHJD63B350		JD63T350		
400	HHJD63B400		JD63T400		

Type CJD6-A 56

Fuseless Curre	nt Limiting	Red Label
Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)		
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC
@ 40°C	Catalog Number	Catalog Number
200		CJD63B200■
225		CJD63B225■
250	For 2-pole application use outside poles of	CJD63B250■
300	3-pole circuit breaker	CJD63B300■
350		CJD63B350■
400		CJD63B400



Dimensions (in inches)

Breaker Type	w	L	D	To Handle D1
Figure 1 JXD2-A, JXD6-A, JD6-A HJD6-A, HJXD6-A, HHJD6, HJD6, HJXD6, HHJXD6, JXD6-ETI, [®] SJD6, SHJD6	7.5	11	4	5.44
Figure 2 CJD6, CJD6-ETI, [®] SCJD6	7.5	17.86	4	5.44

Enclosures (Except SCJD6)

Туре	Catalog Number
1	J6N1
3R	J6N3R
12	J6N12
4X	LD6SS4
7, 9 (200-250A)	EC4
7, 9 (300-400A)	EE
Neutral	W60992

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)	
JXD2, JXD6,	JXD2, JXD6, JD6, HJD6, HHJD6 Assembled Breaker (less terminals)		
2 3	1 1	17.5 19.5	
JD6, HJD6, H	JD6, HJD6, HHJD6 Frame Only		
2 3	1	14 15.5	
JD6 Trip Unit Only			
2 3	1	3.5 4	
CJD6 Complete Assembled Breaker (less terminals)			
3	1	31.5	

For inches / millimeters conversion, see Application Data section.

- \blacksquare Built to order. Allow 2–3 weeks for delivery.
- 2-pole units available in 3-pole construction.
- © When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
- ⑤ For non-interchangeable 3-pole HJD6 or HHJD6 type circuit breaker change the prefix identifier to HJXD6 or HHJXD6. Price equals price of frame plus price of trip, e.g. price of HJXD63B400 equals price of HJD63F400 plus price of JD63T400. Order lugs separately.
- JXD6-ETI, CJD6-ETI see page 17/91 for ordering information.
 Type HJXD6, HHJXD6 Circuit Breakers are UL listed for reverse fed applications.
- © CE applies to non-interchangeable type HJXD6-A only. © HACR rated.

SJD 400A Frame Digital Solid State Sentron Sensitrip III Series

Selection

Type SJD6-A

Blue Label

3-Pole, 600V AC		
	Max	
Catalog	Current	
Number	Rating	
SJD69200■	200	
SJD69300■	300	
SJD69400■	400	
SJD69200G■	200	
SJD69300G■	300	
SJD69400G■	400	
SJD69200NT■	200	
SJD69300NT■	300	
SJD69400NT■	400	
SJD69200NGT■	200	
SJD69300NGT■	300	
SJD69400NGT■	400	

Type SHJD6-A

Black Label

3-Pole, 600V AC	
	Max
Catalog	Current
Number	Rating
SHJD69200■	200
SHJD69300■	300
SHJD69400■	400
SHJD69200G■	200
SHJD69300G■	300
SHJD69400G■	400
SHJD69200NT■	200
SHJD69300NT■	300
SHJD69400NT■	400
SHJD69200NGT■	200
SHJD69300NGT■	300
SHJD69400NGT■	400

Current Limiting

Type SCJD6-A

Red Label

3-Pole, 600V AC	
	Max
Catalog	Current
Number	Rating
SCJD69200■	200
SCJD69300■	300
SCJD69400■	400
SCJD69200G■	200
SCJD69300G■	300
SCJD69400G■	400
SCJD69200NT■	200
SCJD69300NT■	300
SCJD69400NT■	400
SCJD69200NGT■	200
SCJD69300NGT■	300
SCJD69400NGT■	400

Ordering Information

Pricing information for all Digital Sentron Series SJD frames is for complete breaker only - price required lugs as separate items lugs are suitable for 75° C wire.

SJD6 and SCJD6 are acceptable for reverse connection application.

SHJD6 are not acceptable for reverse connection application.

Shippina Weights

11 0		
Breaker Type	Number per Carton	Shipping Weight (lbs)
SJD6-A	1	20
SHJD6-A	1	20
SCJD6-A	1	33

SJD 400A Frame - 100% Rated²

Type SJD6-A

Blue Label

3-Pole, 600V AC	
Catalog Number	Max Current Rating
SJD69200H■	200
SJD69300H■	300
SJD69400H■	400
SJD69200GH■	200
SJD69300GH■	300
SJD69400GH■	400
SJD69200NTH■	200
SJD69300NTH■	300
SJD69400NTH■	400
SJD69200NGTH■	200
SJD69300NGTH■	300
SJD69400NGTH■	400

Type SHJD6-A Black Label

	•	
3-Pole, 600V AC		
	Max	
Catalog	Current	
Number	Rating	
SHJD69200H■	200	
SHJD69300H■	300	
SHJD69400H■	400	
SHJD69200GH■	200	
SHJD69300GH■	300	
SHJD69400GH■	400	
SHJD69200NTH■	200	
SHJD69300NTH■	300	
SHJD69400NTH■	400	
SHJD69200NGTH■	200	
SHJD69300NGTH■	300	
SHJD69400NGTH■	400	

Luas for 75°C Wire¹

Catalog Number	No of Cables per Con- nector	Wire Range
TA2J6500	2 2	#3/0-500 kcmil Cu #4/0-500 kcmil Al
TA1L6750	1	500–750 kcmil Al 500–600 kcmil Cu
TC1J6600 TC2J6500 TA2J630	1 2 2	#3/0-600 kcmil Cu #3/0-500 kcmil Cu #4–#3/0-Cu/Al
Compression Lug		
CCL600	(1 pc.)	#1/0-500 kcmil Cu/Al

Trip Unit Adjustable Functions

Suffix Letter Code	Trip Type	Cont Current Setting	Long Time Delay	Instan- taneous Setting	Short Time Pick Up	Short Time Delay	Short Time I ² t Pick Up	Ground Fault Pick Up	Ground Fault Delay
None	LI	√	√	√					
G	LIG	√	√	√				√	\checkmark
NT	LSI	√	√	√	/	√	√		
NGT	LSIG	√	√	√	/	√	√	√	√

Interrupting Ratings

Breaker	RMS Symmetrical kA UL 489 (File E10848)					
Туре	240V AC	480V AC	600V AC			
SJD6-A SHJD6-A	65 100	35 65	25 35			
SCJD6-A	200	150	100			

Neutral Transformers

Ampere Rating	Catalog Number
200	N02SJD
300	N03SJD
400	N04SJD

Note: "G" suffix in catalog number denotes circuit breaker for 3-phase, 3-wire systems. For 3-phase, 4-wire, order correct 4th wire (neutral) transformer as separate and additional item.

■ Built to order, Allow 2-3 weeks for delivery.

①For additional information, see Note: A, page 17/101. @Refer to the NEC for proper application of 100% rated devices.

Accessories pages 17-72 and 17/108 to 17/113

Siemens Industry, Inc. Industrial Controls Catalog

Internal Accessories

Selections

Accessories for:

JD 400A Frame LD 600A Frame LMD 800A Frame SJD 400A Frame SLD 600A Frame



Sensitrip Ammeter



The Ammeter Display Units plug into the Sensitrip Trip Unit and displays the phase current flowing in the breaker. They are powered by the breaker's CT's with replaceable battery back-up for maintaining trip and max logs.

The SADU reads currents, current imbalance, current demand, and trip status.

Ammeter Mounting Kit

The Ammeter may also be panel or door mounted using the SADURMK18 remote mounting kit.

Shunt Trip Combinations

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch		
AC	DC	Catalog Number	Catalog Number		
24		S17JLD6	_		
48		S18JLD6▲	_		
120		S01JLD6	S01JLD62A		
240		S03JLD6	S03JLD62A		
277		S15JLD6▲	S15JLD64A▲		
480		S04JLD6	_		
	12	S16JLD6▲	S16JLD62A▲		
	24	S07JLD6	S07JLD62A		
48		S09JLD6▲	S09JLD62A		
125		S11JLD6	S11JLD62A▲		
	250	S13JLD6▲	S13JLD62A▲		

Undervoltage Trip Combinations

Control Voltage		1 Undervoltage Trip	1 Undervoltage Trip and 1 Auxiliary Switch	1 Undervoltage Trip and 2 Auxiliary Switches		
AC DC		Catalog Number	Catalog Number	Catalog Number		
120		U01JLD6	U01JLD62A	U01JLD62AA		
208		U02JLD6▲	U02JLD62A▲	U02JLD62AA▲		
240		U03JLD6	U03JLD62A▲	U03JLD62AA▲		
480		U06JLD6	U06JLD64A▲	U06JLD64AA▲		
	24	U13JLD6	U13JLD62A	U13JLD62AA		
	48	U14JLD6▲	U14JLD62A▲	U14JLD62AA▲		
125		U10JLD6▲	U10JLD62A▲	U10JLD62AA▲		
	250	U12JLD6▲	U12JLD62A▲	U12JLD62AA▲		

Auxiliary Switch Combinations

Maximum Voltage		1 Form C	2 Form C		
AC DC		Catalog Number	Catalog Number		
480	250	A01JLD64	A02JLD64		
_	12	A01JLDLV	A02JLDLV		

Alarm Switch Combinations

Maximum Voltage		1 Alarm Switch		1 Alarm Switch and 2 Auxiliary Switches		
AC	AC DC Catalog Number		Catalog Number	CatalogNumber		
480	250	B01JLD64	A01JLD64B	A02JLD64B		

Plug-in Ammeter Display Units

Breaker Type	Description	Catalog Number		
SJD, SLD	Display Unit	SADU		
SJD, SLD	Remote Mounting Kit	SADURMK18		

Note: Accessory modules can only be added to right side pole of solid state SJD and SLD frame circuit breakers. No accessories can be added if mechanical interlock is used. All accessories on this page are useable on superseded JD2, JJ6, JL6, HJ6, SJL, LJ6, LL6, HL6 and SLL circuit breakers. ▲ Built to order. Allow 6-8 weeks for delivery.

LD 600A Frame Sentron Series

Selection

Type LXD6-A ^①	Blue Label							
Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)								
0	2-Pole (3-Pole Width)		3-Pole					
Continuous Current Rating	600V AC	250V DC	600V AC	500V DC				
@ 40°C	Catalog Number		Catalog Number					
450	LXD62B450■	l	LXD63B450					
500	LXD62B500■	l	LXD63B500					
600	LXD62B600		LXD63B600					

Type LD6-A	Type LD6-A@						
Interchangeable Trip							
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only				
@ 40°C	Catalog Number	Catalog Number	Catalog Number				
2-Pole 600V AC, 250V DC (3-Pole Width)							
250	LD62B250■		JD62T250■				
300	LD62B300■		JD62T300■				
350	LD62B350■		JD62T350■				
400	LD62B400	LD62F600	JD62T400				
450	LD62B450■		LD62T450■				
500	LD62B500■		LD62T500■				
600	LD62B600		LD62T600				
3-Pole 600V AC	, 500V DC ②						
250	LD63B250		JD63T250				
300	LD63B300		JD63T300				
350	LD63B350		JD63T350				
400	LD63B400	LD63F600	JD63T400				
450	LD63B450		LD63T450				
500	LD63B500		LD63T500				

Interrupting Ratings

600

	RMS Symmetrical Amperes (KA)										
	UL 489	AIR (File	E10848)			IEC 947-2					
Breaker	Volts AC (50/60Hz) Volt				Volts DC Volts AC (50/60Hz)			Hz)			
Туре	240	480	600	250	500 ³	220/2	240	380/415		500	
						(lcu)	(lcs)	(lcu)	(lcs)	(lcu)	(lcs)
LD6-A, LXD6-A	65	35	25	30 (2-P)	25 (3-P)	65	33	40	20	_	_
HLD6-A, HLXD6-A	100	65	35	30 (2-P)	35 (3-P)	100	50	65	33	_	_
HHLD6, HHLXD6	200	100	50	_	_		_	_	_	_	_
CLD6-A	200	150	100	_	50 (3-P)	_	_	_	_	_	_

Instantaneous Adjustment Trip Range

LD63B600

	Nominal Instantaneous Values								
	<u>+</u> 20%							<u>+</u> 20%	
Breaker Ampere	Tolerance							Tolerance	
Rating	Low	2	3	4	5	6	7	High	
250-300	1250	1430	1610	1790	1960	2140	2320	2500	
350-450	2000	2290	2570	2860	3140	3430	3710	4000	
500-600	3000	3430	3800	4290	4710	5140	5570	6000	

- Built to order. Allow 2–3 weeks for delivery.
- ©Type LXD6A circuit breakers are UL Listed for reverse fed applications.
- When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
- 3 See Note: A, page 17/101.

HACR rated.

Note: LD frame qualified to UL489 supplement SB "NAVAL". See page 17/104 for additional information. Modifications page 17/104 Accessories pages 17/76 and 17/108 to 17/113

LD63T600

Ordering Information

Complete Breaker Unassembled with Lugs

Prices of LD6, HLD6, and HHLD6 breakers include frame, trip, and both line and load lugs (TA2J6500). When ordered by these catalog numbers, the customer will receive the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of LXD6, HLXD6, HHLXD6, and CLD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA2J6500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

100% Rated (3-pole only)

Types LXD6 and HLXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% rated LD breakers require the use of 90°C Cu cable sized at 75°C ampacity and lugs TC1J6600 or TC2J6500.

50°C Applications see page 17/104. **400Hz Applications** see page 17/104.

Shipping Weights

omporing violents			
Number of Poles	Number per Carton	Shipping Weight (lbs.)	
LXD6, LD6, HL Assembled Bre	D6, HHLD6 eaker (less termin	nals)	
2	1	17.5	
3	1	19.5	
LD6, HLD6, HHLD6 Frame Only			
2	1	14	
3	1	15.5	
LD6, HHLD6 Trip Unit Only			
2	1	3.5	
3	1	4	
CLD6 Complete Assembled Breaker (less terminals)			
3	1	31.5	

Lugs For 75°C Wire®

Catalog Number	Cables per Lug	Wire Range
TA2J6500	1, 2 2	#3/0 500 kcmil Cu #4/0 500 kcmil Al
TC2J6500	2	#3/0-500 kcmil Cu
TA1L6750	1 1	500-750 kcmil Al 500-600 kcmil Cu
TC1J6600	1	#3/0-600 kcmil Cu
Compression Lug		
CCL600	1	500 kcmil Cu/Al

2

3

6

<u>′</u>

9

10

12

14

15

16

17

LD 600A Frame Sentron Series

Selection/Dimensions

Type HLD6-	A, HLXD6-A236		Black Label	
Interchangeab	Interchangeable Trip			
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only	
@ 40°C	Catalog Number	Catalog Number	Catalog Number	
2-Pole 600V A0	C, 250V DC (3-Pole Wid	lth)		
250	HLD62B250■		JD62T250■	
300	HLD62B300■		JD62T300■	
350	HLD62B350■		JD62T350■	
400	HLD62B400■	HLD62F600■	JD62T400	
450	HLD62B450■		LD62T450■	
500	HLD62B500■		LD62T500■	
600	HLD62B600■		LD62T600	
3-Pole 600V AC, 500V DC 0 ©				
250	HLD63B250		JD63T250	
300	HLD63B300		JD63T300	
350	HLD63B350		JD63T350	
400	HLD63B400	HLD63F600	JD63T400	
450	HLD63B450		LD63T450	
500	HLD63B500		LD63T500	
600	HLD63B600		LD63T600	

Type HHLD6, HHLXD6236 2-Pole 600V AC (3-Pole Width)

	10 (0 1 010 11101011)		
250	HHLD62B250■		JD62T250■
300	HHLD62B300■		JD62T300■
350	HHLD62B350■		JD62T350■
400	HHLD62B400■	HHLD62F600■	JD62T400
450	HHLD62B450■		HHLD62T450■
500	HHLD62B500■		HHLD62T500■
600	HHLD62B600■		HHLD62T600 ■
		·	·

3.	Pole 600V AC			
Г	250	HHLD63B250		JD63T250
	300	HHLD63B300		JD63T300
	350	HHLD63B350		JD63T350
	400	HHLD63B400	HHLD63F600	JD63T400
	450	HHLD63B450■		HHLD63T450■
	500	HHLD63B500■		HHLD63T500■
	600	HHLD63B600■		HHLD63T600■

Type CLD6-A36

Fuseless Current Limiting		Red Label	
Non-Interchang Without Lugs)	angeable Trip (Assembled Circuit Breaker gs)		
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC	
@ 40°C	Catalog Number	Catalog Number	
450	For 2-pole application	CLD63B450■	
500	use outside poles of	CLD63B500	
600	3-pole circuit breaker	CLD63B600	

Figure 2 Figure 1

Dimensions (in inches)

Breaker Type	w	L	D	To Handle
Figure 1 LXD6-A, LD6-A HLD6-A HHLD6, HHLXD6, LXD6-ETI,® SLD6, SHLD6	7.5	11	4	5.44
Figure 2 CLD6, CLD6-ETI,® SCLD6	7.5	17.86	4	5.44

Enclosures: (except SCLD6)

Туре	Catalog Number
1	LD6N1
3R	LD6N3R
12 4X	LD6N12 LD6SS4
7.9	ED6
7,9	EDO
Neutral	W60993

For inches / millimeters conversion, see Application Data section.

- Built to order. Allow 2–3 weeks for delivery.
- ① When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
- © For complete assembled 3-pole HLD6 or HHLD6 type circuit breaker change the prefix identifier HLD6 or HHLD6 to HLXD6 or HHLXD6. Price is sum of frame and trip units prices, e.g. price of HLXD63B400 is the price of HLD63F600 plus the price of LD63T600. Order the terminal connectors separately.

Black Label

- ®Type HLXD6, HHLXD6, & CLD6 Circuit Breakers are UL
- Listed for reverse feed applications.

 © LXD6-ETI, CLD6-ETI see page 17/91 for ordering information.

 © CE Applies to non-interchangeable type HLXD only. @ HACR rated.

SLD 600A Frame Digital Solid State Sentron Sensitrip III Series

Selection

Type SLD6-A

Blue Label

3-Pole, 600V AC		
	Max	
Catalog	Current	
Number	Rating	
SLD69300■	300	
SLD69400■	400	
SLD69500■	500	
SLD69600■	600	
SLD69300G■	300	
SLD69400G■	400	
SLD69500G■	500	
SLD69600G■	600	
SLD69300NT■	300	
SLD69400NT■	400	
SLD69500NT■	500	
SLD69600NT■	600	
SLD69300NGT■	300	
SLD69400NGT■	400	
SLD69500NGT■	500	
SLD69600NGT■	600	

Type SHLD6-A

Black Label

3-Pole, 600V AC		
Catalog Number	Max Current Rating	
SHLD69300■	300	
SHLD69400■	400	
SHLD69500■	500	
SHLD69600■	600	
SHLD69300G■	300	
SHLD69400G■	400	
SHLD69500G■	500	
SHLD69600G■	600	
SHLD69300NT■	300	
SHLD69400NT■	400	
SHLD69500NT■	500	
SHLD69600NT■	600	
SHLD69300NGT■	300	
SHLD69400NGT■	400	
SHLD69500NGT■	500	
SHLD69600NGT■	600	

Current LimitingType SCLD6-A

Red Label

3-Pole, 600V AC		
Catalog Number	Max Current Rating	
SCLD69300■	300	
SCLD69400■	400	
SCLD69500■	500	
SCLD69600■	600	
SCLD69300G■	300	
SCLD69400G■	400	
SCLD69500G■	500	
SCLD69600G■	600	
SCLD69300NT■	300	
SCLD69400NT■	400	
SCLD69500NT■	500	
SCLD69600NT■	600	
SCLD69300NGT■	300	
SCLD69400NGT■	400	
SCLD69500NGT■	500	
SCLD69600NGT■	600	

Ordering Information

Pricing information for all Digital Sentron Series SLD frames is for complete breaker only – price required lugs as separate items – lugs are suitable for 75°C wire.

SLD6 and SCLD6 are suitable for reverse connection application. SHLD6 are <u>not</u> suitable for reverse connection application.

Shipping Weights

Breaker Type	Number per Carton	Shipping Weight (lbs)
SLD6-A	1	20
SHLD6-A	1	20
SCLD6-A	1	33

Neutral Transformers

Ampere Rating	Catalog Number
300	N03SJD
400	N04SJD
500	N05SLD
600	N06SLD

Trip Unit Adjustable Functions

Suffix Letter Code	Trip Type	Cont Current Setting	Long Time Delay	Instan- taneous Setting	Short Time Pick Up	Short Time Delay	Short Time I ² t Pick Up	Ground Fault Pick Up	Ground Fault Delay
None	LI	√	√	√					
G	LIG	_	√	√				√	√
NT	LSI	√	√	√	✓	✓	✓		
NGT	LSIG	√	√	√	/	√	√	/	√

Interrupting Ratings

Breaker	RMS Symmetrical kA UL 489 (File E10848)			
Туре	240V AC	480V AC	600V AC	
SLD6-A	65	35	25	
SHLD6-A	100	65	35	
SCLD6-A	200	150	100	

Note: "G" suffix in catalog number denotes circuit breaker for 3-phase, 3-wire circuits. For 3-phase, 4-wire, order correct 4th wire (neutral) transformer as separate and additional item. For ordering information and terminal connectors see page 17/73; for enclosures, see page 17/74.

Product Category: MCCB

100% Rated - Not available in SLD6 Frame.

■ Built to order. Allow 2–3 weeks for delivery.

17/75

Internal Accessories

Selection

Accessories for:

JD 400A Frame LD 600A Frame LMD 800A Frame SJD 400A Frame SLD 600A Frame



Sensitrip Ammeter



The Ammeter Display Units plug into the Sensitrip Trip Unit and displays the phase current flowing in the breaker. They are powered by the breaker's CT's with replaceable battery back-up for maintaining trip and max logs.

The SADU reads currents, current imbalance, current demand, and trip status.

Ammeter Mounting Kit

The Ammeter may also be panel or door mounted using the SADURMK18 remote mounting kit.

Shunt Trip Combinations

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch	
AC	DC	Catalog Number	Catalog Number	
24		S17JLD6	_	
48		S18JLD6▲	_	
120		S01JLD6	S01JLD62A	
240 277 480 12		S03JLD6	S03JLD62A	
		S15JLD6▲	S15JLD64A▲	
		S04JLD6	_	
		S16JLD6▲	S16JLD62A▲	
	24	S07JLD6	S07JLD62A	
48		S09JLD6▲	S09JLD62A	
	125	S11JLD6	S11JLD62A▲	
	250	S13JLD6▲	S13JLD62A▲	

Undervoltage Trip Combinations

Control Voltage		1 Undervoltage Trip	1 Undervoltage Trip and 1 Auxiliary Switch	1 Undervoltage Trip and 2 Auxiliary Switches
AC DC		Catalog Number	Catalog Number	Catalog Number
120		U01JLD6	U01JLD62A	U01JLD62AA
208		U02JLD6▲	U02JLD62A▲	U02JLD62AA▲
240		U03JLD6	U03JLD62A▲	U03JLD62AA▲
480		U06JLD6	U06JLD64A▲	U06JLD64AA▲
	24	U13JLD6	U13JLD62A	U13JLD62AA
	48	U14JLD6▲	U14JLD62A▲	U14JLD62AA▲
	125	U10JLD6▲	U10JLD62A▲	U10JLD62AA▲
	250	U12JLD6▲	U12JLD62A▲	U12JLD62AA▲

Auxiliary Switch Combinations

Maximum Voltage		1 Form C	2 Form C
AC DC		Catalog Number	Catalog Number
480 250		A01JLD64	A02JLD64
_	12	A01JLDLV	A02JLDLV

Alarm Switch Combinations

Maximum Voltage		1 Alarm Switch	1 Alarm Switch and 1 Auxiliary Switch	1 Alarm Switch and 2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	CatalogNumber
480	250	B01JLD64	A01JLD64B	A02JLD64B

Plug-in Ammeter Display Units

Breaker Type	Description	Catalog Number	
CID CID	Display Unit	SADU	
SJD, SLD	Remote Mounting Kit	SADURMK18	

Note: Accessory modules can only be added to right side pole of solid state SJD and SLD frame circuit breakers. No accessories can be added if mechanical interlock is used. All accessories on this page are useable on superseded JD2, JJ6, JL6, HJ6, SJL, LJ6, LL6, HL6 and SLL circuit breakers. ▲ Built to order. Allow 6–8 weeks for delivery.

LMD 800A Frame Sentron Series

Selection/Dimensions

Type LMXD6	Blue Label			
Non-Interchangeable Trip (Assembled Circuit Breaker without Lugs)				
Continuous Current Rating @ 40°C	2-Pole (3-Pole Width) Catalog Number	3-Pole Catalog Number		
500	_	LMXD63B500■		
600	LMXD62B600■	LMXD63B600		
700	LMXD62B700■	LMXD63B700		
800	LMXD62B800	LMXD63B800		

Type LMD6 [⊕]			Blue Label
Interchangeabl	e Trip		
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only
@ 40°C	Catalog Number	Catalog Number	Catalog Number
2-Pole 600V AC	, 250V DC (3-Pole Wid	lth)	
500	LMD62B500■		LMD62T500■
600	LMD62B600■	LMD62F800■	LMD62T600■
700	LMD62B700■		LMD62T700■
800	LMD62B800■		LMD62T800■
3-Pole 600V AC	, 500V DC $^{ extstyle 2}$		
500	LMD63B500■		LMD63T500■
600	LMD63B600■	LMD63F800	LMD63T600■
700	LMD63B700■		LMD63T700■
800	LMD63B800		LMD63T800

Instantaneous Adjustment Trip Range

	Nominal Instantaneous Values							
Ampere Rating	Low +/- 20% Tolerance	2	3	4	5	6	7	High +/- 20% Tolerance
500-600	3000	3430	3860	4290	4710	5140	5570	6000
700-800	3200	3500	3700	4200	4700	6400	7300	8000

Ordering Information

Complete Breaker Unassembled with Lugs

Prices of LMD6 and HLMD6 breakers include frame, trip, and both line and load lugs (TA3K500). These catalog numbers include the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of LMXD6 and HLMXD6 include frame with non-interchangeable trip unit installed only. Order required lugs separately. For line and load lugs (TA3K500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

50°C Applications see page 17/104. 400Hz Applications see page 17/104.

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)				
	LMD6, HLMD6, LMXD6, HLMXD6 Complete Breaker (less terminals)					
2	1	53				
3	1	61.5				
LMD6, HLMD6	Frame Only					
2	1	42.25				
3	1	46				
LMD6, HLMD6 Trip Unit Only						
2	1	4.5				
3	1	6.5				

Lugs[®] for 75°C Wire

Catalog Number	Cables per Lug	Wire Range
TA2K500 TA3K500	1, 2 1-3	#1-500 kcmil Cu/Al #1/0-500 kcmil Cu/Al
TA2N750	1, 2	500-750 kcmil Cu/Al

■ Built to order. Allow 2–3 weeks for delivery.

3 See Note: A, page 17/101. @ HACR rated.

Modifications page 17/104

Accessories pages 17/79 and 17/108 to 17/113

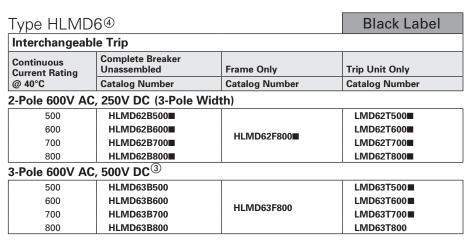
① LMXD6 circuit breakers are UL Listed for reverse connected applications.

[®]When wired as shown on page 17-5, this circuit breaker is UL listed and rated for use on 500VDC ungrounded UPS systems only.

LMD 800A Frame Sentron Series

Selection/Dimensions

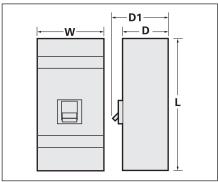
Type HLMX[Black Label		
Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)			
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC	
@ 40°C	Catalog Number	Catalog Number	
500		HLMXD63B500■	
600	For 2-pole application use outside poles of	HLMXD63B600■	
700	3-pole circuit breaker	HLMXD63B700■	
800	- post site of outloon	HLMXD63B800	



Interrupting Ratings

	UL 489A IR				
	RMS Symmetrical Amperes (KA)				
Breaker	Volts AC			Volts DC	
Туре	240	480	600	250	500 [@]
LMD6, LMXD6	65	50	25	30 (2-P)	25 (3-P)
HLMD6, HLMXD6	100	65	50	30 (2-P)	50 (3-P)





Dimensions (in inches)

	•		· ·	
Breaker Type	w	L	D	D1
LMD6, LMXD6, HLMD6, HLMXD6 LMXD6-ETI [®]	7.5	16	4.5	5.93

Enclosures

Туре	Catalog Number
1	LMD1
3R	LMD3R
12	LMD12■
Neutral	W63623

For inches / millimeters conversion, see Application Data section.

- Built to order. Allow 2–3 weeks for delivery.
- ①HLMXD6 circuit breakers are UL Listed for reverse connection applications.
- ② LMXD6-ETI, see page 17/91 for catalog information.
- ® When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500VDC ungrounded UPS systems only.
- 4 HACR rated.

Internal Accessories

Selection

Accessories for:

JD 400A Frame LD 600A Frame LMD 800A Frame SJD 400A Frame SLD 600A Frame



Sensitrip Ammeter



The Ammeter Display Units plug into the Sensitrip Trip Unit and displays the phase current flowing in the breaker. They are powered by the breaker's CT's with replaceable battery back-up for maintaining trip and max logs.

The SADU reads currents, current imbalance, current demand, and trip status.

Ammeter Mounting Kit

The Ammeter may also be panel or door mounted using the SADURMK18 remote mounting kit.

Shunt Trip Combinations

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch
AC	DC	Catalog Number	Catalog Number
24		S17JLD6	_
48		S18JLD6▲	—
120		S01JLD6	S01JLD62A
240		S03JLD6	S03JLD62A
277		S15JLD6▲	S15JLD64A▲
480		S04JLD6	_
	12	S16JLD6▲	S16JLD62A▲
	24	S07JLD6	S07JLD62A
	48	S09JLD6▲	S09JLD62A
	125	S11JLD6	S11JLD62A▲
	250	S13JLD6▲	S13JLD62A▲

Undervoltage Trip Combinations

Control Voltage		1 Undervoltage Trip	1 Undervoltage Trip and 1 Auxiliary Switch	1 Undervoltage Trip and 2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number
120		U01JLD6	U01JLD62A	U01JLD62AA
208		U02JLD6▲	U02JLD62A▲	U02JLD62AA▲
240		U03JLD6	U03JLD62A▲	U03JLD62AA▲
480		U06JLD6	U06JLD64A▲	U06JLD64AA▲
	24	U13JLD6	U13JLD62A	U13JLD62AA
	48	U14JLD6▲	U14JLD62A▲	U14JLD62AA▲
	125	U10JLD6▲	U10JLD62A▲	U10JLD62AA▲
	250	U12JLD6▲	U12JLD62A▲	U12JLD62AA▲

Auxiliary Switch Combinations

Maximum Voltage		1 Form C	2 Form C
AC	DC	Catalog Number	Catalog Number
480	250	A01JLD64	A02JLD64
_	12	A01JLDLV	A02JLDLV

Alarm Switch Combinations

Maximum Voltage		1 Alarm Switch		1 Alarm Switch and 2 Auxiliary Switches
AC DC		Catalog Number	Catalog Number	CatalogNumber
480	250	B01JLD64	A01JLD64B	A02JLD64B

Plug-in Ammeter Display Units

	1 /		
Breaker Type	Description	Catalog Number	
SJD, SLD	Display Unit	SADU	
SJD, SLD	Remote Mounting Kit	SADURMK18	

Note: Accessory modules can only be added to right side pole of solid state SJD and SLD frame circuit breakers. No accessories can be added if mechanical interlock is used. All accessories on this page are useable on superseded JD2, JJ6, JJ6, HJ6, SJL, LJ6, LL6, HL6 and SLL circuit breakers. ▲ Built to order. Allow 6–8 weeks for delivery.

Siemens Industry, Inc. Industrial Controls Catalog

MD 800A Frame Sentron Series

Selection

Type MXD6	Blue Label			
Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)				
Continuous Current Rating	2-Pole ²	3-Pole		
@ 40°C	Catalog Number	Catalog Number		
600	MXD62B600■	MXD63B600		
700	MXD62B700■	MXD63B700		
800	MXD62B800■	MXD63B800		

Type MD66	Blue Label					
Interchangeabl	Interchangeable Trip					
Continuous Current Rating	Complete Breaker Unassembled with Lugs	Frame Only	Trip Unit Only			
@ 40°C	Catalog Number	Catalog Number	Catalog Number			
2-Pole 600V AC, 250V DC ^②						
500	MD62B500■	MD62F800■	MD62T500■			
600	MD62B600■		MD62T600■			
700	MD62B700■		MD62T700■			
800	MD62B800■		MD62T800■			
3-Pole 600V AC	, 500V DC ^③					
500	MD63B500		MD63T500			
600	MD63B600	MDCCFOOO	MD63T600			
700	MD63B700	MD63F800	MD63T700			
800	MD63B800		MD63T800			

Lugs⁴

9-					
Catalog Number	Cables Per Lug	Lugs Per Kit	Wire Range		
TA2K500 TA3K500 TC2K500 TC3K350	1-2 1-3 1-2 1-3	1 1 1 1	#1-500 kcmil Cu/Al 1/0-500 kcmil Cu/Al #1-500 kcmil Cu #1-350 kcmil Cu		
Kits					
2TA2N8750 3TA2N8750	1-2	2 3	500-750 kcmil Cu/Al		
2TA3N8750 3TA3N8750	1-3	2 3	500-750 kcmil Cu/Al		
2TA4N8500 3TA4N8500	1-4	2 3	250-500 kcmil Cu/Al		
2TA4P8500 3TA4P8500	1-4	2 3	250-500 kcmil Cu/Al		

Instantaneous Adjustment Trip Range

Ampere	Nominal Insta	ntaneou	ıs Values					
Rating	Low +/- 20% Tolerance	2	3	4	5	6	7	High +/- 20% Tolerance
500 600–800	3000 4000	3430 4570	3860 5140	4280 5710	4710 6280	5140 6850	5570 7420	6000 8000

■ Built to order. Allow 2–3 weeks for delivery.

Ordering Information

Complete Breaker Unassembled with Lugs

Pricing information for MD6 and HMD6 breakers includes frame, trip, and both line and load lugs (TA3K500). When ordered by these catalog numbers, the customer will receive the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of MXD6, HMXD6 and CMD6 include frame with non-interchangeable trip units installed only. Order required lugs separately. For line and load lugs (TA3K500) installed, add suffix "L" to catalog number (add 2 times list price of lugs for each pole).

100% Rated^⑤

Types MXD6, HMXD6 and CMD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% rated MD breakers require the use of 90°C Cu cable sized at 75°C ampacity and lugs 3TA4P8500 or 3TA2N8750.

50°C Applications see page 17/104. **400Hz Applications** see page 17/104.

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)			
MD6, HMD6, HMXD6, CMD6 Complete Breaker Assembled (less lugs)					
2	1	53			
3	1	61.5			
MD6, HMD6 Fr	ame Only				
2	1	42.25			
3	1	46			
MD6, HMD6 Trip Unit Only					
2	1	4.5			
3	1	6.5			

Enclosures

Туре	Catalog Number
1	MND61
3R	MND63
12	MND612■
Neutral	W63623

Modifications page 17/104 Accessories pages 17/79 and 17/108 to 17/113

①MXD6 circuit breakers are UL Listed for reverse connection applications.

^{©2-}pole units available in 3-pole width only.

When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems.

See Note: A, page 17/101.

^{® 80%} rated breakers with the CE mark will also be marked in the 100% rated version.

HACR rated.

Note: MD frame qualified to UL489 supplement B "NAVAL". See page 17/104 for additional information.

Black Label

MD 800A Frame Sentron Series

Selection/Dimensions

Type HMXD	Black Label			
Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)				
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC		
@ 40°C	Catalog Number	Catalog Number		
600	For 2-pole application	HMXD63B600■		
700	use outside poles of	HMXD63B700■		
800	3-pole circuit breaker	HMXD63B800		

Type HMD6	5)
Interchangeabl	е Т
	$\overline{}$

Interchangeable Trip					
Continuous Current Rating	Complete Breaker Unassembled w/Lugs	Frame Only	Trip Unit Only		
@ 40°C	Catalog Number	Catalog Number	Catalog Number		

2-Pole 600V AC, 250V DC2

500	HMD62B500■	HMD62F800■	MD62T500■		
600	HMD62B600■		MD62T600■		
700	HMD62B700■		MD62T700■		
800	HMD62B800■		MD62T800■		

3-Pole 600V AC, 500V DC ⁴							
500	HMD63B500		MD63T500				
600	HMD63B600	HMD63F800	MD63T600				
700	HMD63B700		MD63T700				
800	HMD63B800		MD63T800				

Type CMD6^{①⑤}

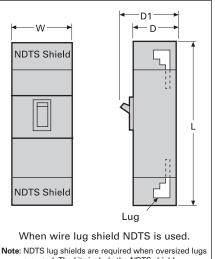
Fuseless Current Limiting

Red Label

		riod Edboi				
Non-Interchangeable Trip (Assembled Circuit Breaker Without Lugs)						
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC				
@ 40°C	Catalog Number	Catalog Number				
600	For 2-pole application	CMD63B600■				
700	use outside poles of	CMD63B700■				
800	3-pole circuit breaker	CMD63B800				

Interrupting Ratings

UL 489 AIR—File E10848								IEC 9	47-2	AIR	
RMS Symmetrical Amperes (KA)				Volts AC (50/60HZ)							
Breaker	Volts A	VC		Volts DC	;	220/2	240	380/	415	500	
Туре	240	480	600	250	500 ⁴	(lcu)	(lcs)	(lcu)	(lcs)	(lcu)	(lcs
MD6, MXD6	65	50	25	30 (2-P)	25 (3-P)	65	33	40	20	_	_
HMD6, HMXD6	100	65	50	30 (2-P)	50 (3-P)	100	50	65	33	_	_
CMD6	200	100	65	_	50 (3-P)	_	_	_	_	_	_



Note: NDTS lug shields are required when oversized lugs are used. The kits include the NDTS shield.

Dimensions (in inches)

Breaker Type	w	L	D	(To Handle) D1
MD6, MXD6, HMD6, HMXD6, CMD6, MXD6-ETI, CMD6-ETI, SMD6, SHMD6, and SCMD6	9	16	6	8.25
with lug shields	9	24	6	8.25

For inches / millimeters conversion, see Application Data section.

■ Built to order. Allow 2-3 weeks for delivery.

①HMXD6 and CMD circuit breakers are UL listed for reverse connection applications.

©2-pole units available in 3-pole width only.

© MXD6-ETI, CMD6-ETI see page 17/91 for catalog information.

®When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS

systems only. § HACR rated.

SMD 800A Frame Digital Solid State Sentron Sensitrip III Series[®]

Selection

Type SMD6

Blue Label

3-Pole, 600V AC				
Catalog Number	Max Current Rating			
SMD69600A■	600			
SMD69700A■	700			
SMD69800A■	800			
SMD69600AG■	600			
SMD69700AG■	700			
SMD69800AG■	800			
SMD69600ANT■	600			
SMD69700ANT■	700			
SMD69800ANT■	800			
SMD69600ANGT■	600			
SMD69700ANGT■	700			
SMD69800ANGT■	800			

Type SHMD6

Black Label

3-Pole, 600V AC				
Catalog Number	Max Current Rating			
SHMD69600A■	600			
SHMD69700A■	700			
SHMD69800A■	800			
SHMD69600AG■	600			
SHMD69700AG■	700			
SHMD69800AG■	800			
SHMD69600ANT■	600			
SHMD69700ANT■	700			
SHMD69800ANT■	800			
SHMD69600ANGT■	600			
SHMD69700ANGT■	700			
SHMD69800ANGT■	800			

Current Limiting

Type SCMD6-A

Red Label

	'
3-Pole, 600V AC	
Catalog Number	Max Current Rating
SCMD69600A■	600
SCMD69700A■	700
SCMD69800A■	800
SCMD69600AG■	600
SCMD69700AG■	700
SCMD69800AG■	800
SCMD69600ANT■	600
SCMD69700ANT■	700
SCMD69800ANT■	800
SCMD69600ANGT■	600
SCMD69700ANGT■	700
SCMD69800ANGT■	800

Ordering Information

Pricing information for all Digital Sentron Series MD frames is for complete breaker only. Price requires lugs or lug kits as separate items. Lugs are suitable for 75°C wire or as noted. Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards. Choose actual connector for circuit breakers based on customer requirements.

Recommended Terminal Connectors

Breaker	Ampere	Connector or
Frame	Rating	Connector Kit
MD	500–600	TA2K500
MD	700–800	TA3K500

Types SMD6 and SHMD6 are acceptable for reverse connection applications.

SMD 800A Frame - 100% Rated^①

Type SMD6

Blue Label

3-Pole, 600V AC				
Catalog Number	Max Current Rating			
SMD69600AH■	600			
SMD69700AH■	700			
SMD69800AH■	800			
SMD69600AGH■	600			
SMD69700AGH■	700			
SMD69800AGH■	800			
SMD69600ANTH■	600			
SMD69700ANTH■	700			
SMD69800ANTH■	800			
SMD69600ANGTH■	600			
SMD69700ANGTH■	700			
SMD69800ANGTH■	800			

Type SHMD6

Black Label

3-Pole, 600V AC				
Catalog Number	Max Current Rating			
SHMD69600AH■	600			
SHMD69700AH■	700			
SHMD69800AH■	800			
SHMD69600AGH■	600			
SHMD69700AGH■	700			
SHMD69800AGH■	800			
SHMD69600ANTH■	600			
SHMD69700ANTH■	700			
SHMD69800ANTH■	800			
SHMD69600ANGTH■	600			
SHMD69700ANGTH■	700			
SHMD69800ANGTH	800			

Current Limiting

Type SCMD6-A

Red Label

3-Pole, 600V AC				
	Max			
Catalog	Current			
Number	Rating			
SCMD69600AH■	600			
SCMD69700AH■	700			
SCMD69800AH■	800			
SCMD69600AGH■	600			
SCMD69700AGH■	700			
SCMD69800AGH■	800			
SCMD69600ANTH■	600			
SCMD69700ANTH■	700			
SCMD69800ANTH■	800			
SCMD69600ANGTH■	600			
SCMD69700ANGTH■	700			
SCMD69800ANGTH■	800			

Shipping Weights

Breaker	Number per	Shipping	
Type	Carton	Weight (lbs)	
All types	1	61.5	

Lugs for 75°C Wire®

Catalog Number	Cables per Lug	Wire Range
TA2K500 TA3K500 TC2K500 TC3K350	2 3 2 3	#1-500 kcmil Cu/Al #1-500 kcmil Cu/Al #1-500 kcmil Cu #1-350 kcmil Cu
Kits (3 lugs/ki	t)	
3TA4N8500 3TA4P8500 3TA2N8750 3TA3N8750	4 4 2 3	250–500 kcmil Cu/Al 250–500 kcmil Cu/Al 500–750 kcmil Cu/Al 500–750 kcmil Cu/Al
00/8816A16	3	DUU-/DU KUMIII CU/AI

Each kit contains the following: 3TA4P8500—3 connectors plus 1 NDTS end barrier 3TA3N8750—3 connectors plus 1 NDTS end barrier 3TA2N8750—3 connectors plus 1 NDTS end barrier

Trip Unit Adjustable Functions

Suffix Letter Code	Trip Type	Cont Current Setting	Long Time Delay	Instan- taneous Setting	Short Time Pick Up	Short Time Delay	Ground Fault Pick Up	Ground Fault Delay
Α	LI	✓	✓	✓				
AG	LIG	✓	√	✓			√	√
ANT	LSI	/	✓	✓	√	/		
ANGT	LSIG	/	/	/	√	/	/	/

Interrupting Ratings

Breaker	RMS Symmetrical kA UL 489 (File E10848)				
Туре	240V AC	480V AC	600V AC		
SMD6	65	50	25		
SHMD6	100	65	50		
SCMD6	200	100	65		

Note: "G" suffix in catalog number denotes circuit breaker for 3-phase, 3-wire circuits. For 3-phase, 4-wire, order correct 4th wire (neutral) transformer as separate and additional item.

Neutral Transformers

Ampere Rating	Catalog Number
600	N06SMDA
700	N07SMDA
800	N08SMDA

Enclosures

Туре	Catalog Number
1 3R 12	MND61 MND63 MND612
Neutral	W63623

Accessories pages 17/90 and 17/108 to 17/113

 $[\]blacksquare$ Built to order. Allow 2–3 weeks for delivery.

① Use 2-3TA4P8500 for 3-pole. These kits are rated for 90°C wire. 90°C Cu only cable must be used, and sized per 75°C ampacity.

For additional information, see Note: A, page 17/101.
 SMD6, SHMD6 and SCMD6 circuit breakers are UL Listed for reverse connection applications.

ND 1200A Frame Sentron Series

Selection

Type NXD6@	Blue Label			
Non-Interchang Without Lugs)	d Circuit Breaker			
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC		
@ 40°C	Catalog Number	Catalog Number		
900	NXD62B900■	NXD63B900		
1000	NXD62B100■	NXD63B100		
1200	NXD62B120■	NXD63B120		

Гуре ND6®			Blue Label
Interchangeab	ole Trip		
Continuous Current Rating	Complete Breaker Unassembled with Lugs	Frame Only	Trip Unit Only
@ 40°C	Catalog Number	Catalog Number	Catalog Number
2-Pole 600V A0	C, 250V DC ^②		
800	ND62B800■		MD62T800■
900	ND62B900■	ND62F120	ND62T900■
1000	ND62B100■		ND62T100■
1200	ND62B120		ND62T120
3-Pole 600V A0	C, 500V DC ³		
800	ND63B800		MD63T800
900	ND63B900	NDC2F420	ND63T900
1000	ND63B100	ND63F120	ND63T100
1200	ND63B120		ND63T120

Interrupting Ratings

	RMS S	RMS Symmetrical Amperes (KA)									
	UL 489	A IR				IEC 9	47-2				
Breaker	Volts A	Volts AC Volts DC				Volts	AC (5	0/60H	Z)		
Туре	240	480	600	250	500 ³	220/2	240	380/4	115	500	
						(lcu)	(lcs)	(lcu)	(lcs)	(lcu)	(lcs)
ND6, NXD6	65	50	25	30 (2-P)	25 (3-P)	65	33	40	20	_	_
HND6, HNXD6	100	65	50	30 (2-P)	50 (3-P)	100	50	65	33	_	_
CND6	200	100	65	_	50 (3-P)	_	_	_	_	_	_

Instantaneous Adjustment Trip Range

	Nominal Ins	Nominal Instantaneous Values						
Breaker Ampere Rating	±20% Tolerance Low	2	3	4	5	6	7	<u>+</u> 20% Tolerance High
800	4000	4570	5140	5710	6280	6850	7420	8000
900-1200	5000	5715	6430	7145	7860	8575	9290	10000

Ordering Information

Complete Breaker Unassembled with Luas

Prices of ND6 and HND6 breakers include frame, trip, and both line and load lugs (3TA4N8500). These catalog numbers are the frame, trip and lugs separately packaged. For applications requiring different lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of NXD6, HNXD6, and CND6 include frame with non-interchangeable trip units installed only. Order required terminal connectors separately. For line and load lugs (3TA4N8500) installed, add suffix "L" to catalog number (add 2 times list price of lug kit).

100% Rated (3-Pole only) Types NXD6, HNXD6 and CND6 breakers are available with 100% ratings. To order, add suffix "H" to catalog number, and add 10% to list price. 100% rated ND breakers require 90°C Cu cable sized at 75°C ampacity and lug kit 3TA4P8500 or 3TA3N8750.

50°C Applications see page 17/104. 400Hz Applications see page 17/104.

Luas@

Lugue				
Catalog Number	Cables per Lug	Wire Range		
TA2K500 TA3K500	2 3	#1-500 kcmil Cu/Al #1-500 kcmil Cu/Al		
TC2K500 TC3K350	2 3	#1-500 kcmil Cu #1-350 kcmil Cu		
Kits (2 Kits red	quired per	r breaker)		
2TA4P8500@ 3TA4P8500@	4	250-500 kcmil Cu/Al		
2TA4N8500® 3TA4N8500®	4	250-500 kcmil Cu/Al		
2TA2N8750 3TA2N8750	2	500-750 kcmil Cu/Al		
2TA3N8750 3TA3N8750	3	500-750 kcmil Cu/Al		

Enclosures

Туре	Catalog Number
1 3R	MND61 MND63
12	MND612■
Neutral	W63623

Modifications page 17/104

Accessories pages 17/86 and 17/108 to 17/113

Siemens Industry, Inc. Industrial Controls Catalog

[■] Built to order. Allow 2-3 weeks for delivery.

①NXD6 circuit breakers are UL listed for reverse connection applications.

²²⁻pole units available in 3-pole width only.

[®]When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500VDC ungrounded UPS

systems only.

① Use 2 – 3TA4P8500 kits for 3-pole, or 2 – 2TA4P8500 kits for 2-pole. Rated for 90° C cable. Use for 100% rated

[©] Use 2 – 3TA4N8500 for 3-pole or 2 – 2TA4N8500 for 2-pole. Rated for 75°C cable.

See Note: A, page 17/101.

^{@80%} rated breakers with the CE mark will also be marked in the 100% rated version. ®HACR rated.

Note: ND frame qualified to UL489 supplement B "NAVAL". See page 17/104 for additional information.

ND 1200A Frame Sentron Series

Selection/Dimensions

Type HNXD6	Black Label	
Non-Interchang Without Lugs)	ed Circuit Breaker	
Continuous Current Rating	2-Pole 600V AC/250V DC	3-Pole 600V AC/500V DC
@ 40°C	Catalog Number	Catalog Number
900	For 2-pole application	HNXD63B900
1000	use outside poles of	HNXD63B100
1200	3-pole circuit breaker	HNXD63B120

Type HND6	4)		Black Label
Interchangeabl	e Trip		
Continuous Current Rating	Complete Breaker Unassembled with Lugs	Frame Only	Trip Unit Only
@ 40°C	Catalog Number	Catalog Number	Catalog Number

2-Pole 600V AC, 250V DC 2 800 900 1000 1200 For 2-pole application use outside poles of 3-pole circuit breaker

3-Pole 600V AC, 500V DC ³			
800	HND63B800		MD63T800
900	HND63B900	LINIDOGEAGO	ND63T900
1000	HND63B100	HND63F120	ND63T100
1200	HND63B120		ND63T120

Type CND6^①

Fuseless	Current	Limiting
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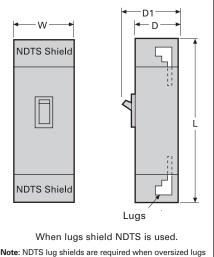
Red Label

Non-Interchangeable Trip (Assembled Circuit Breaker)		
Continuous Current Rating	2-Pole	3-Pole
@ 40°C	Catalog Number	Catalog Number
900	For 2-pole application,	CND63B900■
1000	use outside poles of	CND63B100
1200	3-pole circuit breaker	CND63B120

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)
ND6, HND6, NXD6, HNXD6, CND6 Assembled Breaker (less terminals)		
2 3	1 1	53 61.5
ND6, HND6 Frame Only		
2 3	1 1	42.25 46
ND6, HND6 Trip Unit Only		
2	1	4.5
3	1	6.5





TA4P8500 or TA4N8500 are used. The kits include the NDTS shield.

Dimensions (in inches)

Breaker Type	w	L	D	D1
ND6, NXD6, HND6, HNXD6, CND6, SND6, SHND6, and SCND6	9	16	6	8.25
with NDTS lug shield	9	24	6	8.25

For inches / millimeters conversion, see Application Data section.

■ Built to order. Allow 2–3 weeks for delivery.

①HNXD6 and CND6 circuit breakers are UL Listed for reverse connection applications.

22-pole units available in 3-pole width only.

- ® When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.
- $\ensuremath{\text{@}}\xspace$ HACR rated.

SND 1200A Frame Digital Solid State Sentron Sensitrip III Series[®]

Selection

Type SND6

Blue Label

3-Pole, 600V AC	
Catalog Number	Max Current Rating
SND69800A■	800
SND69100A■	1000
SND69120A■	1200
SND69800AG■	800
SND69100AG■	1000
SND69120AG■	1200
SND69800ANT■	800
SND69100ANT■	1000
SND69120ANT■	1200
SND69800ANGT■	800
SND69100ANGT■	1000
SND69120ANGT■	1200

Type SHND6

Black Label

3-Pole, 600V AC		
Catalog Number	Max Current Rating	
SHND69800A	800	
SHND69100A■	1000	
SHND69120A■	1200	
SHND69800AG■	800	
SHND69100AG■	1000	
SHND69120AG■	1200	
SHND69800ANT■	800	
SHND69100ANT■	1000	
SHND69120ANT■	1200	
SHND69800ANGT■	800	
SHND69100ANGT■	1000	
SHND69120ANGT■	1200	

Current Limiting

Type SCND6-A

Red Label

3-Pole, 600V AC	
	Max
Catalog	Current
Number	Rating
SCND69800A■	800
SCND69100A■	1000
SCND69120A■	1200
SCND69800AG■	800
SCND69100AG■	1000
SCND69120AG■	1200
SCND69800ANT■	800
SCND69100ANT■	1000
SCND69120ANT■	1200
SCND69800ANGT■	800
SCND69100ANGT■	1000
SCND69120ANGT■	1200



SND 1200A Frame - 100% Rated^① Type SND6

Blue Label

3-Pole, 600V AC		
	Max	
Catalog	Current	
Number	Rating	
SND69800AH■	800	
SND69100AH■	1000	
SND69120AH■	1200	
SND69800AGH■	800	
SND69100AGH■	1000	
SND69120AGH■	1200	
SND69800ANTH■	800	
SND69100ANTH■	1000	
SND69120ANTH■	1200	
SND69800ANGTH■	800	
SND69100ANGTH■	1000	
SND69120ANGTH■	1200	

Type SHND6 Black Label

3-Pole, 600V AC		
	Max	
Catalog	Current	
Number	Rating	
SHND69800AH■	800	
SHND69100AH■	1000	
SHND69120AH■	1200	
SHND69800AGH■	800	
SHND69100AGH■	1000	
SHND69120AGH■	1200	
SHND69800ANTH■	800	
SHND69100ANTH■	1000	
SHND69120ANTH■	1200	
SHND69800ANGTH■	800	
SHND69100ANGTH■	1000	
SHND69120ANGTH■	1200	

Current Limiting

Type SCND6-A

Red Label

3-Pole, 600V AC		
Catalog Number	Max Current Rating	
SCND69800AH■	800	
SCND69100AH■	1000	
SCND69120AH■	1200	
SCND69800AGH■	800	
SCND69100AGH■	1000	
SCND69120AGH■	1200	
SCND69800ANTH■	800	
SCND69100ANTH■	1000	
SCND69120ANTH■	1200	
SCND69800ANGTH■	800	
SCND69100ANGTH■	1000	
SCND69120ANGTH■	1200	

Trip Unit Adjustable Functions

Suffix Letter Code	Trip Type	Cont Current Setting	Long Time Delay	Instan- taneous Setting	Short Time Pick Up	Short Time Delay	Short Time I ² t Pick Up	Ground Fault Pick Up	Ground Fault Delay
Α	LI	\checkmark	√	√					
AG	LIG	√	√	√				√	\checkmark
ANT	LSI	\checkmark	√	√	√	√	\checkmark		
ANGT	LSIG	√	√	√	√	√	√	√	\checkmark

Interrupting Ratings

Breaker	RMS Symmet	RMS Symmetrical kA UL 489 (File E10848)			
Туре	240V AC	480V AC	600V AC		
SND6	65	50	25		
SHND6	100	65	50		
SCND6	200	100	65		

Neutral Transformers

Ampere Rating	Catalog Number
800	N08SMDA
1000	N10SNDA
1200	N12SNDA

For inches / millimeters conversion, see Application Data section.

For ordering information and terminal connectors, and enclosures, see page 17/83. Note: "G" suffix in catalog number denotes circuit

breaker for 3-phase, 3-wire circuits. For 3-phase, 4-wire, order correct 4th wire (neutral) transformer as separate and additional item.

■ Built to order. Allow 2-3 weeks for delivery.

① Use 2-3TA4P8500 for 3-pole. These kits are rated for 90°C wire. 90°C Cu only cable must be used, and sized per 75°C ampacity.

② SND6, SHND6 and SCND6 circuit breakers are UL

Listed for reverse connection applications.

Ampere Rating	Catalan Number
Rating	Catalog Number
800	N08SMDA
1000	N10SNDA
1200	N12SNDA

Siemens Industry, Inc. Industrial Controls Catalog Product Category: MCCB

17/85

Molded Case Circuit Breaker

Internal Accessories

Selection

Accessories for:

MD/SMD 800A Frame ND/SND 1200A Frame PD/SPD 1600A Frame RD 2000A Frame



Accessory modules can mount in either left hand or right hand poles of all circuit breakers, including solid state. Exception: when mechanical interlock is used. Accessories cannot be mounted in left pole.

Shunt Trip Combinations

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch
AC	DC	Catalog Number	Catalog Number
120		S01MN6	S01MN64A
208		S02MN6▲	-
240		S03MN6	S03MN64A▲
277		S15MN6▲	S15MN64A▲
480		S04MN6▲	S04MN64A▲
600		S06MN6▲	_
	12	S16MN6▲	S16MN64A▲
	24	S07MN6	S07MN64A
	48	S09MN6▲	_
	125	S11MN6	S11MN64A▲
	250	S13MN6▲	S13MN64A▲

Undervoltage Trip Combinations

			1 Undervoltage Trip and	1 Undervoltage Trip and
Control	Voltage	1 Undervoltage Trip	1 Auxiliary Switch	2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number
120		U01MN6	U01MN64A	U01MN64AA
208		U02MN6▲	U02MN64A▲	U02MN64AA▲
240		U03MN6▲	U03MN64A▲	U03MN64AA▲
277		U15MN6▲	U15MN64A▲	U15MN64AA▲
480		U04MN6▲	U04MN64A▲	U04MN64AA▲
600		U06MN6▲	_	_
	24	U07MN6	U07MN64A	U07MN64AA
	48	U09MN6▲	U09MN64A▲	U09MN64AA▲
	125	U11MN6▲	U11MN64A▲	U11MN64AA▲
	250	U13MN6▲	U13MN64A▲	U13MN64AA▲

Auxiliary Switch Combinations

Maximum Voltage		1 Form C	2 Form C
AC	DC	Catalog Number	Catalog Number
480	250	A01MN64	A02MN64
_	12	A01MNDLV▲	A02MNDLV▲

Alarm Switch Combinations

-				
Maximur	n		1 Alarm Switch and	1 Alarm Switch and
Voltage		1 Alarm Switch	1 Auxiliary Switch	2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number
480	250	B00MN64	A01MN64B	A02MN64B

Plug-in Ammeter Display Units

Breaker Type	Description	Catalog Number	
CMD CND CDD	Display Unit	SADU	
SMD, SND, SPD	Remote Mounting Kit	SADURMK18	

PD 1600A Frame Sentron Series

Selection

Type PXD6@ Non-Interchangeable Trip®

3-Pole 600V AC, 250-500V DC^①

Blue Label

Continuous Current	Complete Breaker Assembled (Frame/Trip Unit Only)	Mounting Assembly	Lugs (6 required)
Rating @ 40°C	Catalog Number	Catalog Number	Catalog Number
1200	PXD63B120■	MB9301	
1400	PXD63B140■	-or-	TA5P600
1600	PXD63B160	MBR9302	

Type PD6 Interchangeable Trip®

3-Pole 600V AC, 250-500V DC^①

Blue Label

Continuous Current	Complete Breaker Unassembled	Frame Only	Trip Unit Only	Mounting Assembly	Lugs (6 required)
Rating @ 40°C	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1200	PD63B120■		PD63T120■	MB9301	
1400	PD63B140	PD63F160	PD63T140	-or-	TA5P600
1600	PD63B160		PD63T160	MBR9302	

Type HPXD6² Non-Interchangeable Trip³

3-Pole 600V AC, 250-500V DC^①

Blue Label

Continuous Current	Complete Breaker Assembled (Frame/Trip Unit Only)
Rating @ 40°C	Catalog Number
1200	HPXD63B120■
1400	HPXD63B140■
1600	HPXD63B160

Type HPD6 Interchangeable Trip®

3-Pole 600V AC, 250-500V DC^①

Black Label

Continuous	Complete Breaker			Mounting	
Current	Unassembled	Frame Only	Trip Unit Only	Assembly	Lugs (6 required)
Rating @	Catalog	Catalog	Catalog	Catalog	Catalog
40°C	Number	Number	Number	Number	Number
1200	HPD63B120■		PD63T120■	MB9301	
1400	HPD63B140	HPD63F160	PD63T140	-or-	TA5P600
1600	HPD63B160		PD63T160	MBR9302	

Type CPD6 Non-Interchangeable Trip®

Fuseless Current Limiting 3-Pole 600V AC, 250-500V DC^①

Red Label

Continuous Current	Complete Breaker Assembled (Frame/Trip Unit Only)
Rating @ 40°C	Catalog Number
1200	CPD63B120■
1400	CPD63B140■
1600	CPD63B160■

Interrupting Ratings

	UL 489 A IR							
	RMS Symmetrical KA							
Breaker	Volts AC			Volts DC⊕				
Туре	240	480	600	250	500			
PD6, PXD6	65	50	25	30 (2P)	25 (3P)			
HPD6, HPXD6	100	65	50	30 (2P)	50 (3P)			
CPD6	200	100	65	30 (2P)	50 (3P)			

- Built to order, Allow 2–3 weeks for delivery.
- ▲ Built to order Allow 6–8 weeks for delivery
- ①Use two outside poles of a 3-pole circuit breaker for 250V ² When wired as shown on page 17/5, this circuit breaker is
- UL listed and rated for use on 500V DC ungrounded UPS systems only.
- ③ PXD6, HPXD6 and CPD6 type circuit breakers are UL Listed for reverse feed applications. For additional information See Note: A, page 17/101.

Ordering Instructions

Complete Breaker Unassembled with Lugs

Prices of PD6, HPD6, RD6, and HRD6 type breakers include frame, trip, mounting base (MB9301), and both line and load lugs (PD Frame -TA5P600, RD Frame - TC5R600). When ordered by these catalog numbers, the customer will receive the frame, trip, mounting assembly and lugs separately packaged. For applications requiring different mounting base or lugs, order individual items as needed.

Complete Breaker Assembled without Lugs

Prices of PXD6, HPXD6, RXD6, HRXD6 and CPD6 type breakers include frame with non-interchangeable trip unit installed only. Order required mounting base and lugs separately.

100% Rated (3-Pole only)

Types PXD6, HPXD6 breakers are available with 100% ratings. To order add suffix "H" to catalog number, and 10% to list price. 100% PD breakers require 90° C cable sized at 75° C ampacity and TC5R600 lugs. RD 2000A Frames not available with 100% ratings.

50°C Applications see page 17/104. 400HZ Applications see page 17/104.

Lugs (6 required per breaker)⁽⁴⁾

Catalog Number	No of Cables per Connector	Wire Range
TA5P600	1-5	300-600 kcmil Cu/Al
TC5R600	1-5	300-600 kcmil Cu only
TA4P750▲	1-4	500-750 kcmil Cu/Al
TA6R600	1-6	300-600 kcmil Cu/Al

© HACR rated.

Note: PD frame qualified to UL489 supplement B "NAVAL". See page 17/104 for additional information.

Siemens Industry, Inc. Industrial Controls Catalog

17/87

SPD 1600A Frame Digital Solid State Sentron Sensitrip III Series

Selection/Dimensions

Ordering Information

Pricing information for all Digital Sentron Series PD frame unit is for breaker only. Price required mounting block assembly and necessary terminal connectors as separate items.

SPD6 and SHPD6 are acceptable for reverse connection applications.

Type SPD6

Blue Label

3-Pole, 600V AC				
Catalog Number	Max Current Rating			
SPD69140■	1400			
SPD69160■	1600			
SPD69140G■	1400			
SPD69160G■	1600			
SPD69140NT■	1400			
SPD69160NT■	1600			
SPD69140NGT■	1400			
SPD69160NGT■	1600			

Cont

Current

Setting

Long

Time

Delay

Type SHPD6

Black Label

3-Pole, 600V AC				
Catalog Number	Max Current Rating			
SHPD69140■	1400			
SHPD69160■	1600			
SHPD69140G■	1400			
SHPD69160G■	1600			
SHPD69140NT■	1400			
SHPD69160NT■	1600			
SHPD69140NGT■	1400			
SHPD69160NGT■	1600			

Short

Time

Pick Up

Lugs¹

Catalog Number	No. of Cables per Connector	Wire Range
TA5P600	1–5 pcs.	300–600 kcmil Cu/Al
TC5R600	1–5 pcs.	300–600 kcmil Cu Only
TA6R600	1–6 pcs.	300–600 kcmil Cu/Al

Neutral Transformers

Ampere Rating	Catalog Number
1400	N14SPD
1600	N16SPD

Enclosure

Ground

Fault

Delay

Ground

Pick Up

Fault

Туре	Catalog Number
1	PRD6N1

LSIG Interrupting Ratings

Trip

Type

LI

LIG

LSI

Suffix

Letter

Code

None

G

NT

NGT

Breaker	RMS Symmetrical kA UL 489		
Type	240V AC	480V AC	600V AC
SPD6	65	50	25
SHPD6	100	65	50

Short

Time

Pick Up

Instan-

taneous

Setting

Short

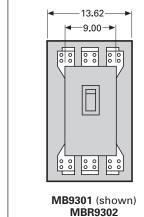
Time

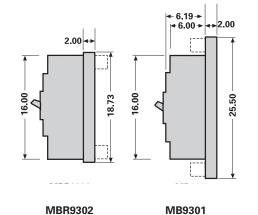
Delay

Mounting Block (Required)²

Catalog Number	
MB9301	
MBR9302	
MBR9302	

All PD, RD Frames:









MBR9302

For inches / millimeters conversion, see Application Data section.

- Built to order Allow 2–3 weeks for delivery
- ①For additional information, see Note: A, page 17/101. ©The PD frame circuit breaker requires the use of a connect-all mounting assembly to allow for placing into service.

Note: "G" suffix in catalog number denotes circuit breaker for 3-phase, 3-wire circuits. For 3-phase, 4-wire, order correct 4th wire (neutral) transformer as separate and additional item.

RD 2000A Frame Sentron Series

Selection

Type RXD6⁴

3-Pole 600V AC, 250-500V DC^①

Blue Label

Non-Interchangeable Trip (Assembled Circuit Breaker Only Without Lugs)				
Continuous Complete Breaker Assembled (Frame/Trip Unit Only) Mounting Assem		Mounting Assembly	Lugs (6 required)	
Rating @ 40°C	Catalog Number	Catalog Number	Catalog Number	
1600	RXD63B160	MB9301		
1800	RXD63B180	-or-	TC5R600	
2000	RXD63B200	MBR9302		

Type RD6⁴

3-Pole 600V AC, 250-500V DC^①

Blue Label

Interchan	Interchangeable Trip (Unassembled Circuit Breaker with Lugs)					
Continuous Current	Complete Breaker Unassembled	Frame Only	Trip Unit Only	Mounting Assembly	Lugs (6 required)	
Rating @ 40°C	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
1600	RD63B160■		RD63T160■	MB9301		
1800	RD63B180	RD63F200	RD63T180	-or-	TC5R600	
2000	RD63B200		RD63T200	MBR9302		

Type HRXD6@

Black Label

Continuous Current	Complete Breaker Assembled (Frame/Trip Unit Only)		
Rating @ 40°C	Catalog Number		
1600	HRXD63B160■		
1800	HRXD63B180■		
2000	HRXD63B200		

Type HRD6⁴

Black	Lahel
Diack	Label

Continuous Current	Complete Breaker Unassembled	Frame Only	Trip Unit Only	Mounting Assembly	Lugs (6 required)
Rating @ 40°C	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1600	HRD63B160■		RD63T160■	MB9301	
1800	HRD63B180	HRD63F200	RD63T180	-or-	TC5R600
2000	HRD63B200		RD63T200	MBR9302	

Interrupting Ratings

	,	J -			
	UL 489 A IR				
	RMS Symmetrical KA				
Breaker Volts AC V		Volts DC	(1)		
Туре	240	480	600	250	500
RD6, RXD6	65	50	25	30 (2P)	25 (3P)
HRD6, HRXD6	100	65	50	30 (2P)	50 (3P)

Instantaneous Adjustment Trip Range (PD / RD Frames)

	Nominal Instantaneous Values							
Breaker Ampere Rating	±20% Tolerance Low	2	3	4	5	6	7	<u>+</u> 20% Tolerance High
1200-2000	5000	5715	6430	7145	7860	8575	9790	10,000

When wired as shown on page 17/5, this circuit breaker is UL listed and rated for use on 500V DC ungrounded UPS systems only.

G G G G G

Mounting Block®

Catalog Number	Connection Points
MB9301	Front
MBR9302	Rear

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.)			
PXD6, HPXD6 Assembled B	6, RXD6, HRXD6, reakers	CPD6			
3	1	61.5			
PD6, HPD6, RD6, HRD6 Frame Only					
3	1	55.0			
PD6, RD6 Trip Unit Only					
3	1	6.5			
Mounting Assembly					
MB9301	1	53.0			
MBR9302	1	50.9			

Lugs (6 required per breaker)⁽⁵⁾

	No of Cables per Connector	Wire Range
TC5R600	1-5	300-600 kcmil Cu only
TA6R600	1-6	300-600 kcmil Cu/Al

■ Built to order. Allow 2–3 weeks for delivery.

▲ Built to order. Allow 6–8 weeks for delivery.

• Use two outside poles of a 3-pole circuit breaker for 250V DC applications. For additional information See Note: A, page 17/101
Note: RD frame qualified to UL489 supplement B "NAVAL".
See page 17/104 for additional information.

© For required mounting base (MB9301 or MBR9302) see page 17/88.

[®] RXD6 and HRXD6 type circuit breakers are UL Listed for reverse feed applications.

Internal Accessories

Selection/Dimensions

Accessories for:

MD/SMD 800A Frame ND/SND 1200A Frame PD/SPD 1600A Frame RD 2000A Frame



Accessory modules can mount in either left hand or right hand poles of all circuit breakers, including solid state. Exception: when mechanical interlock is used. Accessories cannot be mounted in left pole.

Sensitrip Ammeter



The Ammeter Display Units plug into the Sensitrip Trip Unit and displays the phase current flowing in the breaker. They are powered by the breaker's CT's with replaceable battery back-up for maintaining trip and max logs.

The SADU reads currents, current imbalance, current demand, and trip status.

Ammeter Mounting Kit

The Ammeter may also be panel or door mounted using the SADURMK18 remote mounting kit.

Shunt Trip Combinations

Control Voltage		1 Shunt Trip	1 Shunt Trip and 1 Auxiliary Switch
AC	DC	Catalog Number	Catalog Number
120		S01MN6	S01MN64A
208		S02MN6▲	—
240		S03MN6	S03MN64A▲
277		S15MN6▲	S15MN64A▲
480		S04MN6▲	S04MN64A▲
600		S06MN6▲	_
	12	S16MN6▲	S16MN64A▲
	24	S07MN6	S07MN64A
	48	S09MN6▲	—
	125	S11MN6	S11MN64A▲
	250	S13MN6▲	S13MN64A▲

Undervoltage Trip Combinations

			1 Undervoltage Trip and	1 Undervoltage Trip and
Control	Voltage	1 Undervoltage Trip	1 Auxiliary Switch	2 Auxiliary Switches
AC	DC	Catalog Number	Catalog Number	Catalog Number
120		U01MN6	U01MN64A	U01MN64AA
208		U02MN6▲	U02MN64A▲	U02MN64AA▲
240		U03MN6▲	U03MN64A▲	U03MN64AA▲
277		U15MN6▲	U15MN64A▲	U15MN64AA▲
480		U04MN6▲	U04MN64A▲	U04MN64AA▲
600		U06MN6▲	_	_
	24	U07MN6	U07MN64A	U07MN64AA
	48	U09MN6▲	U09MN64A▲	U09MN64AA▲
	125	U11MN6▲	U11MN64A▲	U11MN64AA▲
	250	U13MN6▲	U13MN64A▲	U13MN64AA▲

Auxiliary Switch Combinations

Maximur Voltage	n	1 Form C	2 Form C
AC	DC	Catalog Number	Catalog Number
480	250	A01MN64	A02MN64
_	12	A01MNDLV▲	A02MNDLV▲

Alarm Switch Combinations

Maximum Voltage		1 Alarm Switch	1 Alarm Switch and 1 Auxiliary Switch	1 Alarm Switch and 2 Auxiliary Switches		
AC	DC Catalog Number		Catalog Number	Catalog Number		
480	250	B00MN64	A01MN64B	A02MN64B		

Plug-in Ammeter Display Units

Breaker Type	Description	Catalog Number			
CMD CND CDD	Display Unit	SADU			
SMD, SND, SPD	Remote Mounting Kit	SADURMK18			

Magnetic Trip Only — ETI Motor Circuit Protector

Selection

		Instantaneous Tri	p Range ^②	Complete Circuit Breaker	r Without Lugs [®]
Breaker Type	Ampere Rating	Minimum [®]	Maximum ³	Catalog Number 2-Pole	Catalog Number 3-Pole
HEM	3 7 15 30 50 70 100 SHIPPING:	9 21 45 90 150 210 300	33 77 165 330 550 770 1100		HEM3M003L HEM3M007L HEM3M015L HEM3M030L HEM3M050L HEM3M070L HEM3M100L 3.7 lbs. each
ED6-A 600V AC 250V DC	1 2 3 5 10 25 30 40 50 100 125 SHIPPING:	2.6 7 10 16 30 55 80 115 180 315 500	9 22 35 54 100 180 270 375 600 1000 1250		ED63A001 ED63A002 ED63A003 ED63A005 ED63A010 ED63A025 ED63A030 ED63A040 ED63A050 ED63A050 ED63A100 ED63A125
CED6-A 600V AC 250V DC	1 2 3 5 10 25 30 40 50 100 125 SHIPPING:	2.6 7 10 16 30 55 80 115 180 315 500	9 22 35 54 100 180 270 375 600 1000		CED63A001■ CED63A002■ CED63A003■ CED63A005■ CED63A010■ CED63A025■ CED63A030■ CED63A050■ CED63A050■ CED63A050■ CED63A1050■ CED63A125■ 6 lbs. each
FXD6 ⁴ 600V AC 250V DC	150 150 150 250	400 800 1100 1100	800 1500 2500 2500	= =	FXD63L150■ FXD63A150 FXD63H150 FXD63A250
CFD64 600V AC 250V DC	SHIPPING: 150 150 150 250	400 800 1100 1100	800 1500 2500 2500	= = = = = = = = = = = = = = = = = = = =	9 lbs. each CFD63L150 CFD63A150 CFD63H150 CFD63A250
JXD6(A) ^①	SHIPPING: 400 400	1250 2000	2500 4000	12 lbs. each — JXD62H400■	12 lbs. each JXD63L400 JXD63H400
250V DC CJD6①	SHIPPING: 400 400	1250 2000	2500 4000	16 lbs. each — —	20 lbs. each CJD63L400 CJD63H400 CJD63H400
600V AC 250V DC LXD6(A) ① 600V AC	SHIPPING: 600 600	2000 3000	4000 6000	29.5 lbs. each LXD62L600 —	31.5 lbs. each LXD63L600 LXD63H600
250V DC CLD6 ① 600V AC 250V DC	SHIPPING: 600 600 SHIPPING:	2000 3000	4000 6000	16 lbs. each — —	20 lbs. each CLD63L600 CLD63H600 31.5 lbs. each
LMXD6 ⁽⁴⁾ 600V AC 250V DC	800 800 SHIPPING:	2800 3200	6000 8000	=	LMXD63L800■ LMXD63A800 35 lbs. each
MXD6 600V AC 250V DC	800 800 800 SHIPPING:	3000 4000 5000	6000 8000 10000	= =	MXD63L800■ MXD63A800■ MXD63H800 33 lbs. each
CMD6@ 600V AC 250V DC	800 800 800 SHIPPING:	3000 4000 5000	6000 8000 10000	=	CMD63L800■ CMD63A800■ CMD63H800■ 80 lbs. each

Important Information

ETI interrupting ratings are determined through combination tests with properly sized overload relays and contactors.

■ Built to order. Allow 2–3 weeks for delivery. ① 2-pole available in 3-pole width only.

Lug Information pages 17/101 to 17/103 Accessories pages 17/108 to 17/113 Application data pages 17/92 to 17/93

Product Category: MCCB

17/91

Siemens Industry, Inc. Industrial Controls Catalog

[©] Connectors included when ordering by circuit breaker catalog number for HEM, ED and CED6 ETIs. Order ETI circuit breaker and lugs (2 per pole) separately for the FXD6, CFD6, MXD6, CMD6, JXD6, CJD6, LXD6 and CLD6 ETI's.

 $[\]ensuremath{\texttt{2}}$ When applied on DC Circuits — Trip levels will increase approximately +15 to 20%.

③ Tolerance -20%/+30% for lowest setting. All other set-

tings are -20%/+20%

For 2-pole application use outside poles of 3-pole circuit breaker.

Motor Circuits

Application

General

Protection of Motor Circuits

Molded case circuit breakers are used in motor circuits as a disconnecting means and for short-circuit protection. They should be used in conjunction with motor-running, over-current-protection devices, and should permit the motor to start without nuisance tripping from motor-inrush current. The circuit breaker should have a continuous-current rating of not less than 115% of the motor full-load current.

The recommended motor circuit protectors (Siemens ETI instantaneous only circuit breakers) listed have

continuous-current ratings of at least 115% of motor full-load currents. The trip-setting positions are approximately 11 times motor full-load currents. The suggested trip settings may have to be adjusted upward to no higher than 1300% of full-load current for non-design E type motors, and no greater than 1700% of full load current for design E motors, to allow for motor start-up due to inrush currents.

Breaker Mounted Immediately Ahead of Motor Starter

Siemens ETI motor circuit protectors are recommended for use in combination motor starters to provide selective short-circuit protection for the motor

branch circuit. The adjustable instantaneous-trip feature of the Siemens ETI motor circuit protector provides for a trip setting slightly above the peak motor-inrush current. With this setting, no delay is introduced in opening the circuit when a fault occurs. This circuit breaker has no time-delay trip element. Therefore it must be used in conjunction with, and immediately ahead of, the motor-running overcurrent protective device

Important: The information below does not apply to all motor applications: it is recommended that the user refer to the National Electrical Code (NEC) for specific needs.

Table 1 (When Breaker is Mounted Immediately Ahead of Motor Starter)

3-Phase Induction Type Motors (Siemens ETI motor circuit protectors for branch circuit use with alternating-current combination, full voltage motor starters).

ETI Trip Setting

Motor		ETI Trip	Setting
Full Load	Catalog	Adjust-	Amperes
Amperes	Number	ment	
0.69 - 0.91	HEM3M003L	A (min)	9
1.1 - 1.3		B	15
1.6 - 1.7		C	21
2.0 - 2.2		D	27
2.3 - 2.5		E	30
2.6 - 2.8		F (max)	33
1.5 - 2.0	HEM3M007L	A (min)	21
2.6 - 3.1		B	35
3.7 - 3.9		C	49
4.8 - 5.2		D	63
5.3 - 5.7		E	70
5.8 - 6.1		F (max)	77
3.4 - 4.5	HEM3M015L	A (min)	45
5.7 - 6.8		B	75
8.0 - 9.1		C	100
10.4 - 11.4		D	135
11.5 - 12.6		E	150
12.7 - 13.0		F (max)	165
3.9 - 9.1	HEM3M030L	A (min)	90
11.5 - 13.7		B	150
16.1 - 18.3		C	210
20.7 - 22.9		D	270
23.0 - 25.2		E	300
25.3 - 26.1		F (max)	330
11.5 - 15.2	HEM3M050L	A (min)	150
19.2 - 22.9		B	250
26.9 - 30.6		C	350
34.6 - 38.3		D	450
38.4 - 42.1		E	500
42.2 - 43.5		F (max)	550
16.1 - 30.6	HEM3M070L	A (min)	210
26.9 - 32.2		B	350
37.6 - 42.9		C	490
48.4 - 53.7		D	630
53.8 - 59.1		E	700
59.2 - 60.9		F (max)	770
23.0 - 30.9	HEM3M100L	A (min)	300
38.4 - 46.0		B	500
53.8 - 61.4		C	700
69.2 - 76.8		D	900
76.9 - 84.5		E	1000
84.6 - 87.0		F (max)	1100
.2033 .3445 .4656 .5768 .6981	ED63A001 CED63A001	Low 2 3 4 High	2.6 4.5 6 7.5 9
.5383 .84 - 1.14 1.15 - 1.45 1.46 - 1.68 1.69 - 2.00	ED63A002 CED63A002	Low 2 3 4 High	7 11 15 19 22
.76 - 1.29 1.30 - 1.75 1.76 - 2.29 2.30 - 2.68 2.69 - 3.18	ED63A003 CED63A003	Low 2 3 4 High	10 17 23 30 35

		p	octung
Motor Full Load Amperes	Catalog Number	Adjust- ment	Amperes
1.23 - 1.99 2.00 - 2.75 2.76 - 3.52 3.53 - 4.14 4.15 - 4.90	ED63A005 CED63A005	Low 2 3 4 High	16 26 36 46 54
2.30 - 3.83 3.84 - 5.37 5.38 - 6.52 6.53 - 7.68 7.69 - 9.10	ED63A010 CED63A010	Low 2 3 4 High	30 50 70 85 100
4.23 - 6.91 6.92 - 9.61 9.62 - 11.91 11.92 - 13.83 13.84 - 16.40	ED63A025 CED63A025	Low 2 3 4 High	55 90 125 155 180
6.15 - 10.37 10.38 - 14.22 14.23 - 18.06 18.07 - 20.75 20.76 - 24.50	ED63A030 CED63A030	Low 2 3 4 High	80 135 185 235 270
8.84 - 14.22 14.23 - 19.60 19.61 - 24.99 25.00 - 28.83 28.84 - 34.00	ED63A040 CED63A040	Low 2 3 4 High	115 185 255 325 375
13.84 - 23.06 23.07 - 31.52 31.53 - 39.99 40.00 - 46.14 46.15 - 54.50	ED63A050 CED63A050	Low 2 3 4 High	180 300 410 520 600
24.23 - 41.52 41.53 - 56.91 56.92 - 68.45 68.46 - 76.91 76.92 - 90.90	ED63A100 CED63A100	Low 2 3 4 High	315 540 740 890 1000
38.46 - 55.37 55.38 - 70.75 70.76 - 84.60 84.61 - 96.14 96.15 - 113.60	ED63A125 CED63A125	Low 2 3 4 High	500 720 920 1100 1250
30.76 - 35.37 35.38 - 39.99 44.51 - 49.23 53.84 - 58.45 58.46 - 63.06 63.07 - 74.50	FXD63L150 CFD63L150	Low 2 4 6 7 High	400 460 580 700 760 820
61.53 - 69.22 69.23 - 76.91 84.61 - 92.29 100.00 - 108.00 108.00 - 115.00 115.00 - 136.00	FXD63A150 CFD63A150	Low 2 4 6 7 High	800 900 1100 1300 1400 1500
85.00 - 100.00 100.00 - 115.00 131.00 - 146.00 162.00 - 177.00 177.00 - 192.00 192.00 - 227.00	FXD63A250 CFD63A250	Low 2 4 6 7 High	1100 1300 1700 2100 2300 2500

		ETI Trip	Setting
Motor Full Load Amperes	Catalog Number	Adjust- ment	Amperes
95.00 - 110.00 110.00 - 124.00 138.00 - 151.00 165.00 - 178.00 178.00 - 192.00 192.00 - 227.00	JXD63L400 CJD63L400	Low 2 4 6 7 High	1250 1430 1790 2140 2320 2500
154.00 - 176.00 176.00 - 198.00 220.00 - 242.00 264.00 - 285.00 285.00 - 308.00 308.00 - 326.00	JXD63H400 CJD63H400	Low 2 4 6 7 High	2000 2290 2860 3430 3710 4000
155.00 - 176.00 176.00 - 198.00 220.00 - 242.00 264.00 - 285.00 285.00 - 308.00 308.00 - 326.00	LXD63L600 CLD63L600	Low 2 4 6 7 High	2000 2290 2860 3430 3710 4000
231.00 - 264.00 264.00 - 292.00 330.00 - 362.00 395.00 - 428.00 428.99 - 462.00 462.00 - 490.00	LXD63H600 CLD63H600	Low 2 4 6 7 High	3000 3430 4290 5140 5570 6000
215.00 - 238.00 238.00 - 261.00 261.00 - 284.00 308.00 - 369.00 423.00 - 462.00 462.00 - 490.00	LMXD63L800	Low 2 3 5 6 7 High	2800 3100 3400 4000 4800 5500 6000
246.00 - 269.00 269.00 - 284.00 284.00 - 323.00 362.00 - 492.00 492.00 - 562.00 562.00 - 616.00 616.00 - 660.00	LMXD63A800	Low 2 3 5 6 7 High	3200 3500 3700 4700 6400 7300 8000
231.00 - 264.00 264.00 - 292.00 292.00 - 330.00 362.00 - 395.00 428.00 - 462.00 462.00 - 490.00	MXD63L800 CMD63L800	Low 2 3 5 7 High	3000 3430 3800 4710 5570 6000
308.00 - 352.00 352.00 - 442.00 442.00 - 447.00 483.00 - 527.00 571.00 - 616.00 616.00 - 660.00	MXD63A800 CMD63A800	Low 2 3 5 7 High	4000 4570 5740 6280 7240 8000
385.00 - 440.00 495.00 - 550.00 605.00 - 660.00 660.00 - 695.00	MXD63H800 CMD63H800	Low 3 5 6	5000 6430 7860 8575

Note: Lowest instantaneous settings have a -20%/+30% tolerance and all other settings have a -20%/+20% tolerance.

Motor Circuits

Application

Breaker Mounted at a Distance From Motor Starter

ET thermal-magnetic circuit breakers conform to the National Electrical Code table 430-152 requirements for motor branch and feeder circuit protection when properly applied in conjunction with motor-running overcurrent protective devices. The recommended

circuit-breaker ratings in Table 2 provide adequate time delay for starting the majority of three phase induction motors.

To determine the ampere ratings of the ET breaker to protect a motor feeder, add the rating of the ET breaker used to protect the largest motor branch circuit in the group to the full-load currents of the remaining motors in the group.

Interrupt Ratings

For normal commercial purposes, available fault current can conveniently be obtained in the Interrupting Selector Tables.

Table 2 (When Breaker is Mounted at a Distance From Motor Starter)

3-Phase Induction Type Motors (EQ and ET circuit breakers (thermal-magnetic trip) for branch breaker use with alternating-current combination motor starters).

	200 and 2	08V Motors		230V Mo	tors		460V Motor	rs		575V Moto	rs		
Motor Horse-	240V Circ	uit Breaker Data	1 ^①	240V Circ	uit Breaker Dat	a ^①	480V Circui	t Breaker Data	0	600V Circuit Breaker Data ^①			
power Rating	Breaker Type	Catalog Number	Ampere Rating	Breaker Type	Catalog Number			ker Catalog Number		Breaker Type	Catalog Number	Ampere Rating	
½ ¾ 1 1½ 2 3	BQ [®]	BQ3B015 BQ3B015 BQ3B015 BQ3B015 BQ3B020 BQ3B030	15 15 15 15 20 30	BQ®	BQ3B015 BQ3B015 BQ3B015 BQ3B015 BQ3B015 BQ3B020	15 15 15 15 15 20	ED4	ED43B015 ED43B015 ED43B015 ED43B015 ED43B015 ED43B015	15 15 15 15 15 15	ED6	ED63B015 ED63B015 ED63B015 ED63B015 ED63B015 ED63B015	15 15 15 15 15 15	
5 7½ 10 15 20	BQ [©]	BQ3B040 BQ3B060 BQ3B070 BQ3B100	40 60 70 100	BQ [©]	BQ3B030 BQ3B050 BQ3B070 BQ3B090 BQ3B100	30 50 70 90 100	ED4	ED43B015 ED43B030 ED43B030 ED43B040 ED43B050	15 30 30 40 50	ED6	ED63B015 ED63B020 ED63B030 ED63B035 ED63B050	15 20 30 35 50	
25 30 40 50	FXD6	FXD63B125 FXD63B150 FXD63B175 FXD63B200 FXD63B225	125 150 175 200 225	FXD6	FXD63B125 FXD63B150 FXD63B175 FXD63B200	125 150 175 200	FXD6	FXD63B090 FXD63B100 FXD63B125 FXD63B150	90 100 125 150	FXD6	FXD63B060 FXD63B070 FXD63B090 FDX63B100	60 70 90 100	
60	JXD2	JXD23B300	300	_	_	_	FXD6, FD6	FXD63B150	150	FXD6	FXD63B100	100	
75	JXD2	JXD23B400	400	JXD2	JXD23B350	350	FXD6, FD6	FXD63B200	200	FXD6, FD6	FXD63B125	125	
100	JXD2	JXD23B400	400	JXD2	JXD23B400	400	FD6 [®] JD6 [®]	FD63B250 JD63B250	250 250	FXD6, FD6	FD63B175	175	
125	LD6 [®] or LMD6	LD63B600 LMD63B600	600	LD6 [®] or LMD6	LD63B500 or LMD63B500	500	JD6 [®]	JD63B300	300	FXD6, FD6 OR JD6 ³	FXD63B200 JD63B200	200 200	
150	LD6 ³ or LMD6	LD63B600 or LMD63B600	600	LMD6	LD63B600 or LMD63B600	600	JD6 [®]	JD63B300	300	FXD6 or JD6 [®]	FXD63B225 JD63B225	225 225	
200 250	LMD6 —	LMD63B800 —	800	LMD6	LMD63B800	800	JD6 [®] JD6 [®]	JD63B350 JD63B400	350 400	JD6 [®] JD6 [®]	JD63B300 JD63B400	300 400	
300	_	_	_	_	_	_	LD6 [®] or LMD6	LD63B600 or LMD63B600	600	JD6 [®]	JD63B400	400	
350	_	_	_	_	_	_	LMD6	LMD63B700	700	LD6 [®] or LMD6	LD63B500 or LMD63B500	500	
400	_	_	_	_	_	_	LMD6	LMD63B800	800	LD6 [®] or LMD6	LD63B600 or LMD63B600	600	
500	_	_	_	_	_	_	_	_	_	LMD6	LMD63B800	800	

The selection of breakers for this table is in accordance with Article 430, 2005 National Electric Code. Recommended circuit breakers are for full voltage starting, special consideration is necessary for reduced voltage starting.

[@]For panelboard applications, substitute the BL breaker for the BQ, ED2 circuit breakers may also be used.

[®]For non-interchangeable trip applications, substitute the FXD6 for the FD6, the JXD6 for the JD6, or the LXD6 for the LD6.

Adjustable Installments Magnetic Trip Settings

Application

Breaker	Maximum Continuous	Nomir AC Ad		Trip Rar	nge					ETI Motor Circuit Protector Catalog Number	Thermal Mag	
Туре	Amperes	Low	2	3	4	5	6	7	High	3-Pole	2-Pole	3-Pole
	3 7	9 21	15 35	21 49	27 63	30 70	_	_	33 77	HEM3M003L HEM3M007L	_	_
	15	45	75	100	135	150			165	HEM3M015L	_	
HEM	30	90	150	210	270	300	_	_	330	HEM3M030L	l –	l —
	50	150	250	350	450	500	_	_	550	HEM3M050L	—	—
	70 100	210 300	350 500	490 700	630 900	700 1000			770 1100	HEM3M070L HEM3M100L	_	
	1	2.6	4.5	6	7.5	_	_	_	9	ED63A001	_	-
	2	7	11	15	19	-	_	_	22	ED63A002	—	_
	3 5	10 16	17 26	23 36	30 46	-	_	_	35 54	ED63A003 ED63A005	_	-
	10	30	50	70	85				100	ED63A005 ED63A010		
ED6	25	55	90	125	155	_	_	_	180	ED63A025	_	_
	30 40	80 115	135 185	185 255	235 325	_			270 375	ED63A030 ED63A040		
	50	180	300	410	520	_	_	_	600	ED63A050	_	_
	100 125	315 500	540 720	740 920	890 1100	-			1000 1250	ED63A100 ED63A125	=	—
	125	2.6	4.5	6	7.5	_			9	CED63A001■	-	_
	2	7	11	15	19	=			22	CED63A002	=	
	3	10	17	23	30	_	_	_	35	CED63A003■	_	—
	5 10	16 30	26 50	36 70	46 85	_			54 100	CED63A005■ CED63A010■	_	
CED6	25	55	90	125	155	_	_	_	180	CED63A025■	_	l —
	30	80	135	185	235	-	_	_	270	CED63A030■ CED63A040■	—	—
	40 50	115 180	185 300	255 410	325 520	=			375 600	CED63A040	_	
	100	315	540	740	890	_	_	_	1000	CED63A100	_	l —
	125	500	720	920	1100				1250	CED63A125		_
	70 80	600 600	640 640	690 690	730 730	770 770	810 810	850 850	900 900	—	FXD62B070 FXD62B080	FXD63B070 FXD63B080
	90	600	640	690	730	770	810	850	900	=	FXD62B090	FXD63B090
	100	700	770	840	920	990	1060	1140	1200	-	FXD62B100	FXD63B100
	110	700 800	770 900	840	920	990 1200	1060	1140	1200	—	FXD62B110	FXD63B110
	125 150	400	460	1000 520	1100 580	640	1300 700	1400 760	1500 820	FXD63L150	FXD62B125 —	FXD63B125
FXD6-A	150	800	900	1000	1100	1200	1300	1400	1500	FXD63A150	FXD62B150	FXD63B150
	150 175	1100 900	1300 1060	1500 1210	1700 1370	1900 1520	2100 1780	2300 1930	2500 2000	FXD63H150	— FXD62B175	— FXD63B175
	200	900	1060	1210	1370	1520	1780	1930	2000	=	FXD62B175	FXD63B175
	225	1100	1300	1500	1700	1900	2100	2300	2500		FXD62B225	FXD63B225
	250	1100	1300	1500	1700	1900	2100	2300	2500	FXD63A250	FXD62B250	FXD63B250
	70 80	600 600	640 640	690 690	730 730	770 770	810 810	850 850	900 900		FD62B070 FD62B080	FD63B070 FD63B080
	90	600	640	690	730	770	810	850	900	=	FD62B090	FD63B090
	100 110	700 700	770 770	840 840	920 920	990 990	1060 1060	1140 1140	1200 1200	_	FD62B100 FD62B110	FD63B100 FD63B110
FD6-A	125	800	900	1000	1100	1200	1300	1400	1500	-	FD62B125	FD63B110
	150	800	900	1000	1100	1200	1300	1400	1500	—	FD62B150	FD63B150
	175 200	900 900	1060 1060	1210 1210	1370 1370	1520 1520	1780 1780	1930 1930	2000 2000	=	FD62B175 FD62B200	FD63B175 FD63B200
	225	1100	1300	1500	1700	1900	2100	2300	2500	—	FD62B225	FD63B225
	250	1100	1300	1500	1700	1900	2100	2300	2500	_	FD62B250	FD63B250
	70 80	600 600	640 640	690 690	730 730	770 770	810 810	850 850	900 900	=	HFD62B070 HFD62B080	HFD63B070 HFD63B080
	90	600	640	690	730	770	810	850	900	=	HFD62B090	HFD63B090
	100	700	770	840	920	990	1060	1140	1200	—	HFD62B100	HFD63B100
HFD6	110 125	700 800	770 900	840 1000	920 1100	990 1200	1060 1300	1140 1400	1200 1500	=	HFD62B110 HFD62B125	HFD63B110 HFD63B125
111 00	150	800	900	1000	1100	1200	1300	1400	1500	_	HFD62B150	HFD63B150
	175	900	1060	1210	1370	1520	1780	1930	2000	-	HFD62B175	HFD63B175
	200 225	900 1100	1060 1300	1210 1500	1370 1700	1520 1900	1780 2100	1930 2300	2000 2500		HFD62B200 HFD62B225	HFD63B200 HFD63B225
	250	1100	1300	1500	1700	1900	2100	2300	2500	_	HFD62B250	HFD63B250
	70	600	640	690	730	770	810	850	900	_	_	HHFD63B070
	80 90	600 600	640 640	690 690	730 730	770 770	810 810	850 850	900 900		=	HHFD63B080 HHFD63B090
	100	700	770	840	920	990	1060	1140	1200			HHFD63B090
	110	700	770	840	920	990	1060	1140	1200	-	_	HHFD63B110
HHFD6	125 150	800 800	900	1000 1000	1100 1100	1200 1200	1300 1300	1400 1400	1500 1500	_	_	HHFD63B125 HHFD63B150
	175	900	1060	1210	1370	1520	1780	1930	2000	=	=	HHFD63B175
	200	900	1060	1210	1370	1520	1780	1930	2000	—	-	HHFD63B200
	225 250	1100 1100	1300 1300	1500 1500	1700 1700	1900 1900	2100 2100	2300 2300	2500 2500		_	HHFD63B225 HHFD63B250
	70	600	640	690	730	770	810	850	900	_	CFD62B070	CFD63B070
	80	600	640	690	730	770	810	850	900	-	CFD62B080	CFD63B080
	90 100	600 700	640 770	690 840	730 920	770 990	810 1060	850 1140	900	_	CFD62B090 CFD62B100	CFD63B090 CFD63B100
	110	700	770	840	920	990	1060	1140	1200 1200	=	CFD62B100 CFD62B110	CFD63B100 CFD63B110
	125	800	900	1000	1100	1200	1300	1400	1500	-	CFD62B125	CFD63B125
CFD6	150 150	400 800	460 900	520 1000	580 1100	640 1200	700 1300	760 1400	820 1500	CFD63L150 CFD63A150	— CFD62B150	 CFD63B150
				1500	1700	1900	2100	2300	2500	CFD63A150 CFD63H150	— UI DOZD 150	— 01 D03D 130
	150	1100	1300	1500	1700							
	150 175	900	1060	1210	1370	1520	1780	1930	2000	-	CFD62B175	CFD63B175
	150									=	CFD62B175 CFD62B200 CFD62B225	CFD63B175 CFD63B200 CFD63B225

Note: Tolerances for instantaneous trip points meet UL 489 (7.3). Nominal AC instantaneous trip points are given in the tables. For DC instantaneous trip points, add 15% to nominal values.

Instantaneous trip adjustment is made through the breaker cover on all frame breakers. To change instantaneous trip point on circuit breaker, depress indicating knob, then rotate to desired position.

 \blacksquare Built to order. Allow 2–3 weeks for delivery.

Adjustable Instantaneous Magnetic Trip Settings

Application

Breaker	Maximum Continuous	Nomir AC Ad		Trip Rar	nge					ETI Motor Circuit Protector Catalog Number	Thermal Magn Catalog Numb	
Туре	Amperes	Low	2	3	4	5	6	7	High	3-Pole	2-Pole	3-Pole
JXD2(A)	200 225 250 300 350 400	1250 1250 1250 1250 2000 2000	1430 1430 1430 1430 2290 2290	1610 1610 1610 1610 2570 2570	1790 1790 1790 1790 2860 2860	1960 1960 1960 1960 3140 3140	2140 2140 2140 2140 3430 3430	2320 2320 2320 2320 2320 3710 3710	2500 2500 2500 2500 4000 4000	_ _ _ _	JXD22B200 JXD22B225 JXD22B250 JXD22B300 JXD22B350 JXD22B400	JXD23B200 JXD23B225 JXD23B250 JXD23B300 JXD23B350 JXD23B400
JXD6(A)	200 225 250 300 350 400	1250 1250 1250 1250 1250 2000	1430 1430 1430 1430 2290 2290	1610 1610 1610 1610 2570 2570	1790 1790 1790 1790 2860 2860	1960 1960 1960 1960 3140 3140	2140 2140 2140 2140 3430 3430	2320 2320 2320 2320 2320 3710 3710	2500 2500 2500 2500 4000 4000	_ _ _ _	JXD62B200 JXD62B225 JXD62B250 JXD62B300 JXD62B350 JXD62B400	JXD63B200 JXD63B225 JXD63B250 JXD62B300 JXD23B350 JXD23B400
JD6(A)	200 225 250 300 350 400 400	1250 1250 1250 1250 2000 1250 2000	1430 1430 1430 1430 2290 1430 2290	1610 1610 1610 1610 2570 1610 2570	1790 1790 1790 1790 2860 1790 2860	1960 1960 1960 1960 3140 1960 3140	2140 2140 2140 2140 3430 2140 3430	2320 2320 2320 2320 3710 2320 3710	2500 2500 2500 2500 4000 2500 4000		JD62B200 JD62B225 JD62B250 JD62B300 JD62B350 — JD62B400	JD63B200 JD63B225 JD63B250 JD63B300 JD63B350 — JD63B400
HJD6(A)	200 225 250 300 350 400	1250 1250 1250 1250 1250 2000 2000	1430 1430 1430 1430 2290 2290	1610 1610 1610 1610 2570 2570	1790 1790 1790 1790 1790 2860 2860	1960 1960 1960 1960 3140 3140	2140 2140 2140 2140 2140 3430 3430	2320 2320 2320 2320 2320 3710 3710	2500 2500 2500 2500 2500 4000 4000		HJD62B200 HJD62B225 HJD62B250 HJD62B300 HJD62B350 HJD62H400	HJD63B200 HJD63B225 HJD63H250 HJD63B300 HJD63B350 HJD63B400
HHJD6	200 225 250 300 350 400	1250 1250 1250 1250 2000 2000	1430 1430 1430 1430 2290 2290	1610 1610 1610 1610 2570 2570	1790 1790 1790 1790 2860 2860	1960 1960 1960 1960 3140 3140	2140 2140 2140 2140 3430 3430	2320 2320 2320 2320 2320 3710 3710	2500 2500 2500 2500 4000 4000		HHJD62B200 HHJD62B225 HHJD62B250 HHJD62B300 HHJD62B350 HHJD62B400	HHJD63B200 HHJD63B225 HHJD63B250 HHJD63B300 HHJD63B350 HHJD63B400
CJD6	200 225 250 300 350 400	1250 1250 1250 1250 2000 2000 1250	1430 1430 1430 1430 2290 2290 1450	1610 1610 1610 1610 2570 2570 1610	1790 1790 1790 1790 2860 2860 1790	1960 1960 1960 1960 3140 3140 1960	2140 2140 2140 2140 3430 3430 2140	2320 2320 2320 2320 3710 3710 2320	2500 2500 2500 2500 4000 4000 2500			CJD63B200 CJD63B225 CJD63B250 CJD63B300 CJD63B350 CJD63B400
LXD6(A)	450 500 600	2000 3000 3000	2290 3430 3430	2570 3860 3860	2860 4290 4290	3140 4710 4710	3430 5140 5140	3710 5570 5570	4000 6000 6000		LXD62B450 LXD62B500 LXD62B600	LXD63B450 LXD63B500 LXD63B600
LD6(A)	250 300 350 400 450 500 600	1250 1250 2000 2000 2000 3000 2000 3000	1430 1430 2290 2290 2290 3430 2290 3430	1610 1610 2570 2570 2570 3800 2570 3800	1790 1790 2860 2860 2860 4290 2860 4290	1960 1960 3140 3140 3140 4710 3140 4710	2140 2140 3430 3430 3430 5140 3430 5140	2320 2320 3710 3710 3710 5570 3710 5570	2500 2500 4000 4000 4000 6000 4000 6000		LD62B250 LD62B300 LD62B350 LD62B400 LD62B450 LD62B500 — LD62B600	LD63B250 LD63B300 LD63B350 LD63B400 LD63B450 LD63B500 — LD63B600
HLD6(A)	250 300 350 400 450 500 600	1250 1250 2000 2000 2000 3000 3000	1430 1430 2290 2290 2290 3430 3430	1610 1610 2570 2570 2570 2570 3860 3860	1790 1790 2860 2860 2860 4290 4290	1960 1960 3140 3140 3140 4710 4710	2140 2140 3430 3430 3430 5140 5140	2320 2320 3710 3710 3710 5570 5570	2500 2500 4000 4000 4000 6000 6000		HLD62B250 HLD62B300 HLD62B350 HLD62B400 HLD62B450 HLD62B500 HLD62B600	HLD63B250 HLD63B300 HLD63B350 HLD63B400 HLD63B450 HLD63B500 HLD63B600
HHLD6	250 300 350 400 450 500 600	1250 1250 2000 2000 2000 3000 3000	1430 1430 2290 2290 2290 3430 3430	1610 1610 2570 2570 2570 2570 3860 3860	1790 1790 2860 2860 2860 4290 4290	1960 1960 3140 3140 3140 4710 4710	2140 2140 3430 3430 3430 5140 5140	2320 2320 3710 3710 3710 5570 5570	2500 2500 4000 4000 4000 6000 6000	_ _ _ _ _	HHLD62B250 HHLD62B300 HHLD62B350 HHLD62B400 HHLD62B450 HHLD62B500 HHLD62B600	HHLD63B250 HHLD63B300 HHLD63B350 HHLD63B400 HHLD63B500 HHLD63B500 HHLD63B600
CLD6	250 300 350 400 450 500 600 600	1250 1250 2000 2000 2000 3000 2000 3000	1430 1430 2290 2290 2290 3430 2290 3430	1610 1610 2570 2570 2570 3860 2570 3860	1790 1790 2860 2860 2860 4290 2860 4290	1960 1960 3140 3140 3140 4710 3140 4710	2140 2140 3430 3430 3430 5140 3430 5140	2320 2320 3710 3710 3710 5570 3710 5570	2500 2500 4000 4000 4000 6000 4000 6000		_ _ _ _ _ _	CJD63B250 CJD63B300 CJD63B350 CJD63B400 CLD63B450 CLD63B500 — CLD63B600
LMXD6	500 600 700 800 800	3000 3000 3200 2800 3200	3430 3430 3500 3100 3500	3860 3860 3700 3400 3700	4290 4290 4200 3700 4200	4710 4710 4700 4000 4700	5140 5140 6400 4800 6400	5570 5570 7300 5500 7300	6000 6000 8000 6000 8000	LMXD63L800 LMXD63A800		LMXD63B500 LMXD63B600 LMXD63B700 — LMXD63B800
LMD6	500 600 700 800	3000 3000 3200 3200	3430 3430 3500 3500	3860 3860 3700 3700	4290 4290 4200 4200	4710 4710 4700 4700	5140 5140 6400 6400	5570 5570 7300 7300	6000 6000 8000 8000		LMD62B500 LMD62B600 LMD62B700 LMD62B800	LMD63B500 LMD63B600 LMD63B700 LMD63B800

Adjustable Instantaneous Magnetic Trip Settings

Application

Breaker	Maximum Continuous	Nomin AC Ad		Trip Ran	ge					ETI Motor Circuit Protector Catalog Number	Thermal Magno	
Туре	Amperes	Low	2	3	4	5	6	7	High	3-Pole	2-Pole	3-Pole
HLMXD6	500 600 700 800	3000 3000 3200 3200	3430 3430 3500 3500	3860 3860 3700 3700	4290 4290 4200 4200	4710 4710 4700 4700	5140 5140 6400 6400	5570 5570 7300 7300	6000 6000 8000 8000	_ _ _		HLMXD63B500 HLMXD63B600 HLMXD63B700 HLMXD63B800
HLMD6	500 600 700 800	3000 3000 3200 3200	3430 3430 3500 3500	3860 3860 3700 3700	4290 4290 4200 4200	4710 4710 4700 4700	5140 5140 6400 6400	5570 5570 7300 7300	6000 6000 8000 8000		HLMD62B500 HLMD62B600 HLMD62B700 HLMD62B800	HLMD63B500 HLMD63B600 HLMD63B700 HLMD63B800
MD6	500 600 700 800 800	3000 3000 4000 3000 4000	3430 3430 4570 3430 4570	3860 3860 5140 3860 5140	4290 4290 5710 4280 5710	4710 4710 6280 4710 6280	5140 5140 6850 5140 6850	5570 5570 7420 5570 7420	6000 6000 8000 6000 8000	— — — MXD63L800 MXD63A800	MD62B500 MD62B600 MD62B700 — MD62B800	MD63B500 MD63B600 MD63B700 — MD63B800
MXD6	500 600 700 800 800 800	3000 3000 4000 3000 4000	5715 3430 3430 4570 3430 4570	3860 3860 5140 3860 5140	7145 4280 4280 5710 4280 5710	7860 4710 4710 6280 4710 6280	8575 5140 5140 6850 5140 6850	9290 5570 5570 7420 5570 7420 9290	6000 6000 8000 6000 8000	MXD63H800	MXD62B500 MXD62B600 MXD62B700 MXD62B800	MXD63B500 MXD63B600 MXD63B700 MXD63B800
HMD6	500 600 700 800	3000 3000 4000 4000	3430 3430 4570 4570	3860 3860 5140 5140	7145 4280 4280 5710 5710	7860 4710 4710 6280 6280	8575 5140 5140 6850 6850	5570 5570 7420 7420	6000 6000 8000 8000	MAD63F1600	HMD62B500 HMD62B500 HMD62B700 HMD62B800	HMD63B500 HMD63B600 HMD63B700 HMD63B800
HMXD6	500 600 700 800	3000 3000 4000 4000	3430 3430 4570 4570	3860 3860 5140 5140	4280 4280 5710 5710	4710 4710 6280 6280	5140 5140 6850 6850	5570 5570 7420 7420	6000 6000 8000 8000		_ _ _	HMXD63B500 HMXD63B600 HMXD63B700 HMXD63B800
CMD6	400 500 600 700 800 800	3000 3000 3000 4000 3000 4000	3430 3430 3430 4570 3430 4570	3860 3860 3860 5140 3860 5140	4280 4280 4280 5710 4280 5710	4710 4710 4710 6280 4710 6280	5140 5140 5140 6850 5140 6850	5570 5570 5570 7420 5570 7420	6000 6000 6000 8000 6000 8000		_ _ _ _	CMD63B600 CMD63B700 CMD63B800
ND6	800 800 900 1000 1200	5000 4000 5000 5000 5000	5715 4570 5715 5715 5715	5140 6430 6430 6430 6430	7145 5710 7145 7145 7145	7860 6280 7860 7860 7860	8575 6850 8575 8575 8575	9290 7420 9290 9290 9290	8000 10000 10000 10000	CMD63H800	MD62B800 ND62B900 ND62B100 ND62B120	MD63B800 ND63B900 ND63B100 ND63B120
NXD6	900 1000 1200	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000	=	NXD62B900 NXD62B100 NXD62B120	NXD63B900 NXD63B100 NXD63B120
HND6	800 900 1000 1200	4000 5000 5000 5000	4570 5715 5715 5715	5140 6430 6430 6430	5710 7145 7145 7145	6280 7860 7860 7860	6850 8575 8575 8575	7420 9290 9290 9290	8000 10000 10000 10000	=	HND62B800 HND62B900 HND62B100 HND62B120	HND63B800 HND63B900 HND63B100 HND63B120
HNXD6	900 1000 1200	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000	_	=	HNXD63B900 HNXD63B100 HNXD63B120
CND6	800 900 1000 1200	4000 5000 5000 5000	4570 5715 5715 5715	5140 6430 6430 6430	5710 7145 7145 7145	6280 7860 7860 7860	6850 8575 8575 8575	7420 9290 9290 9290	8000 10000 10000 10000			CND63B800 CND63B900 CND63B100 CND63B120
PD6	1200 1400 1600	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000	_	=	PD63B120 PD63B140 PD63B160
PXD6	1200 1400 1600	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000	_	=	PXD63B120 PXD63B140 PXD63B160
HPD6	1200 1400 1600	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000	_	=	HPD63B120 HPD63B140 HPD63B160
HPXD6	1200 1400 1600	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000	=	=	HPXD63B120 HPXD63B140 HPXD63B160
CPD6	1200 1400 1600	5000 5000 5000	5715 5715 5715	6430 6430 6430	7145 7145 7145	7860 7860 7860	8575 8575 8575	9290 9290 9290	10000 10000 10000		_	CPD63B120 CPD63B140 CPD63B160
RD6	1800 2000	5000 5000	5715 5715	6430 6430	7145 7145	7860 7860	8575 8575	9290 9290	10000 10000	_	<u></u>	RD63B180 RD63B200
RXD6	1800 2000	5000 5000 5000	5715 5715 5715	6430 6430	7145 7145 7145	7860 7860 7860	8575 8575	9290 9290 9290	10000 10000 10000			RXD63B180 RXD63B200
HRD6	1800 2000	5000 5000	5715 5715	6430 6430	7145 7145	7860 7860	8575 8575	9290 9290	10000 10000	_		HRD63B180 HRD63B200
HRXD6	1800 2000	5000 5000	5715 5715	6430 6430	7145 7145	7860 7860	8575 8575	9290 9290	10000 10000	_	=	HRXD63B180 HRXD63B200

Molded Case Switch — Circuit Disconnect

Selection

na :	2-Pole	3-Pole	
Maximum Frame Amp Rating	Catalog Number	Catalog Number	Self-Protective Instantaneous Override ±20% ³
100	BQ2S060■ BQ2S100■	BQ3S060■ BQ3S100■	1000 1000
125	ED22S100A ED42S100A ED42S125A ED62S100A — CED62S100A CED62S125A	ED23S100A ED43S100A ED43S125A ED63S100A ED63S125A CED63S100A■ CED63S125A■ HES3S100L HES3S125L	1000 1000 1000 1000 1000 1000 1000 1250
225	QJ22S225A■	QJ23S225A	2000
250	FXD62S250A HFXD62S250A■	FXD63S250A HFXD63S250A■ CFD63S250A■	3200 3200 3200
400	JXD22S400A■ — — ⊕	JXD23S400A JXD63S400A HJXD63S400A■ CJD63S400A■	6000 6000 6000 6000
600	_ 	LXD63S600A HLXD63S600A■ CLD63S600A■	6000 6000 6000
800	<u> </u>	LMXD63S800A■ MXD63S800A CMD63S800A	8000 8000 8000
1200	<u> </u>	NXD63S120A CND63S120A■	10000 10000
1600	0	PXD63S160A [®]	10000
2000	0	RXD63S200A	10000

Ordering Information

Order by catalog number. Switches include frame and self protective trip unit only. Order lugs separately from pages 17/101 to 17/103.

Lugs pages 17/101 to 17/103 Accessories pages 17/108 to 17/113

[■] Built to order. Allow 2–3 weeks for delivery.

① For 2-pole application use outside poles of 3-pole circuit

[©] For additional lugs see pages 17/101 to 17/103.

³ Molded case switches up to R frame contain a self protecting instantaneous element, which may open circuit above their override set point.

③ UL file E57556 Volume 1, section 2 and

CSA LR 42022-51.

[®] Requires mounting block MB9301 or MBR9302.

Digital Solid State Sentron Sensitrip III Series

Technical

The Sentron Sensitrip III circuit breaker is a true RMS current sensing device. Digital microprocessor circuitry within the electronic trip unit provides more precise control over the circuit breaker functions. This control allows circuit coordination flexibility not available with thermal magnetic circuit breakers.

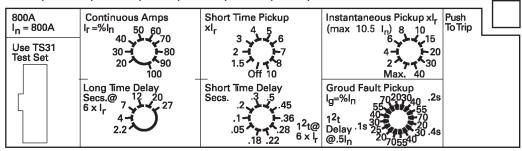
Functions available in Sentron Sensitrip circuit breakers

)	Catalog Number (Description + Suffix)	Trip Type	Cont Current Setting	Long Time Delay	Instan- taneous Setting	Short Time Pick Up	Short Time Delay	Short Time I ² t Pick Up	Ground Fault Pick Up	Ground Fault Delay
	Basic Unit + (A)	LI	√	√	√					
	Basic Unit + (A)G	LIG	√	√	√				✓	/
	Basic Unit + (A)NT	LSI	√	√	√	√	✓	/		
	Basic Unit + (A)NGT	LSIG	√	/	/	√	✓	/	/	/

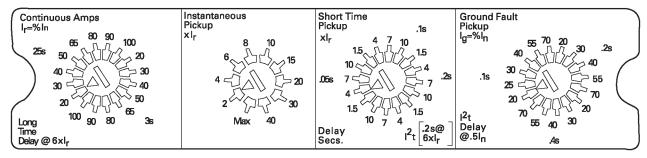
Letter "A" is used for MD and ND Solid State frame types only.

Typical Trip Unit Labeling and Adjustment Positions for the Sentron Sensitrip Circuit Breaker.

SMD6, SHMD6, SCMD6, SND6, SHND6, SCND6, SPD6, SHPD6



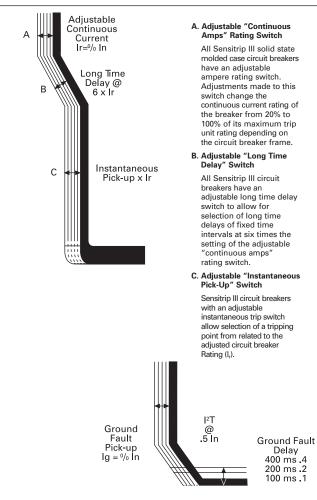
SJD6, SHJD6, SCJD6, SCD6, SHLD6, SCLD6

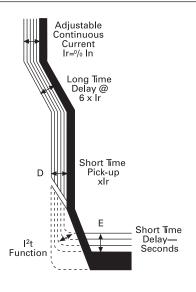


- I_n = Maximum circuit breaker ampere rating.
- I_r = Current Rating a function of continuous ampere adjustment setting expressed in % of I_n.
- I_g = Ground Fault Pickup a function of adjustment setting expressed in % of I_n.

Digital Solid State Sentron Sensitrip III Series

Technical





D. Adjustable "Short Time Pick-Up" Switch (Optional)

Sensitrip III circuit breakers with an adjustable short time pick-up switch allow for selection of short time pick-up in a range from 1.5 to 10 times the setting of the maximum current rating.

E. Adjustable "Short Time Delay" Switch (Optional)

Sensitrip III circuit breakers with an adjustable short time pick-up switch also contain a switch for adjustment in time delay. The adjustable short time delay switch allows for either of two modes of short time delays. One range of settings enables the breaker to be set for fixed time delays and the other range of settings enables the breaker to be set for short time delays based on I2t curves.

Adjustable "Ground Fault Pick-Up" Switch

Sensitrip III circuit breakers containing the optional equipment ground fault protection cover the ground fault pick-up range of 20% to 70% of the circuit breaker frame rating. The ground fault pick-up settings also allow for one of three time delays based on 12t curves.

For 3-phase, 4-wire systems, an external neutral transformer is required with an ampere rating equal to the trip unit ampere rating.

 I_n = Maximum circuit breaker ampere rating.

 I_r = Current Rating — a function of adjustment setting expressed in % of I_n .

 I_{α} = Ground Fault Pick-up — a function of adjustment setting expressed in % of I_{n} .

Examples of Adjustment Settings

Catalog Number SMD69800A

I _n = 800	Continuous Current Setting	Long Time Delay Setting	Instantaneous Setting
$I_p = 800$ amperes	30	12	8
Results	240 amperes	12 seconds trip	1920 amperes
	$I_r = 30\% \text{ of } 800$	at 6 x 240 amps = 1440.	$8 \times I_r = 8 \times 240$

Catalog Number SMD69800ANGT

I _n	I _r Setting	Long Time Delay	Short Time Pick-Up Off	Instantaneous Setting	Short Time Pick-Up On	Short Time Delay	I ² T Set	Ground Fault Pick-Up	Ground Fault Delay
800 amperes	70	20	_	10 I _r	8 I _r	.5	.28	40	.2
Results	560	20 sec.	_	5600A	4480A	.5 secs	.28 sec @ 4480A	320A	.2 sec
(A)	®	©	0	(E)	(F)	©	H	①	①

 $\triangle I_n = 800$ amperes.

 $BI_r = 560$ amperes (70% of 800).

© Delay = 20 seconds at 3360 amps (6 x I_r). Breaker will trip in 20 seconds with 3360 amperes.

Short Time Pick-Up Off — Instantaneous can be used.

(E)Instantaneous set at $10 \times I_r = 10 \times 560 = 5600$

(F) Short Time Pick-Up On — Set at 8 = 8 x 560 = 4480 amperes.

(5) Short Time Delay = .5 seconds. (Definite Time) Note: 6 & A are mutually exclusive.

(H) 12t switch on .28 seconds @ 6 x 560 = 3360 amperes. (Inverse time)

(i) Ground Fault Pick-Up set at 40 = 40% of In = 320 amperes. (Definite Time)

① Ground Fault Delay set at .2 seconds. Breaker will trip in 200 milliseconds with a 400 ampere ground fault.

amperes

Siemens Industry, Inc. Industrial Controls Catalog

Electronic and Communications Accessories

Selection

Multiplexor Translator

Breaker Type	Features	Catalog Number
SJD, SLD	Zone Interlocking Only	MTZ
SMD, SND SPD	Full Communications with Zone Interlocking	МТА

The Multiplexor Translator MTZ is an interface device required in zone selective interlock schemes. The MTA combines the zone selective interlocking function with interface to ACCESS® Systems.

Cables & Connectors

Ribbon Cables

Breaker Type	Length	Catalog Number
SJD, SLD SMD, SND SPD	6" 8" 12" 18" 24"	EPC06 EPC08 EPC12■ EPC18 EPC24■

Telephone Cables

Breaker Type	Length	Catalog Number
SJD, SLD SMD, SND, SPD	8' 15' 25' 50'	MTC08 MTC15 MTC25 MTC50

Expansion Plug

Breaker Type	Frame Size	Mounting Type	Catalog Number
Sensitrip	ALL	ALL	EP

The Expansion Plug EP is a required isolating device to connect the breaker with the Multiplexor Translator. It is connected to the trip unit on the breaker with a "Ribbon Cable", EPC08 e.g., and the Multiplexor Translator with the "Telephone Cable" (an RJ-11 cable) MTCSB08 e.g.

Component Selection Guide¹

Trip Units and Application						
Component Type	ZSI (only) with Sensitrip MCCB'S	Access and/or ZSI with Sensitrip MCCB's				
EP	✓	✓				
MTZ [®]	1					
MTA ²		✓				
EPC Cable	1	✓				
MTC Cable [®]	✓	✓				

Electronic & Display Devices

Trip Unit Test Set

Туре	Catalog Number
SJD, SLD, SMD, SND, SPD, Portable	TS31
Spare TS-31 Test Set Interconnecting Cable	TS31CABLE

The TS-31 test set is used to test the operation of the fault protection functions of the circuit breaker's trip unit, including long-time, short-time, instantaneous, and ground fault by means of secondary current injections.

Sensitrip Ammeter Display Unit

Breaker Type	Catalog Number
SJD, SLD, SMD	SADU
SND, SPD	SADURMK18

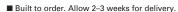
The Sensitrip Ammeter Display Unit (SADU) provides real-time metering for all Sentron-Sensitrip III Molded Case Circuit Breakers. The unit plugs directly onto the front of the trip unit and provides displays for individual phase currents flowing through the breaker. Additional features include Average, Demand, Ground and Unbalance Current displays, along with impending Trip Status. Current Metering Logs, and a unique diagnostic Trip Log that records the date, time and type of fault for the previous five breaker trips. The device is UL and CSSA certified.

The optional panel mount accessory (SADURMK18) allows easy device mounting external from the circuit breaker, in panelboard and switchboard spaces or gutters, with the flexibility of interior panel exterior panel, or wall mounting capability.

The 2×16 alphanumeric LCD display provides easy viewing of data, such as viewing all three phase currents simultaneously.

SADU Ammeter Display Unit

- Direct plug-in or Panel Mounting*
- Trip Unit Powered & Battery back-up
- 2 x 16 LCD Alphanumeric Display*
- Ammeter Display Functions
 - RMS Phase Currents
 - Average Current*
 - Current Demand*
 - Ground Current
 - Current Unbalance (%)*
- Breaker Status
 - Normal
 - Impending Trip*
- Time Stamped Trip Log (last 5)
 - Time & Date*
 - Trip Cause:
 - LT, ST, GF, SC
- Max Log (with date & time)
 - Max Phase Current*
 - Max Average Current*
 - Max Ground Current*
 - Max Unbalance Current*
- Max Current Demand*
 Unique Features



▲ Built to order. Allow 6-8 weeks for delivery.

When ordered with circuit breaker from the factory.One MTA or MTZ per eight trip units when required.

factory. (3) Always required when multiple MT's are used. required. One additional cable per each additional MT.



Lug information Mechanical Lug

Selection

For Use With Type(s)	Circuit Breaker Ampere Rating	Cables Per Lug	Lug Wire Range	Catalog Number		
	Line Side					
	15–40	1 1	#14–#6 AWG Cu #12–#6 AWG AI	TC1Q1 ^{©©}		
BQ, BQH,	45–125	1 1	#8-#1 AWG Cu #6-#1/0 AWG AI	TA1Q1 [®]		
BQHF BQE,	Load Side			·		
BQF, BL, BLH,	15–20	1 1	#14–#10 AWG Cu #12–#10 AWG AI			
HBL, HBQ	25–35	1 1	#14-#6 AWG Cu #12-#6 AWG AI			
Switching Neutrals	40–50	1 1	#8–#6 AWG Cu #8–#4 AWG AI	Lugs are integral to Circuit Breaker		
BG, BLG	55–70	1 1	#8-#4 AWG Cu #8-#2 AWG AI			
	80–100	1 1	#4-#1/0 AWG Cu #2-#1/0 AWG AI			
	110–125	1 1	#2-#1/0 AWG Cu #1/0-#2/0 AWG AI			
	Line Side (CQD, CQD6) & Load Side					
BQD, CQD BQD6, CQD6	15–40	1	#14-#6 AWG Cu #12-#6 AWG Al	Integral		
	45–100	1	#8-#1 AWG Cu #6-#1/0 AWG Al	Integral		
	15–30	1	#14-#6 AWG Cu #12-#6 AWG AI	TC1Q1		
NGG, HGG,	15–30	1	#14-#6 AWG Cu #12-#6 AWG AI	3TC1Q1 (pkg. of 3)		
LGG	35–125	1	#8-#1/0 AWG Cu #8-#2/0 AWG AI	3TC1GG20 (pkg. of 3)		
	15–125	_	NUT KEEPER PLATE	TNKG3 [®] (pkg. of 3)		
	15-125	1	#14-3/0 AWG Cu	3TW1EG30 (pkg. of 3)		
	15-125	1	#14-1/0 AWG Cu/AI	3TA1EG10 (pkg. of 3)		
NEG, HEG	15-125	1	#6-3/0 AWG Cu/AI	3TA1EG30 (pkg. of 3)		
	15-125	-	Nut Keeper Kit (3-pole)	TNKE3 (pkg. of 3)		
	15-125	-	Nut Keeper Kit (4-pole)	TNKE4 (pkg. of 4)		

Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards.

Note:(A) Molded case circuit breakers having a rated ampacity of 125 amperes or less are to be connected with 60 or 75°C wire. Circuit breakers having a rated ampacity greater than 125 amperes shall only be cabled with 75°C cable unless otherwise indicated on the circuit breaker label. Exceptions to this rule are outlined in article 110-14 C(1)(2) of the 2005 National Electrical Code.

⁽B) Connector wire ranges and cavities are established in conjunction with Table 6.1.4.2.1 of UL 489 standards.

① Lug is steel.

² Sold in package of six.

③ One nut keeper plate is required with each lug on the NGG breaker.

Lug informationAluminum Body Lugs for Copper or Aluminum Wire

Selection

For Use With Type(s)	Circuit Breaker Ampere Rating	Cables Per Lug	Lug Wire Range	Catalog Number
QJ2, QJH2, QJ2H, HQJ2, HQJ2H	60–225	1	#6 AWG-300 kcmil (Cu) #4 AWG-300 kcmil (Al)	TA1Q300 (pkg. of 3)
All 2, 3-pole ED2, ED4, ED6, ED6 ETI,	15–25	1	#14–#10 AWG (Cu) #12–#10 AWG (AI)	SA1E025
HED4,	30–100	1	#10-#1/0 (Cu or Al)	LN1E100
HHED6	110–125	1	#3-3/0 (Cu) #1-2/0 (AI)	TA1E6125
CED6 All 1-pole ED, HED	30–60	1	#10–4 (Cu or Al)	LD1E060 (Load Side)
,	70–100	1	#4-#1/0 (Cu or Al)	LD1E100 (Load Side)
FXD6-A, FD6-A, HFD6, CFD6 HHFD6	70–250	1	#6 AWG-350 kcmil (Cu) #4 AWG-350 kcmil (Al)	TA1FD350A
SJD6(A), SHJD6(A) SCJD6	65-200	1–2	#4 AWG-3/0 (Cu or Al)	TA2J630
JXD2(A), JXD6(A), JD6(A), SJD6(A), HJD6(A), HJXD6(A) HHJXD6, HHJD6, SHJD6(A), CJD6, SCJD6	200–400	1–2	3/0–500 kcmil (Cu) 4/0–500 kcmil (Al)	TA2J6500
LXD6(A), LD6(A), SLD6(A), HLD6(A), HLXD6(A), HHLXD6, HHLD6, SHLD6(A), CLD6, SCLD6	250-600	1–2	3/0–500 kcmil (Cu) 4/0–500 kcmil (Al)	TA2J6500
LMD6 [©] , LMXD6 [©] , HLMD6 [©] , HLMXD6 [©] , MD6,	500–600	1–2	#1–500 kcmil (Cu or Al)	TA2K500
MXD6, SMD6, HMD6, HMXD6,		1–3	1/0-500 kcmil (Cu or Al)	TA3K500
SHMD6, CMD6, SCMD6	500-800	1–2	500–750 kcmil (Cu or Al)	TA2N750 ^②
ND6, NXD6, SND6,	800–1200	1–4	250–500 kcmil (Cu or Al)	2TA4P8500 ^{©®} 3TA4P8500 ^{©®}
HND6, HNXD6, SHND6, CND6, SCND6	6UU-12UU	1-4	250–500 kcmil (Cu or Al)	2TA4N8500 ³ 3TA4N8500 ⁴
PD6, HPD6, CPD6 PXD6, HPXD6, SPD6, SHPD6	1200–1600	1–5	300–600 kcmil (Cu or Al)	TA5P600
PD6, PXD6, HPD6, HPXD6, SPD6, SHPD6, RD6, RXD6, HRD6, HRXD6, STD	1200–2000	1–6	300–600 kcmil (Cu or Al)	TA6R600



Lug information Optional Mechanical Lugs

Selection

For Use With Type	Circuit Breaker Ampere Rating	Cables Per Lug	Lug Material	Lug Wire Range	Oty Per Catalog No	Catalog Number
QJ2, QJH2, QJ2H, HQJ2, HQJ2H	60–225	1	Cu	#6 AWG-250 kcmil (Cu)	3	TC1Q250
ED, HED 1, 2 & 3-pole	1, 2 & 3-pole 30-125	1	Cu	#10-#1/0 (Cu)	1	TC1ED6150
HFD6, HHFD6, CFD6, F(X)D6-A	70–250	1	Cu	#6 AWG-350 kcmil (Cu)	1	TC1FD350
J(X)D2(A), J(X)D6(A), HJD6(A), HHJD6, SHJD6(A), L(X)D6(A), HHLD6, SCD6,	200–600	1 1–2	Cu	3/0–600 kcmil (Cu) 3/0–500 kcmil (Cu)	1	TC1J6600 [©] TC2J6500 [©]
HLD6(A), SHLD6(A), CJD6, CLD6, SCJD6, SCLD6	250–600	1 1	Al	500–750 kcmil (AI) 500–600 kcmil (Cu)	1	TA1L6750
SMD6, M(X)D6,	500-600	1–2	Cu	#1 AWG-500 kcmil (Cu)	1	TC2K500
HM(X)D6, HMD6,		1–3	Cu	#1 AWG-350 kcmil (Cu)	1	TC3K350
CMD6, SCMD6, SND6, N(X)D6, HN(X)D6,	700–800	1–2	Al	500–750 kcmil (Cu) 500–750 kcmil (Al)	2 3	2TA2N8750 3TA2N8750
SHND6, CND6, SCND6	800–1200	1–3	Al	500–750 kcmil (Cu) 500–750 kcmil (Al)	2 3	2TA3N8750 3TA3N8750
R(X)D6, HR(X)D6	1600–2000	1–5	Cu	300–600 kcmil (Cu)	1	TC5R600
P(X)D6, HP(X)D6, CPD6, SPD6, SHPD6	1200–1600	1–4	Al	600–750 kcmil (Cu/Al)	1	TA4P750▲

Compression Lugs

For Circuit Breaker Types	Ampere Rating	Poles	Lugs Per Kit	Lug Wire Size	Catalog Number
Lugs (contains indicated number of lugs and necessary hardware per kit)					
ED2, ED4, ED6, HED4, HHED6, CED6	15–125	1, 2, 3	1	#2/0 AWG Cu/AI	CCE125
QJ2, QJH2, QJ2-H	125–225	2, 3	1	350 kcmil Cu/Al	CCQ225
F(X)D6-A, HF(X)D6, HHF(X)D6, CFD6	125–250	2, 3	1	350 kcmil	CCF250
JXD2-A, J(X)D6-A, HJ(X)D6-A, HHJ(X)D6-A, CJD6, SJD6-A, SHJD6-A, SCJD6, L(X)D6-A, HL(X)D6-A, CLD6, SLD6-A, SHLD6-A, SCLD6	200–600	2, 3	1	500 kcmil	CCL600
Kits (contain lugs and hardware for complete line or load end or	2 or 3-pole	breaker)			
M(X)D6, HM(X)D6, CMD6, SMD6, SHMD6, SCMD6	500-800	2	6		CCM800K2
WI(X/D0, TIWI(X/D0, CIVID0, SIVID0, STIVID0, SCIVID0	300-800	3	9	500 kcmil	CCM800K3
N(X)D6, HN(X)D6, CND6, SND6, SHND6, SCND6	900–1200	2	8	- JOU KUIIIII	CCN1200K2
14(A)D0, 1114(A)D0, 614D0, 514D0, 51114D0, 5614D0	900-1200	3	12	1	CCN1200K3

Distribution Lugs²

For Circuit Breaker Types	Ampere Rating	Poles	Lugs Per kit	Wires Per Lug	Lug Wire Size	Catalog Number
NGG, HGG, LGG	15-125	1,2,3	1	6	#6-#4 AL #14-#4 Cu	TA6GG04
NEG, HEG	15-125	1,2,3	3	3	#14-#2 AWG Cu	3TA3EG02
NEG, HEG	15-125	1,2,3	3	6	#14-#6 AWG Cu	3TA6EG06
ED2, ED4, ED6, HED4, HHED6, CED6	15-125	1,2,3	1	6	#14-#4 AWG Cu #6-#4 AWG AI	TA6ED06
F(X)D6-A, HF(X)D6, HHF(X)D6, CFD6	70-250	2,3	1	6	#14-#4 AWG Cu #6-#4 AWG AI	TA6FD04
JXD2-A, J(X)D6-A, HJ(X)D6-A, HHJ(X)D6-A, CJD6-A, SJD6, SHJD6-A, SCJD6, L(X)D6-A, HL(X)D6-A, CLD6-A, SLD6-A, SHLD6-A, SCLD6	200-600	2,3	1	6	#14-2/0 AWG Cu #6-2/0 AWG AI	TA6JD20

 $[\]blacktriangle$ Built to order. Allow 6–8 weeks for delivery.

tion

1

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17

①Used for 100% rated JD/LD frame circuit breakers.

^② Special purpose wire connectors, not for general use.

Molded Case Circuit Breakers

Modifications

• Revised • 07/20/14

General Selection

A variety of internal and external accessories, as well as modifications, are available to adapt Siemens circuit breakers to special installation requirements. UL listed internal accessories for 100 through 2000A circuit breakers are field-addable.

Internal accessories fine tune an electrical distribution system, allowing control of the circuit breakers to meet special application requirements. For example, emergency situations may dictate tripping critically placed circuit breakers quickly. Shunt trips accomplish this conveniently and efficiently. Or, when voltage drops are a concern, undervoltage trips automatically open the circuit breaker at a predetermined voltage level.

A wide range of external operating and mounting accessories is also available. For example, face, shallow, and back mounting plates are ideal for tailoring BQ circuit breakers to OEM applications. A complete line of operating handles and handle-blocking devices meet switchboard, enclosure and safety needs. Plug-in mounting assemblies, which simplify switchboard mounting of circuit breakers and permit breaker removal without disconnecting bus or cable connections, are available.

50°C Ambient Calibration — Not UL listed and not available for solid state, 100% rated breakers or 400HZ calibrated breakers.

For BL Type Circuit Breakers

- Add suffix 'M' to catalog number

(Example: B120M)......No Charge

For BQ, QJ2, and ED Frame Circuit Breakers

— Replace 'B' in catalog number with 'M'......No Charge (Example: BQ3M060, QJ23M200, ED63M060)

For FD, JD, LD, LMD, MD, ND, PD, and RD Frame Circuit Breakers

Non-Interchangeable Trip (3-pole only)No Charge

 Replace 'B' in catalog number with 'M' (Example: FXD63M225, JXD63M400)

400 HZ Calibration

ULListed (5KA IR)

For BQ & BL Type Circuit Breakers (200A max.)......Add 25% to list price

Add suffix 'Y' to catalog number

Not UL Listed

For all other Circuit Breakers, see derating tables on page 6-152 and order standard circuit breakers.

Fungus Proofing

All BQD, CQD, GB, GG, ED, FD, JD, LD, LMD, MD, ND, PD, RD, DG, FG, JG, LG, MG, NG, and PG Frame Circuit Breakers are inherently fungus resistant and do not require special treatment.

Consult Sales Office for Availability

For all other Circuit Breaker Types......Add \$160.00 net per device

Consult Sales Office for Availability

Certificate of Compliance with Test Report (catalog number CERT OF COMP.) Add \$210.00 net Certificate of compliance testing must be performed on the actual device being shipped. The certificate cannot be provided after initial shipment. Order for devices with COC requirement must be placed directly with the factory by the sales office and shipped directly to the end user.

UL 489 Supplement SB Naval Use Breakers

Breakers tested to UL 489 Supplement SB are qualified for use on non combat and auxiliary naval vessels.

Siemens molded case breakers, including BL, NGB and Sentron ED through RD frames can be labeled "NAVAL" in compliance with UL 489 Supplement SB.

Supplement SB testing comprises two sets of vibration tests. The first is to find mechanical resonances in the product and to subject the breaker to extreme testing at each resonant frequency. The second is a swept frequency test, in which the frequency of excitation is changed in intervals of 1Hz, and held at each frequency for five minutes. The excitation frequencies run from 4 to 33Hz, and the test is conducted in each of the three orthogonal axes of the breaker.

During these tests, the breaker must not trip from the closed position, nor may the contacts touch from the open position. Calibration and insulation resistance are also verified during the test.

For detailed information, refer to UL 489, Supplement SB.

Ordering Information

For "NAVAL" label, add **\$75.** net per catalog number per order. Order must be placed directly with the factory by Siemens Sales Office.

Types	UL File
BQD/CQD	E10848, Vol 10, Sec 1
GG	E10848, Vol 10, Sec 2
GB	E10848, Vol 10, Sec 3
ED2, ED4, IIED4, HED6	E10848, Vol 4, Sec 11
CED6	E10848, Vol 4, Sec 13
FD6, FXD6, HFD6, HFXD6	E10848, Vol 4, Sec 17
CFD6	E10848, Vol 4, Sec 18
JXD2, JD6, JXD6, LXD6, LD6, HJD6, HJXD6, HLD6, HLXD6	E10848, Vol 4, Sec 8
HHJD6, HHJXD6, HHLD6, HHLXD6	E10848, Vol 4, Sec 20
CJD6, CLD6	E10848, Vol 4, Sec 14
MD6, MXD6, HMD6, HMXD6, CMD6, ND6, NXD6, HND6, HNXD6, CND6	E10848, Vol 4, Sec 15
PD6, PXD6, HPD6, HPXD6, CPD6, RD6, RXD6, HRD6, HRXD6	E10848, Vol 4, Sec 19

Molded Case Circuit Breakers

Internal Accessories

General

Feature Combinations

The available feature combinations are shown in the chart below. For applications requiring combinations of features not listed in this chart, consult the sales office for availability.

Breakers	Modules Per Breaker	Breaker				ST/ AUX/ ALSW	UVT	UVT/ AUX	UVT/ ALSW	UVT/ AUX/ ALSW	AUX	AUX/ ALSW		Elect. Bell Alarm		Grd fault
QP, BQ, BL®	1	1, 2, 3	1	_	_	_	_	_			1,2	_	_	_	_	<u> </u>
BQD, CQD, GB, GG	1	2, 3	1	1/1	_	_	_	_			1,2	1/1	1	_	_	_
OJ [®]	1	3	1	1/1	_	_	_	_			2	_	_	_	_	<u> </u>
All ED	1	1, 2, 3	1	1/1,1/2	1/1	1/1/1	1	1/1, 1/2	1/1	1/1/1	1, 2	1/1, 2/1	1	_	1	1
All FD	2	2, 3	1	_	_	_	1	1/1	_	_	1, 2	1/1	1	_	_	_
All JD, LD, LMD ²	2	2, 3	1	1	_	_	1	1/1, 1/2	_	_	1, 2	1/1, 1/2	1, 2	_	_	<u> </u>
SJD6, SHJD6, SCJD6, SLD6, SHLD6, SCLD6 ³	11	3	1	1	_	_	1	1/1, 1/2	_	_	1, 2	1/1, 1/2	1, 2	_	_	
All MD, ND, PD, RD Including Electronic trip [®]	2	2, 3	1	1/1	_	_	1	1/1, 1/2	_	_	1, 2	1/1, 2/1	1, 2		_	
STD®	6	3	1	_	_	_	1	_	_	_	1 NC / 1 NO, 2 NC / 2 NO, 3 NC / 3 NO, 4 NC / 4 NO, 5 NC / 5 NO, 6 NC / 6 NO	_	1	1	_	_

Shunt Trip (ST)

One or all critical circuit breakers may be tripped from a distant control point by use of a shunt trip device. A shunt trip operates through an auxiliary switch contact; when the breaker opens, current is not maintained on the shunt trip coil.

Undervoltage Trip (UVT)

When voltage drops to a value below 35% of the nominal coil rating, the undervoltage trip device automatically opens the breaker. The operation is instantaneous, and the circuit breaker cannot be reclosed until the

voltage returns to 85% of line voltage. The undervoltage trip, which is continuously energized, must be energized before the circuit breaker can be closed.

Auxiliary Switch (AUX)

For applications requiring remote "on" or "off" indication (or electrical interlocking), auxiliary switches are available. Each switch comprises an "A" (open when circuit breaker is open) and a "B" (closed when circuit breaker is open) contact with a common connection. (Form C)

Alarm Switch (ALSW)

The alarm switch contact is closed when the circuit breaker is opened automatically by an overload, short circuit, shunt trip or undervoltage trip. The alarm switch contact is open when the circuit breaker is reset.



①Factory assembled only

②If mechanical interlock is installed, no accessory module can be installed in the right pocket.

³ If mechanical interlock is installed, no accessory module can be installed.

⁽a) If mechanical interlock is installed, no accessory module can be installed in the left pocket.

[©]One module per column.

Circuit Breakers

Accessories

Catalog Number	For Use With Breaker Type	Number of Poles	Standard Package
Padlocking Device For locking breaker in "OF	F" position. Note "ON" position does not affect breaker fuction	ally	
ECPLD1	Type QP, BL, QAF, QPF, QE, QT-Duplex, BQ, BQXD	1P	3 Pieces
ECPLD2	Type QP, BL, QAF, QPF, QE, QT-Triplex & Quadplex, BQ, BQXD	2P	3 Pieces
ECPLD2R	Type QP, BL, QAF, QPF, QE, QT-Triplex & Quadplex, BQ, BQXD (Red Color)	2P	3 Pieces
ECPLD3	Type QP, BL, QAF, QPF, QE, BQ	3P	1 Piece
CPLD3R	Type QP, BL, QAF, QPF, QE, BQ (Red Color)	3P	1 Piece
CQLD3	Type QP, BL, BQ, BQXD	1P	10 Pieces
CQLD4	Type QT-Duplex	QT-Duplex Breakers	10 Pieces
CQLN3©	150-225 MBKA, QN, QNR	n/a	1 Piece
CQTH4	Type QP, BL, BQH	Designed for (3) 1P Breakers	1 Piece
landle Tie Provide simultaneous swic	hing of 2 adjacent handles.		
CQTH2	Type QT Duplex	Designed for (2) QT Duplex Breakers	25 Pieces
СОТНЗ	Type QP, BL	2P	50 Pieces
		•	
/lechanical Interlock®			
CQML12	Type QP, BL, BQ Interlock Bracket	Designed for 1" Breaker	10 Pieces
	1 / 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	,	
Handle Blocking Device For holding breaker in "ON	I" or "OFF" position. Not a lockout/tagout device		
ECQL1	Type QP, BL, BQ, BQXD	1P	10 Pieces
CBX231M	Type QT-Duplex	1/2" Breakers	10 Pieces
- ODALO IIII	Typo at Baptox	1/2 Broakers	10 1 10000
Vlain Breaker Retainer			
ECMBR1 [®]	EQ Load Centers		1 Piece
CMBR2	Ultimate Load Centers		1 Piece
	Ottimute 2000 Contolo		111000
Mounting Accessories			
MB120	Type BQ, BQH Mounting Clips	1P	20 Pieces
P9508	Type BQ, BQH FACE MOUNT PLATE	1P	10 Pieces
P9555	Type BQ, BQH FACE MOUNT PLATE	2P	10 Pieces
P9556	Type BQ, BQH FACE MOUNT PLATE	3P	10 Pieces
SMB6R	Type BQ MOUNTING BRACKET	1P, 2P, 3P	6 Pieces
CH65K	Type BQ MOUNTING ADAPTER	.,,=,,=	500 Pieces
BR2	Type BQ, BQH, BQXD Back Mounting Plates	2P	10 Pieces
BR3	Type BQ, BQH, BQXD Back Mounting Plates	3P	10 Pieces
BR4	Type BQ, BQH, BQXD Back Mounting Plates	4P	10 Pieces
0204ML1125	Type QP Back Mounting Plates	1P, 2P	10 Pieces
0303ML3100	Type QP Back Mounting Plates	3P	10 Pieces
			*
Replacement Lugs			
A1Q1	Type BQ, NGG 100A AI Cu LGS	n/a	6 Pieces
C1Q1	Type BQ, NGG 40A AI Cu LUGS	n/a	6 Pieces
inger Chield			
Finger Shield	T POVE 5: 01: 11/2 " 2 1:		4000 B:
BQFS1K	Type BOXD Finger Shield (Bulk Pack)	n/a	1000 Pieces
BQFS2	Type BQXD Finger Shield	n/a	2 Pieces
THE DIE			
Filler Plate			

1" Filler Plate

n/a

ECQF3

5 Pieces

[■] Built to order. Allow 2-3 weeks for delivery

○ For a complete list of standby power mechanical interlock kits, see the Standby Generator Section XXXX

○ For use with Ultimate Load Center Main Breakers

³ Not suitable for use on 15-50A, 10 AIC Type QP Circuit

Breakers

② QP Type includes QPH, HQP
③ BL Type includes BLH, HBL

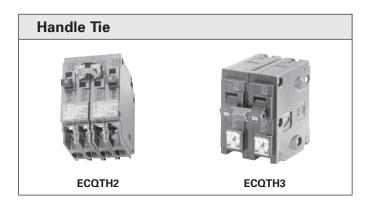
[®] BQ Type includes BQH, HBQ
Q QAF Type includes QAFH, BAF, BAFH
Q PF Type includes QPHF, BLF, BLHF
QE Type includes QEH, BLE, BLEH

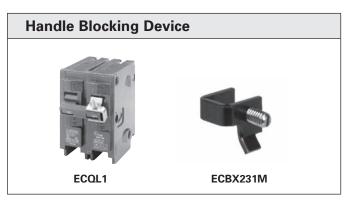
Circuit Breakers

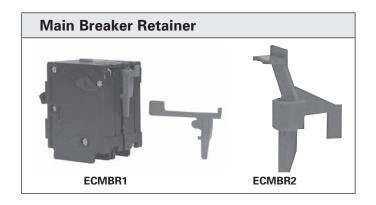
Accessories

White header

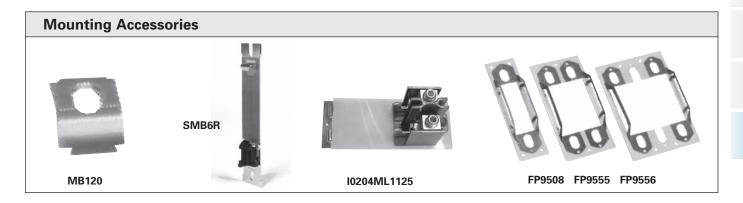












External Accessories

Selection

Handle Ties with Padlock Device

Provide simultaneous switching of 2 or 3 adjacent handles. Do not provide common trip.

For Use With Breaker Frame(s)	Catalog Number	Standard Package	Wt Lb/ Std Pkg
BQD, NGB, HGB, LGB	BQDHT2	10	1/2
BGD, NGB, HGB, EGB	BQDHT3	10	1/2

Padlocking Devices

For locking breaker in "OFF" position.

All QJ	HL9419	10	1/4
All BQD, CQD, NGB, HGB, LGB	BQDPLD	1	1/8
NGG, HGG, LGG	HPLG	1	1/4
EB, 1- thru 3-pole	HPLEB	1	1/8
EG, 3- and 4-pole only	HPLE	1	1/4
All ED	ED2HPL	1	1/4
All FD	FD6PL1	1	1/4
All JD, LD, LMD	JD6HPL	1	1/4
All MD, ND, PD, RD	MN6PLD	1	1/4

Handle Blocking Devices

For holding breaker in "ON" or "OFF" position.

Not a lockout/tagout device.

All QJ	QJHS1 ^①	25	1
All BQD, CQD, GG, GB	BQDHBD	1	1/4
EG	HBDE	1	1/4
All ED	E2HBL	1	1/4
All FD	FD6HB1	1	1/2
All JD, LD, LMD	JD6HBL	1	1/2
All MD, ND, PD, RD	MN6BL	1	1/2

Handle Extensions

For replacement. One extension shipped with breaker.

All MD, ND, PD, RD	EX11	1	2

Terminal Shields

Breaker Type	Poles	Catalog Number	Standard Package
NGG, HGG, LGG	3	TSSG3A	1



FD Padlocking Device FD6PLI



FD Handle Blocking Device **FD6HB1**



[■] Built to order. Allow 2–3 weeks for delivery.

① Sold only in standard package quantities.

External Accessories

Selection

Face Mounting Plates

For Use With	Number of Poles	Catalog	Standard	Wt Lb/
Breaker Frame(s)		Number	Package	Std Pkg
CQD, CQD6	1	CQDFMB1	1	1/4
	2	CQDFMB2■	1	1/4
	3	CQDFMB3■	1	1/4
NGG, HGG, LGG	1 2 3	FMPG1 FMPG2 FMPG3	1 1 1	1/4 1/4 1/4 1/4

Back Mounting Plates

ED2, ED4, ED6, HED4, HED6	1	E2BMB	1	1/4

Mounting Screw Kits

CQD, CQD6	CQDSMK ^①	1	11/4
NGG, HGG, LGG	MSKG4 [®]	1	1/4
All QJ	MSQJ ^①	1	1
All ED (CED6 requires 2 kits)	MSE6 ^① MSE6100 ^②	1 100 [®]	¹ ⁄ ₄ 1
All FD (CFD6 requires 2 kits)	MSF6 ^① MSF650 ^③	1 50 [©]	1/ ₄ 1
All EG 1-pole	MSKE1	_	_
All EG 2-pole	MSKE2	_	_
All EG 3 or 4-pole	MSKE4	_	_
All JD, LD	MSJ6 ^①	1	1/4
All LMD	MSLMD	1	1/4
All MD, ND,	MSMN	1	1/4
All PD, RD	MSPR6	1	2

Mounting Screw Kit MSE6 Mechanical Interlock MI5444

"MI" Mechanical Interlocks

For Use With Breaker Type(s)	Panel ^⑦ Mounted	Plug-in Mounted	Standard Package	Wt Lb Std Pkg
All EG (Sliding Bar)	HSBE	_	1	_
All QJ	CSO		Complete with two breakers	1
All FD	MI5444	MI5444	1	_
All JD, LD	MI5413 ⁴	_	1	1
All LMD	MI5406 ^④ ■	_	1	1
All MD	MI5404 [©] ■	_	1	3
All ND	MI5404 [®] ■	_	1	3
All PD, RD	MI5405 ^⑤ ▲	_	_	_

Siemens panelboards.

① Mechanical interlock is not designed for use within

Siemens Industry, Inc. Industrial Controls Catalog

[■] Built to order, Allow 2–3 weeks for delivery.

 $[\]blacktriangle$ Built to order. Allow 6–8 weeks for delivery.

①Kit consists of 4 screws and washers.②Consists of 1 screw and washers (order 100). 3 Consists of 1 screw and washers (order 50).

⁴ With mechanical interlock in place, no accessory can be installed into circuit breaker right pole.

^(§) Addition of the mechanical interlock will prevent

accessory installation in the left pole.

© Sold only in standard package quantities. Multiply List Price Each times package quantity for full price.

External Accessories

Selection

Rotary Door Mounted Operating Handles Types 1, 3, 3R , 12, 4 4X

For Use	Complete Mech	nanism	Handle Only	Breaker Operator	Shaft Only	/
With	Catalag Numbar					
Breaker Frames	Standard Depth	Variable Depth	Catalog Number	Catalog Number	Length (inches)	Catalog Number
EG	RHVE64X	RHVE124X	_	_	_	_
ED ⁽¹⁾	CRHOESD	CRHOEVD		RHOEBO	2	RHOSSD
FD	CRHOFSD	CRHOFVD	CRHOH ³	RHOFBO	12	RHOSVD
JD, LD	CRHOJSD	CRHOJVD	CKHOH	RHOJBO	16	RHOSXD
LMD	CRHOLMSD	CRHOLMVD		RHOLMBO		
MD, ND PD, RD	RHONSD	RHONVD	RHOH [®]	RHONBO [®]	3 12 24	RHONSSD▲ RHONSVD RHONSXD

Rotary Door Mounted Operating Handles

Types 1 & 12

For Use With	Standard Depth	Variable Depth	Handle and Shaft	Breaker Operator
Breaker Frames	Catalog Number	Catalog Number	Catalog Number	Catalog Number
CQD, NGG, HGG, LGG	_	RHOCQVD	RHOH62	CQDOP
ED	D11CEU1	D11CEU2	_	_
FD	D11CFU1▲	D11CFU2	_	_
JD, LD	_	D11CJU2	_	_

For CQD, NGG, HGG and LGG red emergency handle, order assembly RHOCQVDE (includes handle and operator). For CQD, NGG, HGG and LGG in a NEMA 3R enclosure, order CQDOP34 operator, RHOH handle and RHOSVD shaft. For CQD, NGG, HGG and LGG in a NEMA 4 or 4X enclosure, order CQDOP34 operator, RHOH4 handle and RHOSVD shaft.

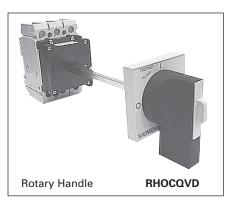
Through Door Mounted Operating Handles²

Types 1 & 12

For Use With	Standard Depth	Variable Depth
Breaker Frames	Catalog Number	Catalog Number
CQD, NGG, HGG, LGG	FMHOS	_
QJ	OH9498 ■	VH9499
EG (3 & 4-Pole only)	RHFESD	_
EG (red handle)	RHFESDEM	_
ED	E2RH1	E2RHV9
FD	F6RH1	F6RHV9

Door Latch Kits

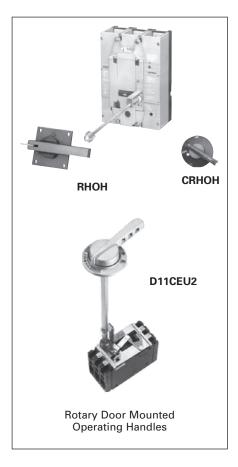
	Catalog Number	Catalog Number
Туре	Right Hand	Left Hand
2 point latch	DKR2	DKL2■
3 point latch	DKR3	DKL3■



- Built to order. Allow 2-3 weeks for delivery.
- ▲ Built to order. Allow 6–8 weeks for delivery.
- ① For use on 3-pole ED frame only.

- ② Meets the requirements of NFPA 79, section 5.3.3.1 for locking external operator disconnecting devices.
- § For 3 or 3R, order shaft and breaker operator as shown, and handle RHOH. For 4 & 4X, order handle RHOH4.
 Consult sales office for additional EG operator shaft

Revised 07/20/14



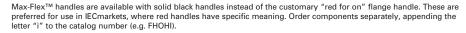


External Accessories

Selection

Max-Flex™, Flange Mounted Variable Depth Operators®

Frames	NEMA Type	Complete Kit Catalog Number	Handle Only Catalog Number	Breaker Operator Catalog Number	36" Cable Catalog Number	
NGG	1, 3 (R), 12	MFKG3R3	MFHM3R	MFMG	MFCF036	
	4 (x)	MFKG4X3	MFHM4X			
EG	1, 3 (R), 12	MFKE3 [®]	_	_	_	
	4 (x)	MFKE4X3	_			
ED	1, 3 (R), 12	FHOE036®	FHOH	FHOEBO ^①	FHOEC036	
	4 (x)	_	FHOH4			
FD	1, 3 (R), 12	FHOF036	FHOH	FHOFBO	FHOFC036	
	4 (x)	_	FHOH4			
JD, LD,	1, 3 (R), 12	FHOJ036	FHOH	FHOJBO	FHOJC036	
SJD, SLD	4 (x)	_	FHOH4			
LMD	1, 3 (R), 12	FHOLM036	FHOH	FHOLMBO	FHOJC036	
	4 (x)	_	FHOH4			
MD, ND, PD, RD,	1, 3 (R), 12	FHON048	FHOHN	FHONBO	FHONC048 ²	
SMD, SND, SPD	D, SND,		THOMBO	FIIOINCU46®		



Alternate Length Cable Only

	ED	FD	JD/LD/LMD	MD/ND/PD/RD
Inches	Catalog Number	Catalog Number	Catalog Number	Catalog Number
48	FHOEC048	FHOFC048	FHOJC048	FHONC048
60	FHOEC060	FHOFC060	FHOJC060	FHONC060
72	FHOEC072	FHOFC072	FHOJC072	FHONC072
84	FHOEC084▲	FHOFC084▲	FHOJC084▲	FHONC084▲
96	FHOEC096	FHOFC096	FHOJC096	FHONC096
120	FHOEC120▲	FHOFC120	FHOJC120▲	FHONC120▲
144	FHOEC144▲	FHOFC144▲	FHOJC144▲	FHONC144▲

Handle Auxiliary Switch

For use with Max-Flex and Rotary Door operators (FHOH and RHOH). 1 NO and 1 NC contact (Form C).

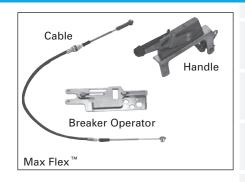
For Use With	Catalog Number
ED, FD, JD, LD, LMD, ND, PD, RD, SD, Max Flex	HAS1

Fixed Depth Flange Mounting

	Minimum		Left Hand Mount	Right Hand Mount
Frames	Enclosure Depth	NEMA Type	Catalog Number	Catalog Number
FD [®]	6.44	1, 3R, 12	FDFBEL▲	FDFBER▲
ED*	0.44	4, 4X	FDFBEL4▲	FDFBER4▲
FD	6.44	1, 3R, 12	FDFBFL▲	FDFBFR▲
10	0.44	4, 4X	FDFBFL4▲	FDFBFR4▲

Max-Flex™ handles are available with solid black handles instead of the customary "Red for On" flange handle. These are preferred for use in IECmarkets, where red handles have specific meaning. Order components separately, appending the letter "i" to the catalog number (e.g. FHOHI).

 ©Consult sales office for additional cable lengths for EG Flex Shaft Operators. For 3-Pole only.
 3-Pole ED only.





 \blacktriangle Built to order. Allow 6–8 weeks for delivery.

©For 1- or 2-pole breaker order FHOED036 complete kit or FHOEDBO breaker operator only. Use MFHM3R handle.

17/111

Siemens Industry, Inc. Industrial Controls Catalog Product Category: MCCB

^{©48} inch cable is standard length for M through R frame

Meets requirements of NFPA 79, section 5.3.3.1 for locking external operator disconnecting devices

External Accessories

Selection/Dimensions

Telemand® Motor Operator

Breaker Frame	AC Voltage	Hinged to Open Down Catalog Number
ED except CED	120	MOE6120
LD except CLD	240	MOE6240 ▲

ED motor operator opens downward.

Breaker Frame	DC Voltage	Hinged to Open Right Catalog Number	AC Voltage	Hinged to Open Right Catalog Number
FD	24 48 125	MOF6024DC▲ MOF6048DC▲ MOF6125DC▲	120 240	MOF6120 MOF6240
JD, LD	24 48 125	MOJ6024DC▲ MOJ6048DC▲ MOJ6125DC▲	120 240	MOJ6120 MOJ6240
LMD	24 48 125	MOLMD6024DC▲ MOLMD6048DC▲ MOLMD6125DC▲	120 240	MOLMD6120 MOLMD6240
MD, ND, PD, RD	_		120 240	MOMN6120 MOMN6240

To order FD through RD motor operators with Left side hinges, add "L" to catalog number (e.g. MOF6120L). List prices are the same.▲

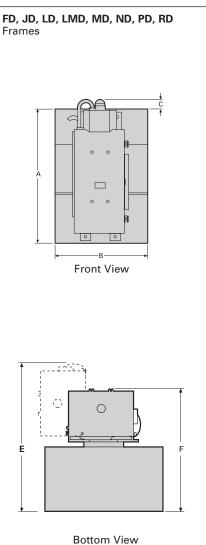
Dimensions

Frame	Α	В	С	D	E	F
ED	7.04	4.31	_	4.31	13.84	8.84
FD	9.50	4.55	1.60	6.84	9.70	7.58
JD, LD, LMD	11.00	7.50	0.79	8.34	9.85	7.74
MD, ND, PD, RD	16.00	9.00	_	9.83	13.13	10.13

Operating Currents

	On			Off			
Catalog	In-Rush	Running	Time	In-Rush	Running	Time	Reset
Number	(Amps)	(Amps)	(msec)	(Amps)	(Amps)	(msec)	(Amps)
MOE6120	10.25	2.3	550	10	2.3	400	2.3
MOE6240	5.2	1.1	500	5	1	330	1.1
MOF6120/L	13.6	5.5	200	13.6	5.5	175	5.5
MOF6240/L	7.6	3.5	200	7.6	3.5	185	3.5
MOLMD6120/L	13.6	6	210	13.6	6	185	6
MOJ6120/L	13.6	6	210	13.6	6	185	6
MOJ6240/L	7.6	3.5	217	7.6	3.5	185	3.5
MOMN6120/L	30.2	13.2	240	30.2	13.2	210	13.2
MOMN6240/L	14.7	6	260	14.7	6	230	6





For inches / millimeters conversion, see Application Data section.

lacktriangle Built to order. Allow 6–8 weeks for delivery.

Sentron Molded Case Circuit Breakers

External Accessories

Selection

Plug-In Mounting Assemblies, Including Base and Tulip Assemblies

		Line Side	Load Side	Steel Switchboard	
For Use With Breaker Frames	Poles	Catalog Number [©]	Catalog Number ²	Mounting Plate ^① Catalog Number	
EG	3	PCBERC3 [©]	_		
	4	PCBERC4 [®]	_	1 _	
All ED	2	PC2637▲	PC2638▲	PL2616	
except CED	3	PC2657	PC2658	FL2010	
CED	2	PC2637▲	PC2638▲	PL2617	
CED	3	PC2657	PC2658	PL201/	
All FD	2	PC4753▲	PC4753▲	PL4762	
except CFD	3	PC4754	PC4754	PL4/02	
CFD	2	PC4753▲	PC4753▲	PL4763	
OI D	3	PC4754	PC4754	PL4/03	
All JD	2	PC5777▲	PC5777▲	DI ETOO	
except CJD	3	PC5778	PC5778	PL5796	
Kit CJD, SCJD	3	PCCJD	PCCJD	PL5797	
All LD	2	PC5660▲	PC5660▲	PL5680	
except CLD	3	PC5661	PC5661	PL3080	
Kit CLD, SCLD	3	PCCLD	PCCLD	PL5797	
All MD	2	PC5662▲	PC5662▲	DI OCOO	
All MD	3	PC5663	PC5663	PL9698	
All ND	2	PC5664 ³ ▲	PC5664 ³ ▲	DI OCOO	
All ND	3	PC5666 ³	PC5666 ³	PL9699	

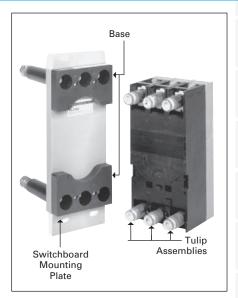


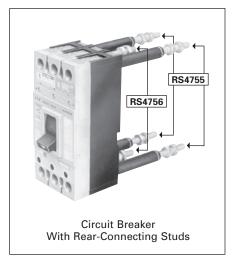
For	2-Pole	3-Pole
Frame	Catalog Number	Catalog Number
ED	TCE2▲	TCE3▲
FD	TCF2▲	TCF3▲
JD	TCJ2▲	TCJ3▲
LD	TCL2▲	TCL3▲
MD	TCM2▲	TCM3▲
ND	TCN2▲	TCN3▲

Rear-Connecting Studs

For Use With Breaker	Ampere		Extension Behind Breaker	Line Side	Load Side
Frames	Rating	Description	(inches)	Catalog Number [®]	Catalog Number [®]
All ED	100 100 100 100	Line Side (Short) Load Side (Short) Line Side (Long) Load Side (Long)	2.38 2.38 4.88 4.88	RS2643 [®] ▲ — RS2641 [®] ▲ —	 RS2644 [©] ▲ RS2642 [©] ▲
All FD	250	Short	3.12	RS4756 [®] ▲	RS4756 ³ ▲
	250	Long	7.06	RS4755 [®] ▲	RS4755 ³ ▲
All JD	400	Short	5.85	RS5774▲	RS5774▲
	400	Long	11.20	RS5773▲	RS5773▲
All LD	600	Short	5.85	RS5784▲	RS5784▲
	600	Long	11.20	RS5783▲	RS5783▲
CJD, SCJD CLD, SCLD	Add red	quired shield kit.			CLRSJL3
LM(X)D6,	800	Short	5.85	RS5788▲	RS5788▲
HLM(X)D6		Long	11.20	RS5787▲	RS5787▲
All MD,	1200	Short	5.50	RS5786▲	RS5786▲
ND	1200	Long	8.00	RS5785▲	RS5785▲

- ▲ Built to order. Allow 6–8 weeks for delivery.
- ①Furnished at no extra charge when ordered with plug-in mounting assembly.
- @Each piece catalog number consists of (1) mounting block assembly and required tulip assemblies (2) for 2-pole, (3) for 3-pole
- ®For vertical bus mounting for horizontal, substitute PC5665 for PC5664 and PC5667 for PC5666.
- @Price includes one current stud, insulating tube, stud nuts and terminal shields, when required.





Siemens Industry, Inc. Industrial Controls Catalog

[©]For proper electrical clearance, studs must alternate between short and long stud lengths on circuit breaker poles (e.g. SLSLSL or LSLSLS).

[@]Plug-in assembly for EG breakers include line and load side in one assembly.

Molded Case Circuit Breakers

Unusual Operating Conditions

Reference

Note: The information provided on this and the next page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data below is based less on controlled testing, than on experience and engineering judgment. Contact Siemens for further information on special conditions and treatment.

High Ambient Temperatures

Because thermal-magnetic trip breakers are temperature sensitive and calibrated for a specific ambient of 40°C (104°F) (average enclosure temperature), a higher ambient will cause the breaker to trip at lower current than its nameplate rating, in other words, causing the breaker to "derate" (see Table 1). Similarly, the current carrying capacity of a circuit conductor is based upon a certain ambient temperature, a higher ambient will reduce its current carrying capacity, causing it to "derate." Thus, with a fluctuating temperature, a thermal-magnetic breaker will derate nearly parallel with its connected circuit conductors and maintain close circuit protection. If the application temperature exceeds 40°C (104°F) and is known, either a breaker specially calibrated for the higher ambient or one oversized according to Table 1 may be selected. In a case such as this, the circuit conductors should be oversized as well.

Siemens Sensitrip® III and Type SB Encased Systems Breakers are insensitive to temperature changes. However, they do include circuitry to protect the components from abnormally high temperatures.

Moisture — Corrosion

For atmospheres having high moisture content and / or where fungus growth is prevalent, a special preventive treatment may be required.

Where the air is heavily laden with corrosive elements, breakers made with special corrosion-resistant finishes may be required.

Altitude

Reduced air density at altitudes greater than 6600 ft. (2000 meters) affects the ability of a molded case circuit breaker to transfer heat and interrupt faults. Therefore, circuit breakers applied at these altitudes should have interrupting, insulation and continuous currents derated as indicated in Figure 1.

Table 1 — Temperature Derating Data for Thermal-Magnetic Breakers

Reference Ampere	Ampere	Rating at:										
Rating at 40° C (104° F)	25° C (77° F)	50° C (122° F)	60° C (140° F)			Sie	mens	Brea	ker Fr	ames		
15	17	13	11									
20	22	18	16	D0								
25	28	23	21	BQ,								
30	33	28	26	BL,								
35	39	30	25	BQD,								
40	44	37	34	COD								
50	55	46	42	CQD,								
60	66	56	52	GG,								
70	77	65	60	GB,								
90	99	84	78	ED								
100	110	94	87	ED								
125	137	114	100		QJ							
150	165	136	120			FD						
175	192	159	140									
200	220	182	160									
225	247	205	180									
250	275	235	220				JD]			
300	330	276	252				ם כו					
350	385	325	301					LD				
400	440	372	340] [
500	550	468	435									
600	660	564	525						MD			
700	770	658	613						IVID			
800	880	754	704									
900	990	828	749							ND		
1000	1100	900	825							ן טא		
1200	1320	1090	1000									
1400	1540	1304	1148								PD	
1600	1760	1500	1320									
1800	1980	1690	1485									RD
2000	2200	1880	1650									

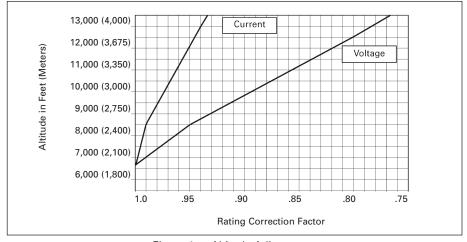


Figure 1 — Altitude Adjustment

Molded Case Circuit Breakers

Unusual Operating Conditions

Reference

400 Hz Systems¹

Siemens molded case circuit breakers can be applied for overcurrent protection on 400Hz systems, commonly used to power computer installations, aircraft, military and other specialty equipment. Below are basic guidelines.

Circuit Breaker Derating Required

This table lists the maximum continuous current carrying capacity for Siemens breakers at 400Hz. Due to the increased resistance of the copper sections resulting from the skin effect produced by eddy currents at these frequencies, circuit breakers in many cases require derating. The thermal derating on these devices is based upon 100%, three phase application in open air in a maximum of 40°C (104°F) with 48 in. (1219 mm) of the specified cable or bus at the line and load side. Additional derating of not less than 20% will be required if the circuit breaker is to be utilized in an enclosure. Further derating may be required if the enclosure

ambient temperature exceeds 40°C (104° F).

Cable and Bus Sizing

The cable and bus sizes to be utilized at 400Hz are not based on standard National Electric Codes tables for 60Hz application. Larger cross sections are necessary at 400Hz. All bus bars specified are based upon mounting the bars in the vertical plane to allow maximum air flow. All bus bars are spaced at a minimum of 0.25 in. (6 mm) apart. Mounting of bus bars in the horizontal plane will necessitate additional drafting. Edgewise orientation of the bus may change the maximum ratings indicated. If additional information is required for other connections of cable or bus, contact Siemens for information.

Application Recommendations

It is recommended that temperatures be measured on the line and load terminals or T-connectors of the center pole. These

Siemens Breaker

are usually the hottest terminals with a balanced Íoad. A maximum temperature of 75°C (35°C over a maximum ambient of 40°C) would verify the particular application. Temperature profiles taken on these breakers can be correlated to ensure that the hottest points within the breaker are within the required temperature limits.

Factory Configuration

When required, molded case circuit breakers may be factory calibrated for 400Hz application. These breakers are specially labeled for 400Hz usage and their nameplate current rating will include the necessary derating factory. The highest "Maximum Continuous" Amperes" rating at 400Hz, found in the table below approximates the highest specially calibrated 400Hz nameplate ampere rating available for a given frame size. Contact Siemens for ordering information on other breakers applied in 400Hz systems.

Enclosed

After Derating

75°C (167°F) Copper Cable per Pole

No of

400Hz Breakers

400HZ Breai		Continuous An 04°F) ^②	npere Rating	75°C (16° Copper	7°F)
Siemens	60HZ	400HZ		Cable pe	r Pole
Breaker Type	Open Air	Open Air ³	Enclosed After Derating	No of Pieces	Wire Size
	15	15	12	1	#14
	20	20	16	1	#12
	25	25	20	1	#10
	30	30	24	1	#10
	35	35	28	1	#10
	40	40	32	1	#8
ED2, ED4, ED6,	45	43	34	1	#8
BQD, HED4,	50	48	38	1	#8
HED6, CED6	60	57	46	1	#6
	70	67	54	1	#4
	80	76	61	1	#4
	90	86	69	1	#3
	100	95	76	1	#3
	110	105	84	1	#2
	125	119	95	1	#1
	70	63	50	1	#4
	80	72	58	1	#4
0.10.0.11.10	90	80	64	1	#3
QJ2, QJH2, QJ2H, HQJ2,	100	90	72	1	#3
HQJ2H, FD6,	110	95	75	1	#2
FXF6, HFD6,	125	105	84	1	#1
HFXD6, CFD6	150	125	100	1	#1/0
	175	140	112	1	#2/0
	200	160	128	1	#3/0
	225	180	144	1	#4/0
	250	200	160	1	250 kcmil
	200	170	136	1	#3/0
JXD2, JD6,	225	190	152	1	#4/0
JXD6, HJD6,	250	210	168	1	250 kcmil
HJXD6, HHJD6,	300	240	192	1	350 kcmil
HHJXD6, CJD6	350	260	208	1	500 kcmil
	400	300	240	2	#3/0
	200	170	170	2	#3/0
IDE IVDE	225	190	190	2	#4/0
JD6, JXD6, HJD6, HJXD6	250	210	210	1	250 kcmil
100% Rated	300	240	240	1	350 kcmil
	350	260	260	1	500 kcmil
	400	300	300	2	#3/0

. 100		000	/ into Donating		0.20
	250	210	168	1	250 kcmil
	300	240	192	1	350 kcmil
LD6, LXD6, HLD6, HLXD6,	350	260	208	1	500 kcmil
HHLD6,	400	300	240	2	#3/0
HHLXD6, CLD6	450	340	272	2	#4/0
CLD6	500	375	300	2	250 kcmil
	600	420	336	2	350 kcmil
	250	210	210	1	250 kcmil
LD6, LXD6,	300	240	240	1	350 kcmil
	350	260	260	1	500 kcmil
HLD6, HLXD6,	400	300	300	2	#3/0
100% Rated	450	340	340	2	#4/0
	500	375	375	2	250 kcmil
	600	420	420	2	350 kcmil
	500	400	320	2	250 kcmil
MD6, MXD6,	600	430	360	2	350 kcmil
HMD6, HMXD6, CMD6	700	500	400	3	250 kcmil
	800	560	448	3	300 kcmil
MD6, MXD6,	500	400	400	2	250 kcmil
HMD6,	600	430	430	2	350 kcmil
HMXD6, CMD6	700	500	500	3	250 kcmil
100% Rated	800	560	560	3	300 kcmil
	800	560	448	3	300 kcmil
ND6, NXD6	900	600	480	3	350 kcmil
HND6, HNXD6, CND6	1000	650	520	3	400 kcmil
0.120	1200	780	624	4	350 kcmil
ND6, NXD6	900	600	600	3	350 kcmil
HND6, HNXD6, CND6	1000	650	650	3	400 kcmil
100% Rated	1200	780	780	4	350 kcmil
PD6, PXD6,	1200	780	624	4	400 kcmil
HPD6, HPXD6,	1400	850	680	4	500 kcmil
CPD6,	1600	960	768	5	500 kcmil
PD6, PXD6,	1200	780	780	4	400 kcmil
HPD6, HPXD6, CPD6	1400	850	850	4	500 kcmil
100% Rated	1600	960	960	5	500 kcmil
RD6, RXD6,	1600	960	768	5	500 kcmil
HRD6, HRXD6	1800	1080	864	5	500 kcmil
80% Rated	2000	1200	960	6	500 kcmil

Maximum Continuous Ampere Rating At 40°C (104°F)^②

400/415HZ

Open Air³

60HZ

Open Air

The information provided on this page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data above is based less on

controlled testing, than on experience and engineering judgment. Contact Siemens for further information on

temperature is greater than 40°C (104°F). Calculated after derating to compensate for the heating of the copper conductor, caused by the skin effect generated by eddy currents produced at 400/415HZ.

Molded Case Circuit Breakers

Unusual Operating Conditions

Reference

Unusual Operating Conditions 400 Hz Systems

Circuit Breaker Derating Required

This table lists the maximum continuous current carrying capacity for Siemens breakers at 400Hz. Due to the increased resistance of the copper sections resulting from the skin effect produced by eddy currents at these frequencies, circuit breakers in many cases require derating. The thermal derating on these devices is based upon 100%, three phase application in open air in a maximum of 40°C (104° F) with 48 in. (1219 mm) of the specified cable or bus at the line and load side. Additional derating of not less than 20% will be required if the circuit breaker is to be utilized in an enclosure. Further derating may be required if the enclosure ambient temperature exceeds 40°C(104° F).

Cable and Bus Sizing

The cable and bus sizes to be utilized at 400Hz are not based on standard National Electric Codes tables for 60Hz application. Larger cross sections are necessary at 400Hz. All bus bars specified are based upon mounting the bars in the vertical plane to allow maximum air flow. All bus bars are spaced at a minimum of 0.25 in. (6 mm) apart. Mounting of bus bars in the horizontal plane will necessitate additional drafting. Edgewise orientation of the bus may change the maximum ratings indicated. If additional information is required for other connections of cable or bus, contact Siemens for information.

Application Recommendations

It is recommended that temperatures be measured on the line and load terminals or T-connectors of the center pole. These are usually the hottest terminals with a balanced load. A maximum temperature of 75°C (35°C over a maximum ambient of 40°C) would verify the particular application. Temperature profiles taken on these breakers can be correlated to ensure that the hottest points within the breaker are within the required temperature limits.

Interrupting Rating

Circuit breakers used in 400 Hz systems are limited to a 5000 A interrupting rating. If higher ratings are required, consult Siemens.

	Maximum at 40°C (10	continuous a)4°F) ^②	mpere rating	75°C (16	57F)
	60HZ	400HZ		cable pe	er pole
Breaker type	Open air	Open air ³	Enclosed after derating	No of pieces	Wire size
	50	48	38	1	#8
	60	57	46	1	#6
	70	63	50	1	#4
	80	72	58	1	#4
DG	90	80	64	1	#3
	100	90	72	1	#3
	110	95	75	1	#2
	125	105	84	1	#1
	150	125	100	1	#1/0
	100	90	72	1	#3
	110	95	75	1	#2
	125	105	84	1	#1
F0	150	125	100	1	#1/0
FG	175	140	112	1	#2/0
	200	160	128	1	#3/0
	225	180	144	1	#4/0
	250	200	160	1	250 kcmil
	250	210	168	1	250 kcmil
10	300	240	192	1	350 kcmil
JG	350	260	208	1	500 kcmil
	400	300	240	2	#2/0
JG	250	210	210	1	250 kcmil
100%	300	240	240	1	350 kcmil
Rated	350	260	260	1	500 kcmil
	400	300	300	2	#3/0
	400	300	240	2	#3/0
LG	500	375	300	2	250 kcmil
	600	420	336	2	350 kcmil

	Maximum at 40°C (10	continuous aı)4°F)②	mpere rating	75°C (16	57F)
	60HZ	400HZ		cable pe	er pole
Breaker type	Open air	Open air ^③	Enclosed after derating	No of pieces	Wire size
	400	300	240	2	#3/0
LG	500	375	300	2	250 kcmil
	600	420	336	2	350 kcmil
	600	430	360	2	350 kcmil
MG	700	500	400	3	250 kcmil
	800	560	448	3	300 kcmil
MG	600	430	430	2	350 kcmil
100%	700	500	500	3	250 kcmil
Rated	800	560	560	3	300 kcmil
	800	560	448	3	300 kcmil
NG	900	600	480	3	350 kcmil
ING	1000	650	520	3	400 kcmil
	1200	780	624	4	350 kcmil
NG	900	600	600	3	350 kcmil
100%	1000	650	650	3	400 kcmil
Rated	1200	780	780	4	350 kcmil
Mateu	1200	780	624	4	400 kcmil
	1400	850	680	4	500 kcmil
PG	1600	960	768	5	500 kcmil
	1200	780	780	4	400 kcmil
PG 100%	1400	850	850	4	500 kcmil
Rated	1600	960	960	5	500 kcmil

The information provided on this page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data above is based less on controlled testing, than on experience and engineering

judgment.Contact Siemens for further information on special conditions and treatment.

② Additional derating may be required if the ambient temperature is greater than 40°C (104°F).

[®] Calculated after derating to compensate for the heating of the copper conductor, caused by the skin effect generated by eddy currents produced at 400/415HZ.

Switches Safety and Disconnect Switches

Contents	Pages	Contents	Pages
leavy Duty Enclosed Safety Switches		Open Disconnect Switches	
Features and Benefits P40V Selection P500V Selection Switches with Viewing Window P50e Pole and 6-Pole Switches P50e VBII Non-Metallic & 316 Grade Stainless P50e VBII Non-Metallic & 700 Switches P50e VBII Non-Metallic & 700 Switches P60e Solar Photovoltaic (PV) Switches P60e Solar Photovoltaic (PV		Compact Non-Fusible — Rotary and Toggle (LBR) Compact Non-Fusible — Rotary and Toggle (3LD)	8/17 - 18/19 18/20 18/21 8/22 - 18/24 8/25 - 18/26

Heavy Duty Safety Switch Standards and Ratings

Standards

- UL98 approved per file #E4776
- Suitable for use as service entrance equipment (where applicable)
- Meets NEMA standard KS-1-1990 for Type HD switches
- Seismic qualification all switches have been tested and comply with the 2007 California Building Code CBC (Zone 4)

Ratings

- 30-1200A, 240V and 600V AC and DC
- 2, 3, 4 and 6 pole fusible and non-fusible
- All HD safety switches are both HP and load break rated
- Enclosures are available to meet NEMA 1, 3R, 12 & 4/4X requirements

Safety Switch AIC Ratings When Protected by Fuses

- 30-600A 10,000 AIC with Class H fuses
- 30-600A 200,000 AIC with Class R, J or T fuses
- 800 & 1200A 200,000 AIC with Class L or T fuse

Fuse Provisions supplied in fusible switches

- 30 & 60A 240V Class H standard, Class R with kit
- 100-600A 240V Class H standard, Class J by moving load base, Class R with kit
- 30-600A 600V Class H standard, Class J by moving load base, Class R with kit
- 100 & 200A Class T with kit
- 400 & 600A Class H standard, Class J & T by moving load base. Class R with kit
- 800A Class L standard, Class T by moving load base
- 1200A Class L standard, Class T with kit (240V max)

Non-Fusible Safety Switch AIC Ratings When Protected by a Circuit Breaker^{©2}

Breaker Frame	Non-Fused Switch	UL Listed Short Circuit Current Rating
NEG, NGB, ED4	30 DT (240V)	18 kA Thru 240 VAC
NEB, NEG, NGG, NGB, ED4	60-100A GD & DT (240V)	18 kA Thru 240 VAC
NEB, NEG, NGG, NGB, ED4	30-100A HD & DT (600V)	18 kA Thru 480 VAC
ED6	30-100A HD & DT (600V)	18 kA Thru 600 VAC
FD6-A, JD6-A	200A HD & DT (600V)	18 KA Thru 600 VAC
JD6-A, LD6-A	400A GD & DT (240V)	18 kA Thru 240 VAC
JD6-A, LD6-A	400A HD & DT (600V)	18 kA Thru 600 VAC
LD6-A	600A GD & DT (240V)	25kA Thru 240 VAC
LD6-A	600A HD & DT (600V)	25kA Thru 600 VAC
NNG	1200A HD & DT (600V)	25 kA Thru 600 VAC

 $[\]ensuremath{\mathbb{O}}$ All switches above are rated at 10 KA when protected by any UL Listed CB

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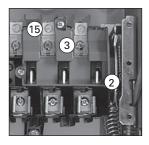
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[@] Circuit breaker trip rating must not exceed switch ampere rating

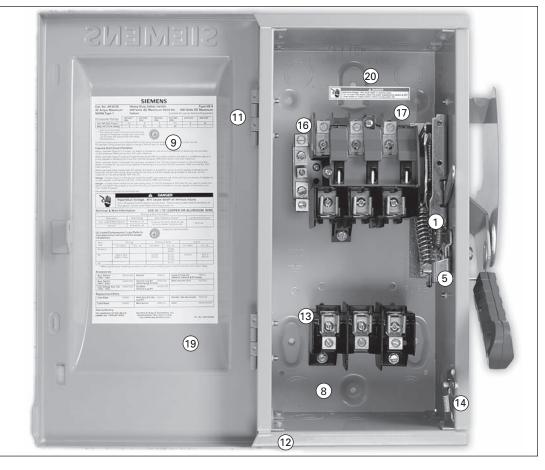
Features











- Quick-make, quick-break operating mechanism that ensures positive operation.
- 2. Visible blade, double-break switching action.
- 3. Arc chutes dissipate heat and prolong switch life.
- Highly visible red handle grip. Designed for hook stick operation.
- 5. Defeatable dual cover interlock.
- Center punch provided for field drilling to allow ON padlocking.
- 7. Handle can be padlocked in the OFF position with up to (3) padlocks with 5/16" hasps.
- Generous top, bottom and side gutters that meet or exceed NEC wire-bending space requirements.
- 9. Informative door labeling which includes replacement parts list.
- **10.** Tangential knockouts through 600A for easy conduit lineup.
- **11.** Side-hinged door that opens past 180 degrees for easier wiring.

- Unique enclosure design increases rigidity and prevents cuts and scrapes to conductors and installer's hands.
- **13.** Spring reinforced fuse clips that assure reliable contact for cool operation.
- Door latch securely holds door closed and allows cover padlocking.
- **15.** Front removable mechanical lugs that are suitable for CU/Al 60 or 75° C conductors.
- Lugs are field convertible to copper body and to a wide variety of compression connectors.
- Hinged clear line terminal shield with probe holes for inspecting or testing line side terminals.
- Embossed aluminum nameplate on Heavy Duty Switches provides highly visible ON/OFF indication.
- **19.** Drawn cover for increased rigidity and resistance to abuse.
- 20. Top key hole and bottom mounting holes provide easy 2 or 3 point mounting.

Selection



						Horse	Horsepower Ratings ^②					
		Indoor — Type 1		Outdoor — Typ	240V AC							
	Ampere		Ship. Wt. (lbs.)		Ship. Wt.	1-Phase, 2-Wire		2-Phase, 4-Wire		3-Phase, 3-Wire		Volt DC
System	Rating	Catalog Number	Std. Pkg.	Catalog Number	Std. Pkg.	Std.	Max.	Std.	Max.	Std.	Max.	

240 Volt Fusible®

2-Pole, 2-Fus	e, and Soli	d Neutral [®]	(Also used for 2-Pole, 2-Wire Applications)					240 Volt AC/250 Volt DC					
	30	HF221N	12	HF221NR	13	1½	3	l —	l —	3	7½	5	
	60	HF222N	18	HF222NR	19	3	10	l —	l —	7½	15	10	
1 1 1	100	HF223N	23	HF223NR	24	7½	15	l —	l —	15	30	20	
77	200	HF224N	47	HF224NR	48	15	l —	l —	l —	25	60	40	
1 5 5 H	400	HF225NH ^①	129	HF225NRH ^①	131	15	_	l —	l —	50	125	50	
\perp $<$ $<$ \parallel	400	HF225N	153	HF225NR	157	15	_	l —	l —	50	125	50	
	600	HF226NH ^①	133	HF226NRH ^①	135	15	l —	l —	l —	75	200	50	
	600	HF226N	155	HF226NR	159	15	_	l —	l —	75	200	50	
	800	HF227N	365	HF227NR	365	_	_	l —	l —	100	250	50	
	1200	HF228N■	385	HF228NR■	385	l —	l —	l —	l —	100	250	50	
3-Pole, 3-Fus	e, and Soli	d Neutral	(Also use	d for 3-Pole, 3-	Wire Applic	ations	5)	240) Volt	AC/25	50 Vol	t DC	
	30	HF321N	14	HF321NR	15	1½	3	_	_	3	7½	5	
	60	HF322N	19	HF322NR	20	3	10	l —	_	7½	15	10	
1	100	HF323N	25	HF323NR	26	7½	15	l —	_	15	30	20	
	200	HF324N	49	HF324NR	50	15	l —	l —	l —	25	60	40	
	400	HF325NH ^①	137	HF325NRH®	138	15	_	l —	_	50	125	50	
\perp \sim \sim \sim \parallel	400	HF325N	158	HF325NR	162	15	l —	l —	l —	50	125	50	
	600	HF326NH ^①	139	HF326NRH ^①	142	15	l —	l —	l —	75	200	50	
' ' ' '	600	HF326N	161	HF326NR	165	15	l —	l —	l —	75	200	50	

240 Volt Fusible®

800

1200

HF327N HF328N

2-	Pole, 2-Fu	se ⁴							240) Volt	AC/25	50 Vo	t DC
			Type 4/4X Stainl	ess®	Type 12 Ind	ustrial [©]							
	ነ ነ	30	HF221S	13	HF221J	13	1½	3	l —	l —	3	7½	5
	55	60	HF222S	19	HF222J	19	3	10	l —	l —	7½	15	10
	ςς	100	HF223S	24	HF223J	24	7½	15	l —	l —	15	30	20
	1 1	200	HF224S	48	HF224J	48	15		<u> — </u>	<u> </u>	25	60	40

HF327NR

HF328NR

375

395

,	3-Pole, 3-Fus	se ^④	(Also used for	2-Pole, 2	-Wire Application	ns in 400–80	00A R	atings	s) 240	Volt	AC/25	i0 Vol	t DC	
		30	HF321S	14	HF321J	14	1½	3	I —	_	3	7½	_	
		60	HF322S	20	HF322J	20	3	10	l —	_	7½	15	10	
		100	HF323S	25	HF323J	25	7½	15	l —	l —	15	30	20	
		200	HF324S	49	HF324J	49	15	l —	l —	l —	25	60	40	
		400	HF325S	154	HF325J■	110	15	—	l —	_	50	125	50	
		600	HF326S	157	HF326J■	161	15	l —	l —	l —	75	200	50	
		800	HF327S■	370	HF327J■	365	l —	l —	l —	l —	100	250	50	

[■] Built to order. Allow 3-5 weeks for delivery.

375

388

18/3

250

250

100

100

50

① Height reduced switch (45.25 rather than 56 inches in height) for use with 500MCM or smaller conductors.

② Dual horsepower ratings: Std.- applies when non-time delay fuses are installed. Max.- applies when timedelay fuses are installed.

These switches are UL-listed for application on

grounded B-phase systems and are suitable for 3-phase motor applications.

⁴ When a neutral is required use a field installed neutral kit.

[§] Suitable for use as service entrance equipment.

Also rated Type 3S/3R.

^{© 304} grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, see page 18/9.

Heavy Duty Safety Switches

Selection



								Hor	sepowe	r Ratin	gs [@]				
		Indoor — Typ	e 1	Outdoor — Tyl	pe 3R	480V	AC			600V	AC				
	Ampere		Ship. Wt.		Ship. Wt.	1-Pha 2-Wir	•	3-Pha 3-Wir		1-Pha 2-Wir		3-Pha		250 Volt	600 Volt
System	Rating	Catalog Number	Std. Pkg.	Catalog Number	Std. Pkg.	Std.	Max.	Std.	Max.	Std.	Max.	Std.	Max.	DC	DC

600 Volt Fusible®

000 00	it i doik														
2-Pole, 2	2-Fuse [®]							480	Volt	AC/6	600 V	olt AC	C/600	Vol	t DC
	30	HF261	15	HF261R	15	3	7½	_	_	3	10	_	_	5	15
1 7 7	60	HF262	20	HF262R	20	5	20	_	_	10	25	_	_	10	30
\ \	100	HF263	26	HF263R	27	10	30	_	_	15	40	_	_	20	50
1 7 7	400	HF265■	149	HF265R■	152	_	50	_	_	50	_	_	_	40	50
	600	HF266■	150	HF266R■	155	—	50	_	_	50	—	_	_	50	50
3-Pole, 3	-Fuse							480 \	/olt A	AC/60	00 Vol	t AC/	250 \	/olt	DC ^①
	30	HF361	14	HF361R	15	3	7½	5	15	3	10	7½	20	5	
	30	HF361L [®]	19	HF361RL [®]	20	3	7½	5	15	3	10	7½	20	5	ı — I
	60	HF362	19	HF362R	20	5	20	15	30	10	25	15	50	10	30®
1 6 6 6	60		_	HF362RL [®]	25	5	20	15	30	10	25	15	50	10	30®
1111	100	HF363	24	HF363R	25	5	20	25	60	15	40	30	75	20	50 [®]
1555	200	HF364	48	HF364R	49	25	50	50	125	30	50	60	150	40	50
\ \ \ \	400	HF365H ²	136	HF365RH ²	137	l —	_	100	250	—	l —	125	350	50	ı — I
	400	HF365	154	HF365R	157	_	_	100	250	—	l —	125	350	50	
	600	HF366H ²	138	HF366RH ²	141	l —	_	150	400	—	l —	200	500	50	—
	600	HF366	157	HF366R	161	—	l —	150	400	—	—	200	500	50	—
	800	HF367	365	HF367R	365	—	—	200	500	—	—	250	500	50	—
	1200	HF368	383	HF368R	385	_	_	200	500	_	—	250	500	50	_
3-Pole, 3	-Fuse a	nd Solid Neut	tral					480 \	/olt A	AC/60	00 Vol	t AC/	250 \	/olt	DC ^①
	30	HF361N	14	HF361NR	15	3	7½	5	15	3	10	7½	20	5	-
	60	HF362N	19	HF362NR	20	5	20	15	30	10	25	15	50	10	30®
1666	100	HF363N	25	HF363NR	26	10	30	25	60	15	40	30	75	20	50 [®]
	200	HF364N	49	HF364NR	50	25	50	50	125	30	50	60	150	40	50
12 2 2 W	400	HF365N	158	HF365NR	162	l —	_	100	250	—	—	125	350	50	—
1 1 1 T	600	HF366N	161	HF366NR	165	_	_	150	400	—	—	200	500	50	
	800	HF367N	375	HF367NR	375	_	_	250	500	—	—	250	500	50	—
	1200	HF368N	395	HF368NR	388	—	—	250	500	—	—	250	500	50	—

600 Volt Fusible[®] (For 2-Pole Applications use outside poles of 3-Pole Switches)

158

161

370

HF365J

HF366J

HF367J■

HF368J■

2-Pole, 2	2-Fuse ³)			•			480	Volt	AC/6	600 V	olt A0	2/600) Vol	t DC
		Type 4/4X Sta	ainless [®]	Type 12 Indus	trial [©]										
7 7	30	HF261S	15	HF261J■	15	3	7½	_	l —	3	10	_	l —	5	15
	60	HF262S	20	HF262J■	20	5	20	l —	_	10	25	_	_	10	30
	100	HF263S■	27	HF263J■	27	10	30	l —	_	15	40	_	_	20	50
1 1	400	HF265S■	153	HF265J■	155	I —	50	l —	_	50	_	_	_	40	50
	600	HF266S■	156	HF266J■	156		50	_	_	50	_	_	_	50	50
3-Pole, 3	3-Fuse							480	Volt A	AC/60	00 Vol	t AC/	250	Volt	DC ^①
	30	HF361S	13	HF361J	14		_	5	15	_	_	7½	20	5	_
	60	HF362S	20	HF362J	20	_	l —	15	30	l —	_	15	50	10	30®
1 1 1 1 1	100	HF363S	25	HF363J	25	_	l —	25	60	l —	—	30	75	20	50®
	200	HF364S	49	HF364.I	49	I	l —	50	125	l	l —	60	150	40	50

160

161

365

388

100

150

200

250

400

500

400

600

800

1200

HF365S

HF366S

HF367S

HF368S■

125

200

250

250

350

500

500

50

50

[■] Built to order. Allow 3-5 weeks for delivery.

① 60-200A 3-Pole switches are also rated 600V DC.

② Height reduced switch (45.25 rather than 56 inches in height) for use with 500MCM or smaller conductors.

③ Use 3-Pole switch for 200A applications.

Dual horsepower ratings: Std.- applies when non-time delay fuses are installed. Max.- applies when time-

delay fuses are installed. Suitable for use as service entrance equipment except on 1200 Amp solidly grounded wye systems per NEC 230.95.

¹ Indicates oversized enclosure (30A switch with 60A

lugs in a 60A enclosure or 60A switch with 100A lugs in a 100A enclosure).

^{® 600}V DC & 600V DC horsepower rating shown requires (2) poles to be connected in series.

^{® 304} grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, see page 18/9.

Selection



		Indoor - Type	1	Outdoor - Type	3R	Horsepo	wer Ratin	gs					
	Ampere	Catalog	Ship.	Catalog	Ship.	240 Volt	t	480 Volt		600 Volt		250V	600V
System	Rating	Number	Wt. (lbs.)	_	Wt. (lbs.)	1-Phase	3-Phase	1-Phase	3-Phase	1-Phase	3-Phase	DC	DC

600 Valt Non-Fusible

000 10	IL I VOII	-i usibie											
2-Pole ³								48	0 Volt A	C / 600	Volt AC	C / 600 \	olt DC
	30	HNF261	12	HNF261R	13	_	_	7 1/2	_	10	_	5	15
	60	HNF262	19	HNF262R	20	_	_	20	_	25	_	10	30
77	100	HNF263	24	HNF263R	25	_	_	30	_	40	_	20	50
	400	HNF265■	109	HNF265R	113	15	_	50	_	50	_	40	50
' '	600	HNF266■	111	HNF266R■	115	15	_	50	_	50	_	50	50
3-Pole		'	'	'				48	0 Volt A	C / 600	Volt A	C / 250 \	Volt DC
	30	HNF361	12	HNF361R	13	5	10	7 1/2	20	10	30	5	_
	30	l —	_	HNF361RL [®]	19	5	10	7 1/2	20	10	30	5	_
	60	HNF362H ²	11	HNF362RH ²	11	10	20	20	50	20	40	10	_
	60	HNF362 ^①	18	HNF362R ^①	19	10	20	20	50	25	60	10	30♡
17771	60	—	_	HNF362RL [®]	24	10	20	20	50	25	60	10	30ౕ
(((100	HNF363 ^①	23	HNF363R ^①	24	15	40	30	75	40	100	20	50 ^⑦
	200	HNF364 [®]	46	HNF364R ^①	47	15	60	50	125	50	150	40	50
	400	HNF365	114	HNF365R	118	15	125	50	250	50	350	50	_
	600	HNF366	116	HNF366R	120	15	200	50	400	50	500	50	_
	800	HNF367	295	HNF367R	295	15	250	50	500	50	500	50	_
	1200	HNF368	305	HNF368R	307	15	250	50	500	50	500	50	_

600 Volt Non-Fusible[®]

2-Pole ³								48	0 Volt A	AC / 600	Volt A	C / 600 \	olt DC
		Type 4 / 4X S	tainless [®]	Type 12 Indust	rial ^⑤								
1 1	30	HNF261S	13	HNF261J	13	_	_	7 1/2	_	10	_	5	15
1///	60	HNF262S	20	HNF262J	20	-	_	20	_	25	_	10	30
((100	HNF263S■	25	HNF263J■	25	_	_	30	_	40	_	20	50
	400	HNF265S■	113	HNF265J■	114	15	_	50	_	_	_	40	50
	600	HNF266S■	115	HNF266J■	120	15	_	50	_	_	_	50	50
3-Pole								48	0 Volt A	C / 600	Volt A	C / 250 \	Volt DC
	30	HNF361S	13	HNF361J	13	5	10	7 1/2	20	10	30	5	_
	60	HNF362SH ²	15	HNF362JH ²	14	10	20	20	50	20	40	10	_
1	60	HNF362S ^①	19	HNF362J ^①	19	10	20	20	50	25	60	10	30♡
	100	HNF363S ^①	24	HNF363J ^①	24	15	40	30	75	40	100	20	50 ^⑦
1///	200	HNF364S ^①	47	HNF364J ^①	47	15	60	50	125	50	150	40	50
	400	HNF365S	118	HNF365J	119	15	125	50	250	50	350	50	_
	600	HNF366S	120	HNF366J	120	15	200	50	400	50	500	50	_
	800	HNF367S	295	HNF367J■	295	15	250	50	500	50	500	50	_
	1200	HNF368S■	310	HNF368J■	310	15	250	50	500	50	500	50	_

[■] Built to order. Allow 3-5 weeks for delivery. ① Also rated 600V DC.

18/5

Compact switch (11.1"H, 6.6"W box less cover and handle). Short circuit withstand rating—100,000 RMS sym. amps.
 Use 3-Pole switch for 200A application.

Suitable for use as service entrance equipment except for 1200 when used on a 480 or 600V grounded wye system. S Also rated type 3S / 3R.

Indicates oversized enclosure (30A switch in a 60A enclosure or a 60A switch in a 100A enclosure.

^{@600}V DC and 600V DC horsepower rating shown requires (2) poles to be connected in series.

Heavy Duty Safety Switches

Type 3R, 4/4X, & 12 with Viewing Window

Description

30–600A, 3-pole 600V max. in fusible and non-fusible versions in Type 4/4X stainless steel and Type 12 enclosures.

All allow viewing of visible blade position. 30–200A also allow viewing of indicating type fuses.

Features

- Rugged installer-friendly enclosure design features a gasket flange with continuously welded seams
- Tool-free cover latches
- Two, three and four point mounting

- Metal handle with large insulating grip features a positive stop in both ON and OFF position
- Ground lugs provided as standard
- Type 12 enclosures are fabricated from galvanized steel and are also rated for 3R/3S outdoor applications
- Type 4X stainless steel switches (30–200A) are provided with stainless steel interior parts
- The widest range of accessories available including 200% neutrals, gold plated PLC auxiliary contacts and isolated ground kits



					Maximum	Horsepower Ratings	2		
	Ampere		Ship.	240\	/ AC	480V AC	600V AC	250V	600V
System	Rating	Catalog Number	Wt. (lbs.)	1-Phase, 2-Wire	3-Phase, 3-Wire	3-Phase, 3-Wire	3-Phase, 3-Wire	DC	DC
3-Pole, 3-	Wire Fusi	ble, Type 3R ^④					600 Volt AC /	250 V	olt DC
7 7 7	30	HF361RW	17	3	7 1/2	15	20	5	
	60	HF362RW	22	10	15	30	50	10	30 ^⑤
3-Pole, 3-	Wire Non	-Fusible, Type 3I	₹4				600 Volt AC /	250 V	olt DC
	30	HNF361RW	14	3	10	20	30	5	_
	60	HNF362RW	21	10	20	50	60	10	30 ^⑤
3-Pole, 3-V	Vire Fusik	ole, Type 12 ³⁴					600 Volt AC /	250 V	olt DC
	30	HF361JW	17	3	7 1/2	15	20	5	
1 6 6 6	60	HF362JW	22	10	15	30	50	10	30 ^⑤
(((100	HF363JW	26	15	30	60	75	20	50 ^⑤
ے کے کے ا	200	HF364JW	53	_	60	125	150	40	50
	400	HF365JW	166	_	125	250	350	50	_
	600	HF366JW	168	_	200	400	500	50	_
3-Pole, 3-V	Vire Non-	Fusible, Type 12	34				600 Volt AC /	250 V	olt DC
	30	HNF361JW	14	3	10	20	30	5	_
	60	HNF362JW	21	10	20	50	60	10	30 ^⑤
1 777	100	HNF363JW	25	15	40	75	100	20	50 ^⑤
	200	HNF364JW	51	15	60	125	150	40	50
	400	HNF365JW	133	15	125	250	350	50	_
3-Pole, 3-V	Vire Fusik	ole, Type 4X Stai	nless Ste	el ⁴⁶			600 Volt AC /	250 V	olt DC
1 1 1	30	HF361SW	17	3	7 1/2	15	20	5	
1 7 7 7	60	HF362SW	23	10	15	30	50	10	30 ^⑤
5 5 5	100	HF363SW	28	15	30	60	75	20	50 ^⑤
	200	HF364SW	55	_	60	125	150	40	50
	400	HF365SW	168	15	125	250	350	50	_
3-Pole, 3-V	Vire Non-	Fusible, Type 4X	Stainles	s Steel ^{@®}			600 Volt AC /	250 V	olt DC
	30	HNF361SW	15	3	10	20	30	5	_
1 1 1 1	60	HNF362SW	23	10	20	50	60	10	30 ^⑤
1 777	100	HNF363SW	27	15	40	75	100	20	50 [©]
1 (((200	HNF364SW	54	15	60	125	150	40	50
	400	HNF365SW	134	15	125	250	350	50	_
	400	11141 0030 44	154	10	123	230	550		

① 200A switches are also rated 600V DC.

② Maximum HP ratings listed apply only when time delay fuses are used.

Also rated 3S/3R for outdoor use.

 ^{© 600}V DC and 600V DC horsepower rating shown requires (2) poles to be connected in series.
 © 304 grade stainless steel. For switches with enclosures

^{9 304} grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, see page 18/9.

Switches Heavy Duty Safety Switches

Type VBII 4 & 6 Pole Heavy Duty Safety Switches

Application

4 & 6-pole Switches are commonly used as a disconnecting means for two-speed, two-winding motors. Fused switches provide both over current and short circuit protection. Non-fusible switches normally provide a local disconnection means for two-speed motors which are remote from their motor controller. 4-pole switches are also used in 3-phase, 4-wire circuits when a switching neutral is required. All 4 & 6-pole switches are service entrance rated.

Description

4 & 6-pole switches are available in 30-200A ratings and in both fusible and non-fusible versions. 4-pole switches are supplied with either Type 1 or Type12/3R enclosures.

6-pole switches are available with either Type 12/3R or Type 4X stainless steel enclosures.

Standards

- UL & CUL listed under file #E4776
- Meets UL98 for enclosed switches
- 4 & 6-Pole switches are suitable for use as service entrance
- Meets NEMA Standard KS-1 for enclosed switches
- Meets NEC wire bending space requirements

Features

- Visible blade, double break switching action
- Highly visible ON/OFF indication
- Defeatable dual cover interlock
- Padlock option in OFF position
- All copper current carrying parts^①
- Tangenital knockouts (Type 1, 4-pole switches)



4-Pole Type VBII Switches[©]

		Indoor Type 1		Type 12/3R Ind	ustrial ^⑤	Horsep	ower Ra	tings ^③						
	Amp	Catalog	Ship Wt.	Catalog	Ship Wt.	240V, 2	2Ø, 4W	240V 3	ð	480V, 3	Ø	600V, 3	3Ø	250V
System	Rating	Number	(lbs.)	Number	(lbs.)	Std.	Max.	Std.	Max.	Std.	Max.	Std.	Max.	DC
Fusible 6	00 Volt	AC, 250 Volt	DC — 4-F	Pole, 4 Fuse ^④)									
LINE	30	HF461	36	HF461J	36	3	10	3	7%	5	15	7%	20	5
LOAD ON	60	HF462	40	HF462J	40	7½	20	7½	15	15	30	15	50	10
LINE OFF	100	HF463	43	HF463J	43	15	30	15	30	25	60	30	75	20
LOAD	200	HF464 ■	88	HF464J∎	88	25	50	25	60	50	125	60	150	40
Non-fusi	ble 600 \	olt AC, 250 \	olt DC -	– 4-Pole				1			ļ.	1		
LINE	30	HNF461	32	HNF461J	32		10		10		20		30	5
LOAD	60	HNF462	34	HNF462J	34	_	20		20		50		60	10
LINE OFF	100	HNF463■	36	HNF463J■	36	_	30	_	40	_	75	l _	100	20
LOAD	200	HNF464■	78	HNF464J∎	78	_	50	_	60	_	125	l —	150	4

6-Pole Type VBII Switches 029

		Type 12/3R Ind	ustrial	Type 4X Stainless	Steel			Horsepov	wer Rating	js ^③		
	Amp	Catalog	Ship Wt.	Catalog	Ship Wt.	240V 3Ø		480V, 3Ø		600V, 3Ø	1	250V
System	Rating	Number	(lbs.)	Number	(lbs.)	Std.	Max.	Std.	Max.	Std.	Max.	DC
Fusible 6	00 Volt	AC, 250 Volt	DC — 6-Po	le, 6 Fuse ^④								
LINE OFF	30 60 100 200	HF661J HF662J HF663J∎ HF664J∎	37 41 44 90	HF661S HF662S HF663S HF664S	37 41 44 90	3 7½ 15 25	7½ 15 30 60	5 15 25 50	15 30 60 125	7½ 15 30 60	20 50 75 150	5 10 20 40
	ble 600 \	Volt AC, 250	Volt DC —	6-Pole								1
LOAD ON LINE OFF	30 60 100 200	HNF661J HNF662J HNF663J HNF664J	33 35 37 80	HNF661S HNF662S HNF663S HNF664S■	33 35 37 80	_ _ _ _	10 20 40 60		20 50 75 125	_ _ _	30 60 100 150	5 10 20 40

[■] Built to order. Allow 3-5 weeks for delivery.

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 $[\]ensuremath{\mathfrak{D}}$ Lugs are aluminum alloy as standard. Optional copper body lugs are available.

② All 4 & 6-pole VBII switches are suitable for use as service equipment when a neutral is installed or equipment ground kit is properly connected.

[®] Dual horsepower ratings: Std. – applies when non-time-delay fuses are installed. Max. – applies when time delay fuses are installed.

Fusible switches accept Class H Fuses as the standard. Class R & J fuses can also be installed and increase the rating from 10,000 to 200,000 AIC. For

Class J, the load base is moved upward. For Class R fuses, rejection kits are required.

Supplied with factory installed ground lugs.

Heavy Duty Safety Switches

Special Application Switches / **Interlocked Receptacle Switches**

Application

Receptacle Safety Switches provide cord connection protection of heavy-duty portable equipment (welders, infrared ovens, batch feeders, portable conveyors, assembly line fixtures and tools, refrigerator trucks, etc.) under load or fault conditions.

Standards

All receptacle switches are UL listed under file #E4776. Those with a viewing window are also CSA certified under file #1079316.

Description[®]

Type 12 and 4/4X Receptacle Safety Switches are available with 3-phase, 4-wire grounded type Crouse-Hinds Arkite™ 2 or Pyle-National receptacle, pre-wired and mounted with interlock linkage to the switch mechanism. Insertion or removal of the plug is prevented by the interlock linkage while the switch is in the "ON" position. Receptacle prevents operation of switch if incorrect plug is inserted.



			itches	
	Type 12 ^⑤	Type 4/4X [®]	Shipping	Accepts Crouse-Hinds
Ampere Rating [®]	Catalog Number	Catalog Number	Wt. (lbs.) Std. Pkg.	Arktite ^① Plug Catalog Number
240V Fusi	ble, 3-Pole, 3-Wire			
30	HF321JCH	HF321SCH▲	23	APJ3485 & NPJ3485
60	HF322JCH	HF322SCH▲	30	APJ6485 & NPJ6485
100	HF323JCH	HF323SCH▲	36	APJ10487 & NPJ10487
300V Fusi	ble, 3-Pole, 3-Wire			
30	HF361JCH	HF361SCH	24	APJ3485 & NPJ3485
60	HF362JCH	HF362SCH	30	APJ6485 & NPJ6485
100	HF363JCH	HF363SCH▲	36	APJ10487 & NPJ10487
600V Non	-Fusible, 3-Pole, 3-W	/ire		
30	HNF361JCH▲	HNF361SCH▲	22	APJ3485 & NPJ3485
00	HNF362JCH	HNF362SCH	29	APJ6485 & NPJ6485
60	HINESOZUCH	THAT 3023CH		
60 100	HNF363JCH▲	HNF363SCH▲	35	APJ10487 & NPJ10487
100	HNF363JCH▲		35	
100	HNF363JCH▲	HNF363SCH▲	35	
100 600V Fusi	HNF363JCH▲ ble, 3-Pole, 3-Wire w	HNF363SCH▲ vith Viewing Window	35	APJ10487 & NPJ10487
100 600V Fusi	HNF363JCH▲ ible, 3-Pole, 3-Wire w HF361JCHW▲	HNF363SCH▲ vith Viewing Window HF361SCHW▲	35	APJ3485 & NPJ3485
100 600V Fusi 30 60 100	HNF363JCH▲ ible, 3-Pole, 3-Wire w HF361JCHW▲ HF362JCHW HF363JCHW▲	HNF363SCH▲ vith Viewing Window HF361SCHW▲ HF362SCHW	24 30 36	APJ10487 & NPJ10487 APJ3485 & NPJ3485 APJ6485 & NPJ6485
100 600V Fusi 30 60 100	HNF363JCH▲ ible, 3-Pole, 3-Wire w HF361JCHW▲ HF362JCHW HF363JCHW▲	HNF363SCH▲ Vith Viewing Windov HF361SCHW▲ HF362SCHW HF363SCHW▲	24 30 36	APJ10487 & NPJ10487 APJ3485 & NPJ3485 APJ6485 & NPJ6485
100 600V Fusi 30 60 100 600V Non	HNF363JCH▲ ible, 3-Pole, 3-Wire w HF361JCHW▲ HF362JCHW HF363JCHW▲ I-Fusible, 3-Pole, 3-W	HNF363SCH▲ vith Viewing Windov HF361SCHW▲ HF362SCHW HF363SCHW▲ Vire with Viewing Wi	24 30 36 ndow	APJ10487 & NPJ10487 APJ3485 & NPJ3485 APJ6485 & NPJ6485 APJ10487 & NPJ10487

Pyle-National Interlocked Receptacle Switches 3-Poles Fusible and Non-Fusible

	Receptacle	Voltage Rating	Type 12 Catalog Number [©]	Type 12 Stainless Steel Catalog Number®	Shipping Wt. (lbs.) Std. Pkg.	Accepts Pyle-National QuelArc™②3 Plugs Plug Catalog Number
30	30	600 (F) 600 (N-F)	HF361JPN▲ HNF361JPN	HF361SPN▲ HNF361SPN	23 21	JPD-83046
60	60	240 (F) 600 (F) 600 (N-F)	HF322JPN▲ HF362JPN▲ HNF362JPN	— HF362SPN▲ HNF362SPN	28 28 27	JPD-116046

[▲] Built to order. Allow 6-8 weeks for delivery.

Arktite[™] is a registered trademark of the Crouse-Hinds Company. Plugs are not sold or supplied by Siemens.

 $^{^{\}odot}$ Indicates plug with maximum diameter cable bushing. $^{\odot}$ QuelArc $^{\text{TM}}$ is a registered trademark of the Pyle-

National Company.

⁴ Ampere rating of both switch and receptacle.

Also rated Type 3R/3S.

[®] Enclosure is constructed of Type 304 stainless steel.

Switches Heavy Duty Safety Switches

Special Application Safety Switches / Type VBII Non-Metallic & 316 Grade Stainless Steel

Application

Siemens Non-metallic and 316 grade stainless steel switches provide a superior level of corrosion resistance to assure trouble free performance in the most severe conditions. 316 grade stainless steel provides increased corrosion resistance when compared to 304 grade, especially in atmospheres containing a high level of chlorine commonly encountered in marine and waste management applications. Our non-metallic enclosures are constructed from fiberglass reinforced polyester and are extremely resistant to a wide range

of corrosive atmospheres. They allow a wide range of operating temperatures and their insulating properties virtually eliminate problems caused by internal condensation.

Description

30-200A, 600V Max, fusible and nonfusible switches are available in both non-metallic and 316 grade stainless steel versions. All are supplied with factory installed ground bars as standard. Viewing windows are also available in the stainless offering.



Type 4/4X Non-Metallic

			Horsepower Rating—3-Phase							
Amnoro	Catalog	Ship Weight Std. pkg.			480 Volt AC		600 Volt AC		250 Volts	600 Volts
Rating			Std.	Max.	Std.	Max.	Std.	Max.	DC	DC
3-Pole, 4-Wire, 240 Volt Fusible, Type 4X ^⑤										
30	HF321NX	21	3	7½	_	_	_	_	5	_
60	HF322NX▲	22	7½	15	_	_	_	_	10	_
3-Pole,	3-Pole, 4-Wire, 600 Volt AC Fusible, Type 4X ²³⁵									
30	HF361NX	21	3	7½	5	15	7½	20	5	15 ⁴
60	HF362NX	22	7½	15	15	30	15	50	10	30④
100	HF363NX▲ ^①	39	15	30	25	60	30	75	20	504
200	HF364NX▲ ^①	83	25	60	50	125	60	150	40	50
3-Pole,	3-Wire, 600	AC Volt N	lon-F	usible	, ^① Ty	pe 4)	(23			
30	HNF361X	20	-	7½	—	20	-	30	5	15 ⁴
60	HNF362X	20	_	15	_	50	_	60	10	304
100	HNF363X▲	38	_	30	-	75	-	100	20	504
200	HNF364X▲	81		60		125		150	40	50

Type 4/4X 316 Grade Stainless Steel

	Standard	With Viewing Window	ing Ship Horsepower Rating—3-Phase						250	600	
Ampere Rating	Catalog Number	Catalog Number	Weight (lbs.)	240 Vo Std.	Max.	480 Vo	Max.	600 V	Max.	Volts DC	Volts DC
240V A	C, 250V DC F	usible 3-Pole,	3-Wire								
30	HF321SS▲	-	15	3	7½	—	—	I —	I —	5	1 —
60	HF322SS▲	_	19	7½	15	—	—	—	—	10	—
100	HF323SS▲	_	27	15	30	_	-	—	-	20	—
200	HF324SS▲	_	48	25	60	I —	-	l —	1 —	40	1 —
600V A	C, 250V DC F	usible 3-Pole,	3-Wire ³)							
30	HF361SS	HF361SSW	17	3	7½	5	15	7½	20	5	T —
60	HF362SS	HF362SSW▲	21	7½	15	10	30	15	50	10	30④
100	HF363SS	HF363SSW▲	28	15	30	25	60	30	75	20	504
200	HF364SS	HF364SSW▲	54	25	60	50	125	60	150	40	50
300V A	C, 250 V DC	Non-Fusible 3-	Pole, 3-	Wire ^①)(3)						
30	HNF361SS	HNF361SSW	15	_	10	I —	20	l —	30	5	1 —
60	HNF362SS	HNF362SSW▲	21	_	20	1 —	50	1 —	60	10	30④
100	HNF363SS	HNF363SSW▲	26	_	40	<u> </u>	75	_	100	20	50④
200	HNF364SS	HNF364SSW▲	51	_	60	1 —	125	l —	150	40	50

[▲] Built to order. Allow 6-8 weeks for delivery.

① Also used for 240 volt applications.

[@] Add "L" to end of catalog number for switches less line & load lugs with mounting hardware for crimp type or copper body lugs.

^{3 200}A switches are also rated 600V DC max.

^{@ 600}V DC voltage and horsepower rating shown requires (2) poles to be connected in series.

Supplied with factory installed neutral.

Heavy Duty Safety Switches

Enclosed Solar Photovoltaic (PV) Switches

Application

Solar disconnect switches are designed to be used in the DC portion of photovoltaic power generation circuits. They incorporate powerful magnets within the switch line base which work in combination with a double break switching action to quickly dissipate the very hot arc that is generated when a 600V DC circuit is opened under load. These circuits are defined by article 690 of the NEC which requires the grounded conductor to be at ground potential at all times and therefore cannot be switched.

Description

30-200A switches are available in both Type 1 and 3R enclosures and in both fusible and non–fusible versions. They are provided with an additional door mounted warning label as required by the NEC and are supplied with a factory installed equipment ground bar. They are built to UL98 requirements but are UL listed in file number E335018 as UL1741 photovoltaic disconnect switches. They are 3 pole switches that are approved to switch 3 separate 600V DC circuits (one per pole). The design incorporates

many of the standard VBII switch features including a rolled out enclosure front flange, a large metal operating handle, oversized line and load lugs and large wire gutters. 1000VDC photovoltaic switches are UL98B listed for solar applications and comply with article 690 of the NEC. The new 400-600Amp switches are also UL98B listed at 600VDC and come in NEMA Type 3R.

Solar Photovoltaic Enclosed Disconnect Switches

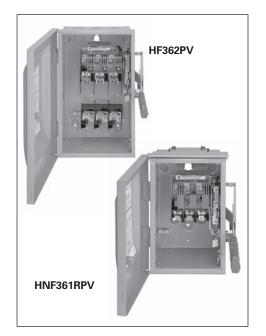
	Indoor – Type 1		Outdoor – Type 3R		Rated Isc	
Ampere Rating	Catalog Number	Ship Wt* Std. Pkg.	Catalog Number	Ship Wt* Std. Pkg.	Per NEC Article 690	
Negativ	ve Ground 3 Pol	e 3 Wire Fu	ısible 600Volt D	С		
30	HF361PV	14	HF361RPV	15	19.2 A	
60	HF362PV	20	HF362RPV	21	38.4 A	
100	HF363PV▲	25	HF363RPV	26	64.0 A	
200	HF364PV▲	49	HF364RPV	50	128.0 A	
Negativ	ve Ground 3 Pol	e 3 Wire N	on-Fusible 600V	olt DC		
30	HNF361PV	12	HNF361RPV	13	24.0 A	
60	HNF362PV	19	HNF362RPV	20	48.0 A	
100	HNF363PV▲	24	HNF363RPV	25	80.0 A	
200	HNF364PV▲	47	HNF364RPV	48	160.0 A	
NEW Ne	gative Ground,	1 Pole, Fus	ible 1000 Volt D	C		
200	HF1104NPV▲	52	HF1104NRPV▲	53	128.0A	
NEW Ne	gative Ground,	1 Pole, Nor	n-Fusible 1000 V	olt DC		
	<u> </u>					
200	HNF1104NPV▲	50	HNF1104NRPV▲	51	160.0A	
	HNF1104NPV▲ e Ground 3 Pole	1	1		160.0A	
		1	1			
Positiv	e Ground 3 Pole	3 Wire Fus	sible 600Volt DC	;	19.2 A	
Positive 30	e Ground 3 Pole	3 Wire Fus	sible 600Volt DC	15	19.2 A 38.4 A	
Positive 30 60	e Ground 3 Pole HF361PVPG HF362PVPG▲	3 Wire Fus	HF361RPVPG HF362RPVPG	15 21	19.2 A 38.4 A 64.0 A	
30 60 100 200	HF361PVPG HF362PVPG HF363PVPG HF363PVPG HF363PVPG	3 Wire Fus 14 20 25 49	HF361RPVPG HF362RPVPG HF363RPVPGA HF364RPVPGA	15 21 26 50	19.2 A 38.4 A 64.0 A 128.0 A	
30 60 100 200	HF361PVPG HF362PVPG HF363PVPG HF364PVPG HF364PVPG HF364PVPG HF364PVPG	3 Wire Fus 14 20 25 49	HF361RPVPG HF362RPVPG HF363RPVPGA HF364RPVPGA	15 21 26 50	19.2 A 38.4 A 64.0 A	
30 60 100 200 Positive	HF361PVPG HF362PVPG HF363PVPG HF364PVPG HF364PVPG HF364PVPG HF364PVPG HF364PVPG HF364PVPG	3 Wire Fus 14 20 25 49 3 Wire No	HF361RPVPG HF362RPVPG HF363RPVPG HF364RPVPG n-Fusible 600Vc	15 21 26 50	19.2 A 38.4 A 64.0 A 128.0 A	
90 100 200 Positive 30	HF361PVPG HF362PVPGA HF363PVPGA HF364PVPGA HF364PVPGA HNF361PVPG	3 Wire Fus 14 20 25 49 3 Wire No	HF361RPVPG HF362RPVPG HF363RPVPG HF364RPVPG HNF361RPVPG	15 21 26 50 SIT DC	19.2 A 38.4 A 64.0 A 128.0 A	

Positive and Negative Ground, 2 Wire, 600Volt DC, Type 3R

			· · · · · · · · · · · · · · · · · · ·		. , 0
Amperage Rating	No. Poles	Fuse Type	Catalog Number	Ship Wt* Std. Pkg	Rated Isc Per NEC Article 690
400A	1	Fusible	HF165NRPV▲	165	256A
400A	1	Non-fusible	HNF165NRPV▲	127	256A
400A	2	Fusible	HF265NRPV▲	325	256A
400A	2	Non-fusible	HNF265NRPV▲	315	256A
600A	1	Fusible	HF166NRPV▲	167	384A
600A	1	Non-fusible	HNF166NRPV▲	129	384A
600A	2	Fusible	HF266NRPV▲	327	384A
600A	2	Non-fusible	HNF266NRPV▲	315	384A

▲ Built to order. Allow 6–8 weeks for delivery.

Note: All disconnects are rated at 10,000 AIC per UL requirements when used with or protected by Class K, J or R fuses rated at 600VDC.





^{*} In pounds (lbs)



Class R Fuse Clip Kits

All General Duty and Heavy Duty Switches are field convertible to accept Class R Fuse Clip Kits. The kits prevent the installation of Class H and K fuses (one kit required per 3-pole switch).

Class R Fuse Clip Kits

Catalog Number	Description
GSRK321	30A, 240V Kit (GD only)
HR21	30A, 240V Kit (HD only)
HR612	30A, 600V Kit/60A, 240V Kit
HR62	60A, 600V Kit
HR63	100A Kit
HR64	200A Kit
HR656	400A/600A Kit

Class J Fusing

All 30-600A, 600V and 100-600A,240V fusible Heavy Duty Switches are field convertible to accept Class J fuses by moving the load base to a pre-drilled J fuse position. All 100-600A, 240V fusible General Duty switches can also be field converted to accept Class J fuses.

Internal Shield Kits (for fusible switches)

Kits provide a clear plastic inner door to prevent accidental contact with live parts. Test probe holes are provided and fuses can be replaced without removal of kit.

NEW Internal Shield Kits 2

Switch Ampere Rating	Kit Catalog Number
30A HD	HSK61SSW
60A HD	HSK62SSW
100A HD	HSK63SSW
200A HD	HSK64SSW

▲ Built to order. Allow 6–8 weeks for delivery.

① One kit per pole required.



Class T Fuse Adapter Kits

All 100-600A, General Duty and 100-200Amp and 1200Amp Heavy Duty Switches are field convertible to accept Class T fuses. 400-800A switches are field convertible to accept Class T fuses by moving the load base to a pre-drilled T fuse position.

Class T Fuse Adapter Kits[®]

Catalog Number	Description
HT23	100A, 240V Kit
HT63	100A, 600V Kit
HT24	200A, 240V Kit
HT64▲	200A, 600V Kit
TFAK82	1200A, 240V Kit

Neutral Kits

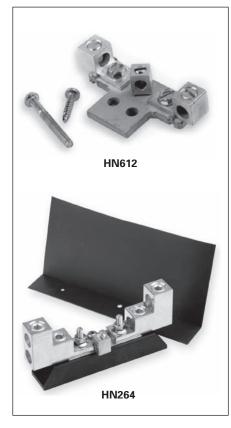
Standard Neutral Kits can be field installed in General and Heavy Duty Switches.

Neutral Kits

Switch Ampere Rating	Kit Catalog Number
30 GD	W410190
30 HD, 60 GD	HN612
60, 100 HD, 100 GD	HN623
200	HN64
400 & 600	HN656
800 & 1200	HN678



[®] Not designed for use in Non-metallic 4X safety switches. Not designed for use with Auxiliary Contacts.



200% Neutral Kits

UL listed 200% Neutrals are available on 100-600A Heavy Duty Switches. They are typically used with non-linear transformers or where increased neutral ampacity/lug capacity is required.

200% Neutral Kits

Switch Ampere Rating	Kit Catalog Number	Wire Range Line & Load Lugs (Cu/Al)
100	HN263	(2) #14-1/0 AWG
200	HN264	(2) #6 AWG-300 Kcmil
400	HN656	(2) 1/0 AWG-750 Kcmil or (4) 1/0 AWG-250 Kcmil
600	HN678	(4) 1/0 AWG-750 Kcmil

Fuse Puller Kits

Fuse Puller Kits are field installable in 30-100A Type VBII Heavy Duty Switches (one kit required per 3-pole switch).

Fuse Puller Kits

Switch Ampere Rating	Fuse Puller Kit Catalog Number
30	HP61
60	HP62▲
100	HP63▲

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Heavy Duty Safety Switches

Accessories







Auxiliary Contacts

Auxiliary Contacts are available only for Heavy Duty Switches. The auxiliary contacts are available in 1 normally open and 1 normally closed or 2 normally open and 2 normally closed configurations. Siemens offers a PLC Auxiliary Switch (30-200A) that has very low resistance for low voltage and current typical in PLC circuits. All auxiliary contacts make after and break before main switch contacts.

Auxiliary Contacts

					Horsepower Rating		
Switch Ampere	Aux. Switch Catalog Number	125V AC Max.	250V AC Max.	28V DC Max.	125V AC Max.	250V AC Max.	

With 1 NO & 1 NC Isolated Contacts

30-200	HA161234	10	10	7	1/2	3/4
400-1200	HA165678	10	10	_	1/2	3/4

With 2 NO & 2 NC Isolated Contacts

30-200	HA261234	10	10	7	1/2	3/4
400-1200	HA265678	10	10	7	1/2	3/4

Low Current PLC Type with 1 NO & 1 NC Gold Plated Contacts

30-200	HA361234	10	10	7	1/2	3/4
400-1200	HA365678	10	10	_	1/2	3/4

Isolated Ground Kits

Isolated Ground Kits are available on 30-600A Heavy Duty Switches. They are normally used on circuits with a high content of computer or other electronic loading which require a ground which is isolated from the building ground and neutral circuits. The kit includes both isolated and grounded terminals as listed below.

Isolated Ground Kits

Switch Ampere	Catalog	Number of T	erminals	Wire Range	
Rating	Number	Isolated	Grounded	Per Terminal (Cu/Al)	
30–200	HG261234	2	2	#14-4 AWG	
400-600	HG2656	4	4	#14-2/0 AWG	

▲ Built to order. Allow 6-8 weeks for delivery.

NEW Quick Connects

They provide two point control power take-off capability and are normally used on two poles on the line side when it is required to have control power available when the switch is in the OFF position. They provide a mounting provision for standard ¼" quick connect terminal. Installed in the line or load side. 30A VBII switches have lugs UL listed to accept (2) wires per pole as standard so a 30A kit is not required.

Catalog Number	Description
HCQ62	60A 2 wire quick connect kit
HCQ63	100A 2 wire quick connect kit
HCQ64	200A 2 wire quick connect kit

Copper Lug Kits

Heavy duty switches are UL approved to accept field installed copper lug kits.

Copper Lug Kits

Switch Ampere Rating	Copper Lug Catalog Number	Description
30-60	HLC612	(9) Lugs/Kit #14-4 AWG Cu
100	HLC63▲	(9) Lugs/Kit #14-1/0 AWG Cu
200	HLC64▲	(9) Lugs/Kit #6 AWG-300 Kcmil Cu
400–1200	HLC65678	(1) Lugs/Kit #1/0 AWG-600 Kcmil Cu

Equipment Ground Kits

Equipment Ground Lug Kits are available for all General and Heavy Duty Switches. They are field installable in Type 1 and Type 3R Switches and are factory installed as standard in Type 4 / 4X and Type 12 and also in all VBII 4&6-pole Switches.

Equipment Ground Kits

Switch Ampere Rating	Catalog Number	Number of Terminals	Wire Range Per Terminal (Cu/Al)
30A GD	GSGK60	2	#14-8 AWG
60–200 GD	HG61234	2	#14-4 AWG
30-200 HD	HG61234	2	#14-4 AWG
400 & 600	HG656	4	#14-2/0 AWG
800–1200	HG678	8	#6 AWG-250 Kcmil

Hub and Lug Data

Interchangeable Hubs

Conduit hubs are available for Type 3R, 12 and 4 / 4X applications. 30-200A Type 3R Switches are provided with a conduit hub provision and a removable hub plate on their top rainshed.

Hubs

Conduit Size (inches)	Catalog Number	Used On
Type 3R ^①)	
Cover 3/4 1 1 1/4	ECHA000 ECHA075 ECHA100 ECHA125	30A GD Only
Cover 3/4 1 1 1/4 1 1/2 2 2 1/2	ECHS000 ECHS075 ECHS100 ECHS125 ECHS150 ECHS200 ECHS250	60–200A GD 30–200A HD
2 1/2 3 3 1/2 4	ECHV250 ECHV300 ECHV350 ECHV400	400–1200A

Type 4/4X²

3/4	SSH075		
1	SSH100		
1 1/4	SSH125	30-200A	
1 1/2	SSH150		
2	SSH200		

Note: 30 thru 200A. Type 3R Switches have removable hub plates on rainshed. 400A and larger Type 3R Switches have no provisions for mounting hubs. Drill or punch hole in the field to accommodate hub size desired.

Compression Lug Mounting & Neutral Barrier Kit

All Heavy Duty Switches are field convertible for (Crimp) type lugs. When compression lugs are required for 30-100A switches, a neutral barrier kit is required for 1-Phase, 3W or 3-Phase, 4W applications. When compression lugs are required on 400-1200A switches, lug mounting kits are required.

Compression Lug Mounting® and Neutral Barrier Kits

Switch Ampere Rating	Catalog Number	Kit Description
30	HCL612	Neutral Barrier Kit
60 & 100	HCL623	Neutral Barrier Kit
400 [@]	HCL65	1 Pole, Compression Lug Mounting Kit
400 & 600 [©]	HCL65678■	1 Pole, Compression Lug Mounting Kit
800 & 1200 ^⑤	HCL65678■	1 Pole, Compression Lug Mounting Kit

Lugs

30 & 60A Switches are suitable for use with 60° or 75°C wire. 100–1200A are suitable for use with 75°C rated wire.

Multiple Padlock Accessory

A tamper-proof device to provide for multiple padlocking to meet OSHA or plant requirements. Accepts up to 6 1/4" padlocks. Catalog number **SL0420**. Standard Carton-12.

Wire Ranges (Line, Load and Standard Neutral)

Switch Ampere Rating	Wire Range with Wire Bending Space Per NEC Requirements	Lug Wire Range
30GD	#14-8 AWG (Cu/AI) [©]	#14-6 AWG (Cu/AI)
30HD	#14-6 AWG (Cu/AI)	#14-2 AWG (Cu/AI)
60 ^{®®}	#14-3 AWG (Cu/AI)	#14-2 AWG (Cu/AI)
100 [®]	#14-1/0 AWG (Cu/AI)	#14-1/0 AWG (Cu/AI)
200 [®]	#6 AWG-250 Kcmil (Cu/Al)	#6 AWG-300 Kcmil (Cu/AI)
400 [©]	1/0 AWG-750 Kcmil (Cu/Al) or (2) 1/0 AWG-250 Kcmil (Cu/Al)	(1) 1/0 AWG-750 Kcmil (Cu/Al) or (2) 1/0 AWG-250 Kcmil (Cu/Al)
600 [©]	(2) 1/0 AWG-750 Kcmil (Cu/Al) or (4) 1/0 -250 Kcmil (Cu/Al)	(2) 1/0 AWG-750 Kcmil (Cu/Al) or (4) 1/0 AWG-250 Kcmil (Cu/Al)
800	(3) 1/0 AWG-750 Kcmil (Cu/Al) Line Load (4) 1/0 AWG-750 Kcmil (Cu/Al) neutral	(3) 1/0 AWG-750 Kcmil (Cu/Al) Line Load (4) 1/0 AWG-750 Kcmil (Cu/Al) neutral
1200	(4) 3/0 AWG-750 Kcmil (Cu/Al) Line Load (4) 1/0 AWG-750 Kcmil (Cu/Al) neutral	(4) 1/0 AWG-750 Kcmil (Cu/Al) Line Load (4) 1/0 AWG-750 Kcmil (Cu/Al) neutral

- \blacksquare Built to order. Allow 3-4 weeks for delivery.
- $\ensuremath{\texttt{0}}$ Hubs suitable for 3R Switches.
- ② Also suitable for Type 12 applications.
- Neutral Barrier kits are required on 30-100A switches only and only with 1-Phase / 3W or 3-Phase / 4W loads. Compression Lugs mounting kits are required on 400-1200A switches only.
- Provides mounting for a single line or load lug.





ECHV300



ECHS200



- ⑤ Provides mounting for (2) compression lugs per phase on line or load.
- Line base lugs (only) are UL approved to accept #14-6 CU/Al cable.
- ② Max. wire size for height reduced switches is 500 kcmil (Cu/Al).
- All but 60A GD & Compact HD NF switches are also UL approved for #2 Cu/Al conductors.
 All 200A Heavy Duty Switches have a wire range
- & wire bending space for (1) #6-300 Kcmil (Cu/Al).

 (a) Also for 30A oversized heavy duty switches.
- Also for 60A oversized heavy duty switches.

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Enclosed Switches

Rotary Disconnect Switches in Non-Metallic Enclosures

Description

16-125A non-fusible switches are available in fiberglass reinforced polycarbonate enclosures which are UL approved as Type 12 & 4X and for either indoor or outdoor use. All are horsepower and load break rated. All are panel mounted and are either supplied with factory installed aux. contacts or will accept contact kits. All are compact in size while providing ample wiring space for copper line & load conductors.



Siemens Enclosed Rotary Disconnect Switches

- 16-125A, Non-Fusible
- 600VAC max. rated (except catalog no. HNF3100CX is rated 480VAC max.)
- Available in both Type 12 and 4X non-metallic enclosures
- Both screw and hinged cover designs available
- Listed and marked "suitable for use as motor disconnect" per NEC Section 430-109
- Screw cover switches are UL listed under File No. E47705 and are CSA certified under File No. 203576
- IEC 60947-3 rated and CE marked (enclosures are IP65 rated)
- HP rated

- Hinged door switches are UL listed for multiple line and load conductors per phase in 30-100A ratings. They are UL & CUL listed under File No. E191706
- Rotary handles are available in black, red, and yellow and in pistol grip designs
- 16–63A screw cover switches have factory installed ground bars. All hinge cover switches accept ground lug kits
- Screw cover switches are provided with knockouts
- Padlockable in OFF position with up to (3) padlocks

	Catalog Number			Horsepower Ratings				
Ampere Rating	3 Pole, 3 Wire	3 Pole, 3 Wire with (1) NO & (1) NC Aux. Contact [®]	Shipping Weight ^①	240V AC 1 Phase	3 Phase	480V AC 3 Phase	600V AC 3 Phase	
Non-Fu	sible, Type 1, 4X & 12K	with Screw Cover and Bla	ck Rotary H	landle 600	V AC Max.	(5)	-	
16	3LD2064-0TB51-0US2	3LD2064-1GP51-0US2	1	1½	3	7½	10	
25	3LD2164-0TB51-0US2	3LD2164-1GP51-0US2	1	3	71/2	10	15	
30	3LD2264-0TB51-0US2	3LD2264-1GP51-0US2	1	3	7½	15	20	
30	l 	3LD2264-1TS51-0US2⑥▲	1	3	71/2	15	20	
30	l 	3LD2264-2TW51-0US2⑦▲	1	3	71/2	15	20	
63	3LD2565-0TB51-0US2	3LD2565-1GP51-0US2▲	3	10	15	40	50	
100	3LD2766-0TB51-0US2	3LD2766-1GP51-0US2▲	6	_	30	60	75	
125	3LD2866-0TB51-0US2	3LD2866-1GP51-0US2▲	6	-	40	75	100	
Non-Fu	sible, Type 1, 4X & 12K [©]	with Screw Cover and Rec	and Yellov	w Rotary H	andle 600	V AC Max	<u>(S)</u>	
16	3LD2064-0TB53-0US2	3LD2064-1GP53-0US2	1	1½	3	7½	10	
25	3LD2164-0TB53-0US2	3LD2164-1GP53-0US2	1	3	71/2	10	15	
30	3LD2264-0TB53-0US2	3LD2264-1GP53-0US2	1	3	7½	15	20	
30	l _	3LD2264-1TS53-0US2⑥▲	1	3	71/2	15	20	
30	-	3LD2264-2TW53-0US2 ^⑦ ▲	1	3	71/2	15	20	
63	3LD2565-0TB53-0US2	3LD2565-1GP53-0US2▲	3	10	15	40	50	
100	3LD2766-0TB53-0US2▲	3LD2766-1GP53-0US2▲	6	_	30	60	75	
125	3LD2866-0TB53-0US2▲	3LD2866-1GP53-0US2▲	6	l —	40	75	100	

	Catalog Number			Horsepower Ratings					
Ampere		3 Pole, 3 Wire with (1) NO	Shipping	120V AC	240V AC		480V AC		600V AC
Rating	3 Pole, 3 Wire	& (1) NC Aux. Contact®®	Weight ^①	1 Phase	1 Phase	3 Phase	1 Phase	3 Phase	3 Phase
3 Pole, Non-Fusible, Type 12 ^② with Screw Cover and Black Rotary Handle 480V AC Max ^③									
20	HNF3020CJ [®]	_	1	3/4	2	5	5	10	1 –
30	HNF3030CJ®	_	2	2	3	7½	71/2	15	20
60	HNF3060CJ [©]	_	4	3	10	15	20	40	50
100	HNF3100CJ®	_	5	5	15	25	30	50	_
Pole, No	on-Fusible, Type 12 $^{ extstyle 2}$ v	vith Screw Cover and R	ed and Ye	llow Rota	ry Handle	480V AC	Max^3		
20	HNF3020CJE [®]	_	1	3/4	2	5	7½	10	_
30	HNF3030CJE®	_	2	2	3	7½	20	15	20
60	HNF3060CJE®	_	4	3	10	15	30	40	50
100	HNF3100CJE®	_	5	5	15	25	30	50	_
B Pole, Non-Fusible, Type 4, 4X [®] with Hinged Door and Black Pistol Grip Rotary Handle 480V AC Max. [®]									
30	HNF3030CX	_	4	2	3	7½	7½	15	20
60	HNF3060CX	_	4	3	10	15	20	40	50
100	HNF3100CX	_	5	5	15	25	30	50	_

[▲] Built to order. Allow 6-8 weeks for delivery.

© Carton quantity of (1). Shipping weight in pounds (lbs.).

© Approved for indoor/outdoor use. No cover interlock provided.

© 30 and 60A switches are also rated 600V AC.

Also rated as Type 12 and UL approved for both indoor and outdoor use. Defeatable cover interlock provided.

[©] Screw cover enclosures are constructed from Makrolon 9425. Hinged cover enclosures are constructed from fiberglass reinforced polycarbonate.

Switch is supplied with (2) NO and no NC aux. contacts. ② Switch is supplied with (4) NO and no NC aux. contacts. Ground bar is not provided or available.

[®] Aux. contacts break about 3 Ms before and make about 3 Ms after main switch contacts.

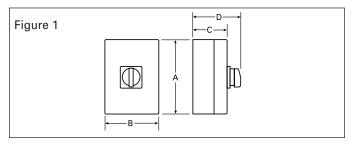
Short Circuit Rating

Rotary Disconnect Switches

Enclosed Disconnect Switch Dimensions (Inches)*

Catalog	Ampere	Fig.		Dimens	ions	
Number	Rating	No.	Α	В	С	D
3LD2064-	16		5.52 ^④	3.94	3.19	4.57
3LD2164-	25		5.524	3.94	3.19	4.57
3LD2264-	30	1	5.524	3.94	3.19	4.57
3LD2565-	63	'	6.93 ^⑤	5.75	4.10	5.87
3LD2766-	100		11.90	8.35	5.36	7.13
3LD2866-	125		11.90	8.35	5.36	7.13
HNF3020CJ	20		4.92	2.95	3.94	5.44
HNF3020CJE	20	1	4.92	2.95	3.94	5.44
HNF3030CJ	30		6.89	4.92	3.94	5.44
HNF3030CJE	30		6.89	4.92	3.94	5.44
HNF3060CJ	60		9.46	6.31	4.77	6.27
HNF3060CJE	60	1	9.46	6.31	4.77	6.27
HNF3100CJ	100		11.77	7.87	5.20	6.70
HNF3100CJE	100		11.77	7.87	5.20	6.70
HNF3030CX	30		7.87	7.87	5.20	7.29
HNF3060CX	60	2	11.77	7.87	5.20	7.29
HNF3100CX	100		11.77	7.87	5.20	7.29

Note: 3LD2 Type switches only have top and bottom end KOs as follows: 16-30A - 1/2" & 3/4", 63A - 3/4" & 1", 100 & 25A - 1" & 1 1/4"



UL and CUL Short Circuit Withstand Ratings

	Short	Short Circuit Withstand Rating and Fuse Class				
	With Line S	ide Fusing		With Load Si	de Fusing ^①	
Ampere Rating	5 kA at 600V Max	10 kA at 600V Max	18 kA at 480V Max	5 kA at 480V Max	18 kA at 480V Max	
3LD2 Ty	3LD2 Type Switches [®]					
16	RK5 (50A Max)	_	_	_	_	
25 & 30	RK5 (80A Max)	_	_	_	_	
63	RK5 (175A Max)	_	_	_	_	
100 & 125	_	RK5 (200A Max)	_	_	_	

HNF Type Switches

30		H, K & RK5 (100A Max)	J, T & CC	H, K & RK5 (30A Max)	Ferraz Shawmut A50P or lower let-through semiconductor fuses (60A Max)
60		H, K & RK5 (150A Max)	(100A Max)	H, K & RK5	Ferraz Shawmut A50P or lower let-through
100	6	6		(60A Max)	semiconductor fuses (100A Max)

- © For use as supplemental protection on the load side of the branch circuit over current
- © For use as supplemental protection on the load side of the branch circuit over current protective device.

 @ Ground lug kit has two lugs for #14-4 Cu/Al wire.

 @ Factory installed ground lugs supplied as follows: 16-30A #14-10 Cu, 63A #14-8 Cu. Ground lug not provided and is not available on catalog numbers 3LD2264-2TW51-0US2 and 3LD2264-2TW53-0US2.

 @ 6.38 inches high including mounting feet.

 @ 7.85 inches high including mounting feet.

 @ 60 & 100A HNF switches are rated 10kA at 480V max. with line side Class H, K & RK5 150A max fuses.

- © 600 & 100A HIVE SWITCHES are rated TUKA at 480V max. With line side Class H, K & HKS 150A max. fuses.
 © Wire range (1) #14-2 AWG 60/75 °C Cu only.
 © 16-63A 3LD switches are also rated 5kA at 600VAC max when protected by a 3RV type MSP of the same or lesser ampere rating.

*For inches / millimeters conversion, multiply inches by 25.4.

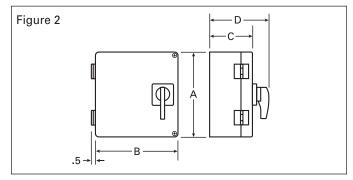
Wire ranges 60/75°C Cu Only

3LD2 Type Switches[®]

16 Amps	(1) #18-10 AWG
25–30 Amps	(1) #14-10 AWG
63 Amps	(1) #14-6 AWG
100–125 Amps	(1) #12-1 AWG

HNF Type Switches

30 Amps	(1) #14-#10 AWG Solid (1) #14-#4 AWG Stranded Up to (4) #12 AWG Solid Up to (3) #12 AWG Stranded Up to (6) #14 AWG Stranded Up to (4) #14 AWG Stranded with (1) #10 AWG Stranded
60 & 100 Amps	(1) #14-#10 AWG Solid (1) #14-#1 AWG Stranded (2) #6 AWG Stranded Up to (3) #8 AWG Stranded Up to (6) #10 AWG Stranded Up to (6) #12 AWG Solid



IEC Fuse and Withstand Ratings

3LD2 Screw Cover Switches				
16	20A	5k Arms		
25	25A	10k Arms		
32	50A	10k Arms		
63	63A	15k Arms		
100	100A	20k Arms		
125	125A	20k Arms		

gG Fuse Size

HNF Hinged Cover Switches

30	63A	10k Arms
60	100A	10k Arms
100	100A	10k Arms

Accessories

Ampere Rating

Switch Ampere Rating	Catalog Number	Description		
21 D2 T C				

3LD2 Type Switches

16-30A	3LD9220-2C	Neutral Kit
63A	3LD9250-2CA	Neutral Kit
100-125A	3LD9280-2C	Neutral Kit

HNF Type Switches

30-100A	GSGK60	Ground Lug Kit [®]
30A	LBRA1	Auxiliary Contact Kit (1 NO-1 NC)
60-100A	LBRA2	Auxiliary Contact Kit (1 NO-1 NC)
30-100A	HF63CX [®]	Neutral Kit

Disconnect Switches

Compact Non-Fusible — Rotary and Toggle

Features

- 16-250 Ampere, to 100 hp, 480V & 600V
- Rotary and Toggle actuation models
- LBR Type switches are padlockable in the OFF position and are UL & CUL listed under File No. E191706 as manual motor controllers per UL Standard UL508
- 3LD2 Type switches are padlockable in the OFF position and are UL listed under File No. E47705 per UL508 and are CSA certified under File No. 203576
- Base, DIN-rail and door mounting
- Multiple conductor, distribution terminal type rating LBR & LBT Type (40A -100A only)
- IEC 947-1 rated, CE marked
- Listed and marked "suitable as motor disconnect" per NEC Section 430-109

Application

Siemens Load Break Switches are listed as manual motor controllers and are suitable as motor disconnects. They are load break rated and act as enclosure disconnects when short circuit protection is provided upstream of the switch. If upstream over current protection is not provided, use a Siemens fusible Type VBII, CFS or MCS Disconnect Switch.

Ordering Information

Door Mounted Switches (Rotary Type Only) — Order either complete "3LD2" assemblies or individual "LBR" components as follows:

Complete Assemblies include switch, handle, and shaft. Certain 25 and 32A assemblies are also available with factory installed neutral blocks and/or aux. contacts. These accessories can also be ordered as field installed kits.

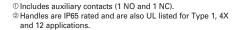
Individual Components are ordered as follows:

25A — LBR3025D switch + LBRH3 or 4 handle.

40–100A — LBR switch + LBRH3 or 4 handle + LBRD1.

Notes: (LBR Type switches only)

- 1. Aux contacts are available as field installed kits on 25A units only.
- 2. Lugs on 25A units face to the rear and lugs on 40–100A units face toward the front





Type LBR Rotary Switches

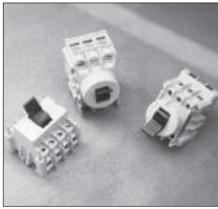


Base/DIN Rail Mounted Switches (Rotary or Toggle Type) — Order individual components as follows:

Toggle — Order the LBT switch required and a toggle switch cover plate if needed.

Rotary, Base Mounted with Door Mounted Handle — Order "LBR" switch + door mounted handle + shaft + any accessories.

Rotary, Base Mounted with Direct Mounted Handle — Order "LBR" switch + direct mounted handle.



Type LBT Toggle Switches

Short Circuit Withstand Ratings

Switch Rating	
& Type	Max. Line Side Fuse Rating

5kA with Line Side Class H, K, or RK5 Fuses

25 & 32A 3LD2	80A Max. at 600V AC Max.
63A 3LD2	175A Max. at 600V AC Max.

10kA with Line Side Class H, K, or RK5 Fuses[®]

25A LBR	30A Max. at 480V AC Max.
40A, 4P LBR & LBT	60A Max. at 480V AC Max.
40 & 60A, 3P LBR & LBT	100A Max. at 480V AC Max.
80 & 100A LBR & LBT	150A Max. at 480V AC Max.

18kA with Line Side Class J, T, or CC Fuses

40-100A, 3P LBR & LBT	100A Max. at 480V AC Max.

Note: 3LD2 switches are also rated 5kA at 600V AC Max. when protected by a 3RV motor starter with a FLA rating equal to or less than the switch ampere rating.

Door Mounted Complete Assemblies Operator, Shaft, & Switch) 600V AC Max.[®]

Shaft Mounted	Shaft Mounted 4 Hole Mounted			AC Horsepower Ratings			gs	
		Number	Ampere	120V	240	V	480V	600V
Catalog Number ³	Catalog Number ³	of Poles	Rating	1Ø	1Ø	3Ø	3Ø	3Ø
_	3LD2003-1TP53 ^①	3	16	1/2	1½	3	7½	10
3LD2154-0TK 3LD2154-1TP 3LD2154-1TL 3LD2154-2EP	3LD2103-0TK 3LD2103-1TP 3LD2103-1TL 3LD2103-2EP	3 3 ^① 3 + N 3 + N ^①	25	2	3	71/2	10	15
3LD2254-0TK 3LD2254-1TL	3LD2203-0TK 3LD2203-1TL	3 3 + N	32	2	3	10	20	20
3LD2555-0TK	3LD2504-0TK	3	63	_	10	15	40	50
_	3LD2704-0TK	3	100	_	_	30	60	75
_	3LD2804-0TK	3	125	_	_	40	75	100

[®] Add 51 for a black handle or 53 for a red & yellow handle to the end of the catalog number.

Switches Disconnect Switches

Compact Non-Fusible — **Rotary and Toggle**

3LD Type Base Mounted Complete Assemblies (Operator, Shaft, & Switch) 600V AC Max.②

Handle mounting ^②					AC Ho	rsep	ower	Rating	s
Shaft	4 Hole	4 Hole	1						
(center hole)	(no defeat)	(with defeat)			120V	240V	′	480V	600V
Catalog		Catalog	Number	Ampere					
Number	Catalog Number	Number	of Poles	Rating	1Ø	1Ø	3Ø	3Ø	3Ø
_	3LD2013-0TK5_	3LD2017-0TK1	3	1.0	1/2	1½	3	71/	10
_	 	3LD2017-1TL1	3 + N	16	//2	1 //2	3	7½	10
3LD2144-0TK5	3LD2113-0TK5	_	3	25	2	3	7½	10	15
3LD2144-1TL5	3LD2113-1TL5	_	3 + N	25		3	1 72	10	15
3LD2244-0TK5	3LD2213-0TK5	3LD2217-0TK1	3	32	2	3	10	20	20
3LD2244-1TL53	3LD2213-1TL53	3LD2217-1TL1	3 + N	32		3	10	20	20
3LD2545-0TK5	3LD2514-0TK5	3LD2517-0TK1	3	63	3	10	15	40	50
_	-	3LD2517-1TL1	3 + N	03	3	10	15	40	50
_	3LD2714-0TK5	_	3	100	_	_	30	60	75
_	3LD2814-0TK5	_	3	125	_		40	75	100
_	3LD2318-0TK1	_	3	160	_		40	75	75
_	3LD2418-0TK1	_	3	250	_		50	100	75

Accessories for Front Mounted 3LD2 Switches

Catalog Number	Description	Switches Used With
3LD9200-5B ³ 3LD9200-5BF ³	1 NO, 1 NC Aux. Contact 1 NO, 1 NC Aux. with Gold Plated Contacts	25-125A 25-125A
3LD9220-2B 3LD9250-2BA 3LD9280-2B	Neutral/Ground Terminal Neutral/Ground Terminal Neutral/Ground Terminal	25 & 32A 63A 100 & 125A
3LD9220-0B 3LD9250-0BA 3LD9280-0B	4th Pole (leading ON, lagging OFF) 4th Pole (leading ON, lagging OFF) 4th Pole (leading ON, lagging OFF)	25 & 32A 63A 100 & 125A
3LD9224-1B ^① 3LD9284-1B ^① 3LD9224-3B ^① 3LD9284-3B ^①	Black Handle (4 hole mtg.) Black Handle (4 hole mtg.) Red/Yellow Handle (4 hole mtg.) Red/Yellow Handle (4 hole mtg.)	25 & 32A 63-125A 25 & 32A 63-125A
3LD9224-1D ^① 3LD9284-1D ^① 3LD9224-3D ^① 3LD9284-3D ^①	Black Handle (shaft mtg.) [®] Black Handle (shaft mtg.) [®] Red/Yellow Handle (shaft mtg.) [®] Red/Yellow Handle (shaft mtg.) [®]	25 & 32A 63-125A 25 & 32A 63-125A
3LD9221-2A ^① 3LD9221-0A ^① 3LD9251-0A ^①	Terminal Cover 1P (Pack of 4) Terminal Cover 3P (Pack of 4) Terminal Cover 3P (Pack of 4)	25 & 32A 25 & 32A 63A

Accessories for Base Mounted 3LD2 Switches

3LD9200-5C ³	1 NO, 1 NC Aux. Contact	25-250A
3LD9200-5CF ³	1 NO, 1 NC Aux. with Gold Plated Contacts	25-250A
3LD9220-2C	Neutral/Ground Terminal	25 & 32A
3LD9250-2CA	Neutral/Ground Terminal	63A
3LD9280-2C	Neutral/Ground Terminal	100 & 125A
3LD9240-2C	Neutral/Ground Terminal	160 & 250A
3LD9220-0C 3LD9250-0CA 3LD9280-0C 3LD9240-0C	4th Pole (leading ON, lagging OFF) 4th Pole (leading ON, lagging OFF) 4th Pole (leading ON, lagging OFF) 4th Pole (leading ON, lagging OFF)	25 & 32A 63A 100 & 125A 160 & 250A
3LD9224-1B ^① 3LD9284-1B ^① 3LD9224-3B ^① 3LD9284-3B ^①	Black Handle (4 hole mtg. no defeat) Black Handle (4 hole mtg. no defeat) Red/Yellow Handle (4 hole mtg. no defeat) Red/Yellow Handle (4 hole mtg. no defeat)	25 & 32A 63-125A 25 & 32A 63-125A
3LD9224-1D ^① 3LD9284-1D ^① 3LD9224-3D ^① 3LD9284-3D ^①	Black Handle (shaft mtg.) Black Handle (shaft mtg.) Red/Yellow Handle (shaft mtg.) Red/Yellow Handle (shaft mtg.)	25 & 32A 63-125A 25 & 32A 63-125A
3LD9221-2A ^①	25 & 32A	
3LD9221-0A ^①	25 & 32A	
3LD9251-0A ^①	63A	

③ Aux. contacts break about 30 Ms before and make about 3 Ms after main switch contacts Ra

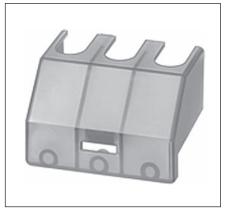
io uitoi	mam switch contacts.	
atings	10A	at 120V AC
-	6A	at 240V AC
	1.4A	at 480V AC



3LD2217-0TK13



3LD9220-2C



3LD9251-0A

Note: 3LD2 shaft lengths allow the following maximum enclosure depths from the switch mounting surface to the outside of the cover:

16-32A, 15.25" 63-125A, 15.75" 160 & 250A, 23.70"

① Handles and line side terminal covers are supplied as standard with 3LD2 switches.
 ② Add suffix 1 for a black or 3 for a red & yellow handle to the catalog number (except 3LD2244-1TL53 & 3LD2213-1TL53). Handles are IP65 rated and are also listed by UL for Type 1, 4X and 12 applications.

Base mounted switches with direct mount handles are also available (3LD2330-0TK1_@ rated 160A and 3LD2430-0TK1_@ rated 250).

Disconnect Switches

Compact Non-Fusible — **Rotary and Toggle**

Individual Components and Assemblies

Recommended for Basemount. For Door mounting only, use LBRD1.®

Rotary and Toggle Switches

notary and roggic outtones									
				Max	AC H	orse	powe	r Rating	s
Catalog	Switch	No. of	Ampere	AC	115V	240	V	480V	600V
Number	Type	Poles	Rating	Volt	1Ø	1Ø	3Ø	3Ø	3Ø
LBR3025	Rotary	3	25	480	3/4	2	5	10	_
LBR3025D [®]	Rotary	3	25	480	3/4	2	5	10	_
LBR3040 [©]	Rotary	3	40	600	2	3	7½	20	25
LBR3060 [©]	Rotarý	3	60	480	2	5	10	25	_
LBR3080 [©]	Rotary	3	80	600	3	10	20	40	50
LBR3100 [©]	Rotary	3	100	480	5	15	25	50	_
LBR4040	Rotary	4	40	480	2	3	7½	20	_
LBT3040	Toggle	3	40	600	2	3	7½	20	25
LBT3060	Toggle	3	60	480	2	5	10	25	_
LBT3080	Toggle	3	80	600	3	10	20	40	50
LBT3100	Toggle	3	100	480	5	15	25	50	_
LBT4040	Toggle	4	40	480	2	3	7½	20	_



Standard Duty Rotary Switch Door Handles



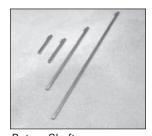
Heavy Duty Rotary Switch Door Handle

LBR Type Handles

LDIT Type Hallules								
Catalog Number	Used on Rotary Switches	NEMA Type	Mounting	Marking	Color	Cover Interlock Supplied	Padlockable	
Standard Duty								
LBRH2 ² LBRH3 ² LBRH4 ²	AII AII AII	1 1, 3R, 12, 4X 1, 3R, 12, 4X	Door Door Door	ON/OFF O/I, ON/OFF O/I, ON/OFF	Black Black Red/Yel	No Yes [©] Yes [©]	No Yes Yes	
LBRH9 ² LBRH10 ²	All (Pistol Grip Type) All (Pistol Grip Type)	1, 3R, 12, 4X 1, 3R, 12, 4X	Door Door	O/I, ON/OFF O/I, ON/OFF	Black Red/Yel	Yes Yes	Yes Yes	
LBRH5 LBRH6 LBRH7 LBRH8 Heavy Duty	25 Amps 3-Pole, 40-60 Amps 3-Pole, 80-100 Amps 4-Pole, 40-60 Amps	1 1 1 1	Direct Mount Direct Mount Direct Mount Direct Mount	O/I O/I O/I O/I	Black Black Black Black		Yes Yes Yes Yes	
CFSH10B12 CFSH10R12	AII AII	1, 3R, 12 1, 3R, 12	Door Door	O/I, ON/OFF O/I, ON/OFF	Black Red/Yel	Yes Yes	Yes Yes	

LBR Type Rotary Shafts

Catalog No	Length In. (mm)
For Standard Duty H	andles
LBRS040	1.57 (40)
LBRS050	1.97 (50)
LBRS055	2.17 (55)
LBRS080	3.15 (80)
LBRS120	4.72 (120)
LBRS180	7.09 (180)
LBRS305	12.00 (305)
For Heavy Duty Hand	dles
CFSS5200H	7.9 (200)
CFSS5400H	15.7 (400)



Rotary Shafts



Rotary Switch Direct Mount Handles



Toggle Switch Cover

25 Amp, 4th Pole

Used on Catalog No	Catalog Number
LBR3025	LBRP25
LBR3025D	LBRP25D

Auxiliary Switch Kits

Used on Rotary Switch	Catalog Number	Contact Arrangement
LBR3025	LBRA25 ³⁴	1 NO & 1 NC
LBR3025D	LBRA25D ³⁴	1 NO & 1 NC
LBR3040, LBR3060	LBRA1 ³ ®	1 NO/1 NC with common point
LBR3080, LBR3100	LBRA2 ³⁴	1 NO/1 NC with common point

[®] No cover interlock defeat mechanism provided. To elimi-

15.1A resistive at 250V AC max. .5A at 125V DC .25A at 250V DC .5 HP at 250V AC max.

LBR Type Toggle Switch Cover Plate

Used on Toggle Switches	Catalog Number
LBT3040, LBT3060	LBTCP1
LBT3080,LBT3100	LBTCP2
LBT4040	LBTCP3

LBR Type Rotary Switch Door Mounting Kit (For use with LBRH3 & LBRH4 only)

Used on Rotary Switch	Catalog Number
40-100 Amps	LBRD1®

LBR/LBT Neutral Kit[®]

Used with Catalog Number	Catalog Number
All	HF63CX

[®] Only door mountable and for use with LBRH3 &

② LBRH2 is IP54 rated. All others are IP65. 3 Ratings

nate cover interlock, order additional catalog number LBRDC1.

Auxiliary switch contacts break about 30 Ms before and

make about 3 Ms after main switch contacts.

S Lug wire ranges:
HF63CX—(1) #14-2 AWG 60/75°C Cu only

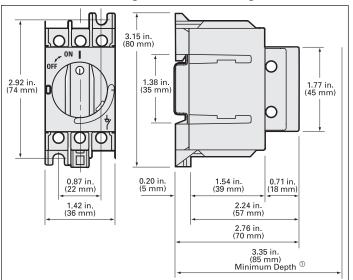
A handles only.
 For door mounting of 40–100A LBR switches use door mounting kit LBRD1 & LBRH3 or 4 handle.
 LBRD1 does not require shaft.

SwitchesDisconnect Switches

Compact Non-Fusible — Rotary and Toggle

Dimension J

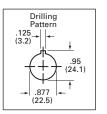
Dimension Drawings and Wire Ranges



LBR 3025

Wire Ranges 60/75°C Cu only

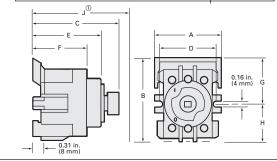
_	•
25 Amps LBR	(1) #14 - #10 AWG Solid (1) #14 - #8 AWG Stranded
40 & 60 Amps LBR & LBT	(1) #14 - #10 AWG Solid (1) #14 - #4 AWG Stranded UP to (4) #12 AWG Solid Up to (3) #12 AWG Stranded Up to (6) #14 AWG Stranded Up to (4) #14 AWG Stranded with (1) #10 AWG Stranded
80 & 100 Amps LBR & LBT	(1) #14 - #10 AWG Solid (1) #14 - #1 AWG Stranded (2) #6 AWG Stranded Up to (3) #8 AWG Stranded Up to (6) #10 AWG Stranded Up to (6) #12 AWG Solid
16A, 3LD20 25A, 3LD21 32A, 3LD22 63A, 3LD25 100, 125A, 3LD2 160, 250A, 3LD2	(1) #18-10 AWG (1) #14-8 AWG (1) #14-8 AWG (1) #14-6 AWG (1) #12-1 AWG (1) #1-400 MCM



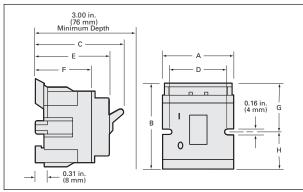
Shaft Mounted 3LD2 Handle Cutout (4-hole pattern)

Dimension J Minimum Depth Depth Switch

LBR 40-100A 3.35 (85) 3LD2 25 & 32A Front Shaft Mounted 3.07 (78) 3LD2 63 Front Shaft Mounted 3.35 (85) 3LD2 16-32A Front 4-hole Mounted 3LD2 63A Front 4-hole Mounted 3LD2 100 & 125A Front 4-hole Mounted 2.48 (63) 3LD2 25 & 32A Base w/shaft Mtg. Handle 3LD2 63A Base w/shaft Mtg. Handle 3LD2 105 32A Base w/4-hole Mtg. Handle 3LD2 105 32A Base w/4-hole Mtg. Handle 3LD2 100-250A Base w/4-hole Mtg. Handle 3LD2 100-250A Base w/4-hole Mtg. Handle 3LD2 100-250A Base w/4-hole Mtg. Handle		
3LD2 63 Front Shaft Mounted 3.35 (85) 3LD2 16-32A Front 4-hole Mounted 2.13 (54) 3LD2 63A Front 4-hole Mounted 2.48 (63) 3LD2 100 & 125A Front 4-hole Mounted 2.56 (65) 3LD2 25 & 32A Base w/shaft Mtg. Handle 3LD2 63A Base w/shaft Mtg. Handle 5.59 (142) 3LD2 63A Base w/4-hole Mtg. Handle 5.99 (152)	LBR 40-100A	3.35 (85)
3LD2 25 & 32A Base w/shaft Mtg. Handle 3LD2 63A Base w/shaft Mtg. Handle 6.77 (172) 3LD2 16-32A Base w/4-hole Mtg. Handle 3LD2 63A Base w/4-hole Mtg. Handle 5.99 (152)	3LD2 63 Front Shaft Mounted 3LD2 16-32A Front 4-hole Mounted 3LD2 63A Front 4-hole Mounted	3.35 (85) 2.13 (54) 2.48 (63)
	3LD2 63A Base w/shaft Mtg. Handle 3LD2 16-32A Base w/4-hole Mtg. Handle 3LD2 63A Base w/4-hole Mtg. Handle	6.46 (164) 6.77 (172) 5.59 (142) 5.99 (152)



LBR 40-100 Amps & 3LD2 16-250A



LBT Toggle — 40-100 Amps

Switch	Switch	Dimensions In	Dimensions Inches (mm)						
Туре	Catalog Number	Α	В	С	D	E	F	G	Н
Rotary	LBR3040	2.00 (51)	2.72 (69)	2.72 (69)	1.78 (45)	2.16 (55)	1.67 (42)	1.50 (38)	1.22 (31)
Rotary	LBR3060	2.00 (51)	2.72 (69)	2.72 (69)	1.78 (45)	2.16 (55)	1.67 (42)	1.50 (38)	1.22 (31)
Rotary	LBR3080	2.09 (53)	3.32 (84)	2.92 (74)	1.97 (50)	2.29 (58)	1.69 (42)	1.66 (42)	1.66 (42)
Rotary	LBR3100	2.09 (53)	3.32 (84)	2.92 (74)	1.97 (50)	2.29 (58)	1.69 (42)	1.66 (42)	1.66 (42)
Rotary	LBR4040	2.42 (61)	2.72 (69)	2.72 (69)	2.28 (58)	2.16 (55)	1.67 (42)	1.50 (38)	1.22 (31)
Rotary Front Mtg.	3LD20 ^②	1.89 (48)	1.97 (50)	1.97 (50)	_	_	_	_	_
Rotary Front Mtg.	3LD21 & 2 ²	1.81 (46)	2.17 (55)	1.97 (50)	_	_	_	_	_
Rotary Front Mtg.	3LD25 ^②	2.36 (60)	2.52 (64)	2.32 (59)	_	_	_	_	_
Rotary Front Mtg.	3LD27 & 8 ²	2.40 (61)	3.27 (83)	2.40 (61)	_	_	_	_	_
Rotary Base Mtg.	3LD20 ^②	1.89 (48)	1.97 (50)	2.29 (58)	_	_	_	_	_
Rotary Base Mtg.	3LD21 & 2 ²	1.81 (46)	2.17 (55)	2.29 (58)	_	_	_	_	_
Rotary Base Mtg.	3LD25 ^②	2.36 (60)	2.52 (64)	2.68 (68)	_	_	_	_	_
Rotary Base Mtg.	3LD27 & 8 ²	2.80 (71)	3.27 (83)	2.76 (70)	_	_	_	_	_
Rotary Base Mtg.	3LD23 & 4	4.41 (112)	5.83 (148)	4.10 (104)	_	_	_	_	_
Toggle	LBT3040	2.00 (51)	2.72 (69)	2.75 (70)	1.78 (45)	2.16 (55)	1.67 (42)	1.50 (38)	1.22 (31)
Toggle	LBT3060	2.00 (51)	2.72 (69)	2.75 (70)	1.78 (45)	2.16 (55)	1.67 (42)	1.50 (38)	1.22 (31)
Toggle	LBT3080	2.09 (53)	3.32 (84)	2.90 (74)	1.97 (50)	2.29 (58)	1.69 (42)	1.66 (42)	1.66 (42)
Toggle	LBT3100	2.09 (53)	3.32 (84)	2.90 (74)	1.97 (50)	2.29 (58)	1.69 (42)	1.66 (42)	1.66 (42)
Toggle	LBT4040	2.42 (61)	2.72 (69)	2.75 (70)	2.28 (58)	2.16 (55)	1.67 (42)	1.50 (38)	1.22 (31)

① Depth from outside of cover to back of switch.

[®] Handle front plate dimensions: 3LD 16-32A—2.64 inches square 3LD 63-125—3.55 inches square

18/19

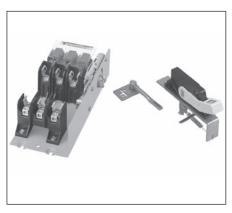
Disconnect Switches

Type VBII (30-600A) with Flange Mounted Operating Handle

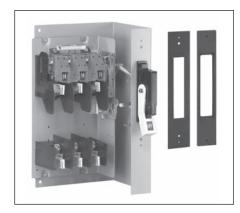
Features

- 30-600A, 600VAC and DC ratings
- 240 & 600V AC switches are UL Recognized under file number E121152, Vol. 3 and CSA certified under file number 154852
- 600V DC Photovoltaic switches are UL Recognized under file number E335018, Vol. 3 and are rated to switch 3 separate 600V DC circuits
- Visible blade quick make and break switching action

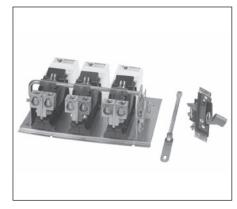
- Panel and Flange mounted assemblies facilite installation
- Panel mounted switches are variable depth
- Short circuit rating of 10,000 AIC with class H fuse, and of 200,000 AIC with class R or J fuses. PV switches are rated 10,000 AIC at 600V DC with 600V DC rated class K, J or R fuses.
- Flange mounted handles rated as Type 1, 3R & 12 or 4X are padlockable in the off position with up to (3) padlocks with 5/16 hasps
- Meets UL98 requirements and suitable for both main and branch circuit applications
- A complete line of aux contacts are available
- Load break and horsepower rated
- Defeatable cover interlock standard with all handles
- Meets NFPA79 requirements
- Seismic qualified complies with the 2010 California Building Code (CBC) — and with the International Building Code (IBC) — Compliance Level SDS = 1.85 g



VBFS361, VBLK1 & VBH1



VBFS363F



VBNFS365, VBLK4 & VBH2

Ordering Information

- 1. Determine the ratings required (amps, volts, HP, Fusible, NF), the mounting needed (Panel or Flange), and select the appropriate switch.
- For panel mounted switches with a rigid operating shaft (30-600A), order panel mounted switch, flange mounted operating handle & rigid linkage kit based on depth required.
- 3. For panel mounted switches with a Max-Flex operator, order panel mounted switch, Max-Flex Handle & Adapter Kit and drive cable.
- 4. Select accessories if required.

Switches Disconnect Switches

Type VBII Switch, Handle and **Linkage Kit Selection**

Switches—for Standard 600V Max AC or DC Applications

0 " 1			Horsepowe	er Rating, Sv	vitches and 3-	Phase ⁴			
Switch Ampere	Max. AC Voltage	Catalog	240 Volts	AC	480 Volts A	AC .	600 Volts	AC	600 Volts DC
Rating	Rating	Number	Standard	Max.	Standard	Max.	Standard	Max.	(max)@
Fusible P	Fusible Panel Mounted Variable Depth Switches - 3-Pole®								
30	240	VBFS321	3	7 1/2	_	_	_	_	<u> </u>
60	240	VBFS322	7 1/2	15	_	_	_	_	②
30	600	VBFS361	_	_	5	15	7 1/2	20	15 ③
60	600	VBFS362	_	_	15	30	15	50	30 ③
100	600	VBFS363	_	_	25	60	30	75	50 ③
200	600	VBFS364	_	_	50	125	60	150	50
400	600	VBFS365	_	_	100	250	125	350	— 9
600	600	VBFS366	_	_	150	400	200	500	_ 9
Non-fusik	le Panel Mo	unted Variable Depth	Switches - 3	3-Pole [!] ⑤					
30	600	VBNFS361	_	10	_	20	_	30	15 ③
60	600	VBNFS362	_	20	_	50		60	30 ③
100	600	VBNFS363	_	40	_	75	_	100	50 ③
200	600	VBNFS364	_	60	_	125	_	150	50
400	600	VBNFS365	_	125	_	250	_	300	_ 9
600	600	VBNFS366	_	200	_	400	_	500	— ⑨
Fusible Fl	ange Mount	ted Switches - 3-Pole®							
30	240	VBFS321F	3	7 1/2	_	_	_	_	<u> </u>
60	240	VBFS322F	7 1/2	15	_	_	_	_	②
30	600	VBFS361F	_	_	5	15	7 1/2	20	15 ③
60	600	VBFS362F	_	_	15	30	15	50	30 ③
100	600	VBFS363F	_	_	50	60	30	75	50 ③
200	600	VBFS364F	_		100	125	60	150	50
Non-fusik	le Flange M	ounted Switches – 3-P	ole®						
30	600	VBNFS361F	_	10	_	20	_	30	15 ③
60	600	VBNFS362F	_	20	_	50	_	60	30 ③
100	600	VBNFS363F	_	40	_	75		100	50 ③
200	600	VBNFS364F	_	60	_	125	_	150	50

Note: Fusible switches include fuse provisions for Class H Fuses. The load base can be moved to pre-drilled holes for Class J Fuses on all 600V switches. If Class R Fuses are required, add a Class R Fuse Clip Kit.

Switches—for Photovoltaic Applications, 600VDC Max. (for use in negative ground systems only)

(ioi asc iii iicgai	ive ground systems only,	
Switch		

Switch Ampere		Rated Isc per NEC			
Rating	Catalog Number	Article 690			
Fusible Panel Mounted Variable Depth Switches—3 Pole®®					
30	VBFS361PV	19.2A			
60	VBFS362PV	38.4A			
100	VBFS363PV	64.0A			
Non-Fusible	Panel Mounted Variable De	pth Switches—3 Pole ^⑤			
30	VBNFS361PV	24.0A			
60	VBNFS362PV	48.0A			
100	VBNFS363PV	80.0A			
Fusible Flan	ge Mounted Variable Depth	Switches—3 Pole			
(Includes Ty	pe 1, 3R and 12 Rated Opera	ating Handle)©®			
30	VBFS361FPV	19.2A			
60	VBFS362FPV	38.4A			
100	VBFS363FPV	64.0A			
Non-Fusible	Non-Fusible Flange Mounted Variable Depth Switches—3 Pole				
(Includes Type 1, 3R and 12 Rated Operating Handle) [©]					
30	VBNFS361FPV	24.0A			
60	VBNFS362FPV	48.0A			
100	VBNFS363FPV	80.0A			

- ① Rated 5 HP at 250V DC.
- Rated 10 HP at 250V DC.
 600V DC & 600V DC horsepower rating shown requires (2) poles to be connected.
- Std. applies when non-time delay fuses are used.
 Max. applies when time delay fuses are used.
 Includes line base, load base, operating mechanism and line and load lugs.
- Order operating handle and linkage kits from tables on pages 18/21 or 18/22.

 Includes line base, load base, operating mechanism line and load lugs plastic operating handle and required linkage.

 All photovoltaic switches are rated to be used with 3 separate 600V DC circuits.

 Fusible switches accept Class K or R fuses as standard and Class J fuses by releasing the load base.

- relocating the load base.

 ® Rated 250V DC max and 50HP at 250V DC.

Cable Kit

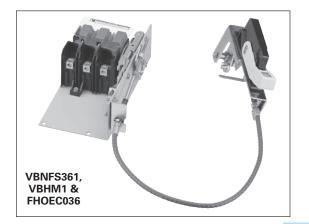
For use with 30-200A panel mounted switches and Max-Flex handle and adapter kit.

Catalog Number	Description
FHOEC036	36" long drive cable
FHOEC048	48" long drive cable

Max-Flex™ Handle and Adapter Kit

(Type 1, 12, 3R & 4X) Use with 30-200A panel mounted switches and cable kit.

Catalog Number	Operating Handle Description	
Plastic Handles		
VBHM1	30-200A Type 1, 3R, 12 and 4X	
Metal Handles		
VBH112	30-200A Type 1, 3R and 12	
VBH14	30-200A Type 4X	



Accessories Type VBII

Flange Mounted Operating Handles

For use with Panel Mounted Switches. Plastic handle is included with Flange Mounted Switches as standard.

Catalog Number	Operating Handle Description	
Plastic Ha	ndles	
VBH1	30-200A Type 1, 3R & 12	
VBH14X	30-200A Type 4X	
Metal Har	ıdles	
VBH112	30-200A Type 1, 3R & 12	
VBH14	30-200A Type 4X	
VBH2	400A Type 1 & 12	
VBH2R	400 & 600A Type 1, 3R & 12	
VBH24X	400 & 600A Type 4X	



Class R Fuse Clip Kits

These kits prevent the installation of Class H and K fuses (one kit required per switch).

Class R Fuse Clip Kits

Catalog Number	Description
HR21	30A, 240V Kit (HD only)
HR612	30A, 600V Kit/60A, 240V Kit
HR62	60A, 600V Kit
HR63	100A Kit
HR64	200A Kit
HR656	400A/600A Kit

Internal Door Latch Kits

For use with enclosures with door mounted latching bar. Required when a flange mounted switch is mounted in a Hoffmann or Rittal enclosure provided with an AB cutout.

Catalog Number	Description		
DKR2	2 point (for use with enclosures less than 40" high)		
DKR3	3 point (for use with enclosures 40" or larger in height)		

Rigid Linkage Kits

For use with Panel Mounted Switches. Not required for Flange Mounted Switches.

	Switch		
Catalog	Ampere	Enclosur	e Depth ^①
Number	Rating	Min	Max.
VBLK1	30-200	6.942	6.942
VBLK2	30-200	6.942	19.0
VBLK3	400 & 600	9.00	8.75
VBLK4	400 & 600	9.00	19.0



Class T Fuse Adapter Kits

100-600A fusible switches are field convertible to accept Class T fuses.
400-600A switches are field convertible to accept Class T fuses by moving the load base to a pre-drilled T fuse position.

Class T Fuse Adapter Kits®

Catalog Number	Description	
HT23	100A, 240V Kit	
HT63	100A, 600V Kit	
HT24	200A, 240V Kit	
HT64▲	200A, 600V Kit	

Class J Fuse Provisions

All 30-600A, 600V fusible switches are field convertible to accept Class J fuses by moving the load base to a pre-drilled J fuse position.

Window Kits (Type 1, 12, 3R and 4x)

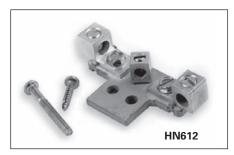
Allows viewing of visible blades and of indicating fuses through 200A.

Catalog Number	Description
VBWK1	30A Window Kit
VBWK2	60 & 100A Window Kit
VBWK3	200-600A Window Kit

Quick Connects

They provide two point control power take-off capability and are normally used on two poles on the line side when it is required to have control power available when the switch is in the OFF position. They provide a mounting provision for standard ¼" quick connect terminal. Installed in the line or load side. 30A VBII switches have lugs UL listed to accept (2) wires per pole as standard so a 30A kit is not required.

Catalog Number	Description
HCQ62	60A 2 wire quick connect kit
HCQ63	100A 2 wire quick connect kit
HCQ64	200A 2 wire quick connect kit



Neutral Kits⁴

Standard Neutral Kits can be field installed in 30-100A switches.

Neutral Kits

	Kit Catalog Number
30A 600V, 60A 240V	HN612
60A, 600V & 100A	HN623

200% Neutral Kits⁴

UL listed 200% Neutrals are available on 60 & 100A switches. They are typically used with non-linear transformers or where increased neutral ampacity/lug capacity is required.

200% Neutral Kits

Switch		
Ampere Rating		Wire Range Line & Load Lugs (Cu/Al)
60 & 100A	HN263	(2) #14-1/0 AWG

@ UL approved (not CSA certified).

[▲] Built to order. Allow 6–8 weeks for delivery.

① Dimensions (min. & max.) from enclosure mounting

Dimensions (min. & max.) from enclosure mounting pan to outside surface of enclosure handle mounting flange.

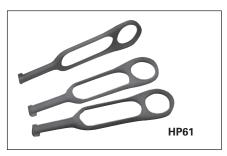
② 7.12 for 200A switches.

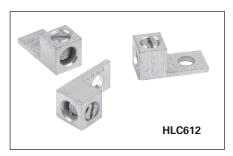
³ One kit per pole required.













▲ Built to order. Allow 6-8 weeks for delivery.

Auxiliary Contacts

The auxiliary contacts are available in 1 normally open and 1 normally closed or 2 normally open and 2 normally closed configurations. Siemens offers a PLC Auxiliary Switch (30-200A) that has very low resistance for low voltage and current typical in PLC circuits. All auxiliary contacts make after and break before main switch contacts.

Switch		Kit Ampere Rating			Kit Horsepower Rating		
Ampere Rating	Aux. Switch Catalog Number	125V AC Max.	250V AC Max.	28V DC Max.	125V AC Max.	250V AC Max.	28V DC Max.
With 1 NO	With 1 NO & 1 NC Isolated Contacts						
30-200	HA161234	10	10	_	1/2	3/4	_
400-600	HA165678	10	10	_	1/2	3/4	_

1/2

1/2

1/2

3/4

3/4

3/4

400-600	HA2000/8	10	10	/	1/2	3/4	_
Low Curre	nt PLC Type wit	h 1 NO	& 1 NC (Gold Pla	ated Co	ntacts	

10

10

10

10

10

Fuse Puller Kits

30-200

30-200

400-600

Fuse Puller Kits are field installable in 30-100A Type VBII Heavy Duty Switches (one kit required per 3-pole switch).

Switch Ampere Rating	Fuse Puller Kit Catalog Number
30	HP61
60	HP62▲
100	HP63▲

With 2 NO & 2 NC Isolated Contacts HA261234

HA361234

HA365678

Copper Lug Kits

All switches are UL approved to accept field installed copper lug kits.

Switch Ampere Rating	Copper Lug Catalog Number	Description
30–60	HLC612	(9) Lugs/Kit #14-4 AWG Cu
100	HLC63▲	(9) Lugs/Kit #14-1/0 AWG Cu
200	HLC64▲	(9) Lugs/Kit #6 AWG-300 Kcmil Cu
400–600A	HLC65678	(1) Lugs/Kit #1/0 AWG-600 Kcmil Cu

Equipment Ground Kits

Equipment Ground Lug Kits are available for all switches.

Switch Ampere Rating	Catalog Number	Number of Terminals	Wire Range Per Terminal (Cu/Al)
30–200	HG61234	2	#14-4 AWG
400 & 600	HG656	4	#6 AWG-250 Kcmil

NEW Internal Shield Kits (for fusible switches)

Kits provide a "skirt" that encloses the VBII switch and also a clear plastic inner door to prevent accidental contact with live parts. Test probe holes are provided and fuses can be replaced without removal of kit.

Switch Ampere Rating	Shield Kit Catalog Number
30A	HSK61
60-100A	HSK623
200A	HSK64

Disconnect Switches

Type VBII Lug Wire Ranges & Dimensions

Lugs

30 & 60A switches are suitable for use with 60° or 75°C wire. 100–600A switches are suitable for use with 75°C rated wire. All switches are supplied with factory installed line and load lugs.

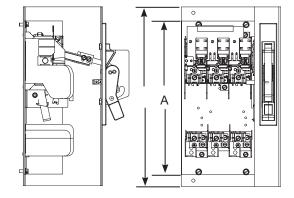
Wire Ranges (Line, Load and Standard Neutral)

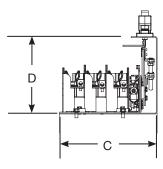
Switch Ampere	III Annual Wins Donne	Lua Wina Danna
Rating	UL Approved Wire Range	Lug Wire Range
30	#14-6 AWG (Cu/AI)	#14-2 AWG (Cu/AI)
60	#14-2 AWG (Cu/AI)	#14-2 AWG (Cu/AI)
100	#14-1/0 AWG (Cu/AI)	#14-1/0 AWG (Cu/AI)
200	#6 AWG-300 Kcmil (Cu/AI)	#6 AWG-300 Kcmil (Cu/Al)
400	1/0 AWG-750 Kcmil (Cu/AI) or	(1) 1/0 AWG-750 Kcmil (Cu/Al) or
	(2) 1/0 AWG-250 Kcmil (Cu/Al)	(2) 1/0 AWG-250 Kcmil (Cu/Al)
600	(2) 1/0 AWG-750 Kcmil (Cu/Al) or (4) 1/0 -250 Kcmil (Cu/Al)	(2) 1/0 AWG-750 Kcmil (Cu/Al) or (4) 1/0 AWG-250 Kcmil (Cu/Al)

Approximate Dimensions

Mounting bracket shown with handle installed is supplied with Flange Mounted Switches only. All Panel Mounted Switches have a "L" shaped mounting pan with a line base, load base (if fusible) and mechanism installed.

Catalog	Dimensions				
Number	Α	В	C①	D (min)	D (max)
Fusible, Panel Mo	ounted				
VBFS321	11.88	N/A	7.47	6.94	19
VBFS322	13.12	N/A	8.50	6.94	19
VBFS361, PV	11.88	N/A	7.47	6.94	19
VBFS362, PV	13.12	N/A	8.50	6.94	19
VBFS363, PV	13.12	N/A	8.50	6.94	19
VBFS364	17	N/A	12.33	7.12	19
VBFS365	26.25	N/A	16.50	8.63	19
VBFS366	26.25	N/A	16.50	8.63	19
Non-fusible, Pan	el Mounted				
VBNFS361, PV	9.79	N/A	7.47	6.94	19
VBNFS362, PV	9.79	N/A	8.50	6.94	19
VBNFS363, PV	9.79	N/A	8.50	6.94	19
VBNFS364	10.77	N/A	12.33	7.12	19
VBNFS365	13	N/A	16.50	8.63	19
VBNFS366	13	N/A	16.50	8.63	19
Fusible, Flange N	/lounted				
VBFS321F	11.88	14.08	7.47	7.27	N/A
VBFS322F	13.12	15.83	8.85	7.27	N/A
VBFS361F, PV	11.88	14.08	7.47	7.27	N/A
VBFS362F, PV	13.12	15.83	8.85	7.27	N/A
VBFS363F, PV	13.12	15.83	8.85	7.27	N/A
VBFS364F	17	18.20	12.68	7.57	N/A
Non-fusible, Flan	ge Mounted				
VBNFS361F, PV	9.79	11.78	7.47	7.27	N/A
VBNFS362F, PV	9.79	11.78	8.85	7.27	N/A
VBNFS363F, PV	9.79	11.78	8.85	7.27	N/A
VBNFS364F	10.77	11.97	12.68	7.57	N/A





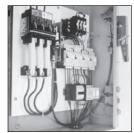
① Dimension C for panel mounted switches indicates the minimum width from the left hand edge of the switch mounting pan to the right hand inside surface of the enclosure.

Switches Disconnect Switches

Type MCS (30-200A) — Switches, Fuse and No Fuse Kits

Features

- 30, 60, 100 and 200 Ampere Switches
- UL Recognized (file # E121152 vol. 1 & 2) and CSA Certified
- Simple Mounting with an integral switch and over center mechanism
- Horsepower & load break rated



Type MCS Disconnect Switch with Max-Flex[™] handle operator

Ordering Information

- 1. Select the basic switch size you need (30, 60, 100 or 200 ampere).
- 2. Check the switch selected against the maximum horsepower rating required for our application. "L" or "R" suffix on

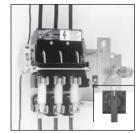
- Compact Size
- Visible Blade Contacts
- Rugged Construction with a short circuit current rating of 10,000 amps with Class H or 200,000 amps at 600V maximum AC, when fused with Class R or Class J fuses



Type MCS Disconnect Switch with fixed-depth, flange-mounted handle

- switch catalog numbers denotes left or right-handed mechanism drive.
- 3. Choose either fuse or no fuse kit from chart below.
- 4. Check "Minimum Dimensions" on page

- Available with three operator handle options, allowing flexible placement of switch
- Field Installable Auxiliary Contacts
- Flexible Fuse Class Configurations
- Flange mounted handles meet NFPA79 requirements



Type MCS Disconnect Switch with rotary handle

18/26 for installation space requirements.

5. Select from the list of handle operators, the type which best suits your application. Handle operators can be selected from the next page.

Basic Switches

				Maximum I	Maximum Horsepower Rating, 3 Phase [®]					
		Catalog	Catalog	240 Volts A	C	480 Volts A	C	600 Volts A	C	250
Switch Ampere Rating	Maximum Voltage Rating	Number Right Hand	Number Left Hand	Standard Fuse	Time Delay Fuse	Standard Fuse	Time Delay Fuse	Standard Fuse	Time Delay Fuse	Volts DC (max) [@]
30	600	MCS603R	MCS603L	3	7½	5	15	7½	20	5
60	600	MCS606R	MCS606L	7½	15	15	30	15	50	10
100	600	MCS610R	MCS610L▲	15	30	25	60	30	75	20
200	600	MCS620R	MCS620L▲	25	60	50	125	60	150	40

Fuse And No Fuse Kits (Includes load base plus line and load fuse clips)

Basic			No Fuse Kits		For Class H	For Class J	For Class R	
Switch Ampere Rating	Switch Catalog Number	Kit Description	Standard Catalog Number	Cu Only ^② Catalog Number	Catalog Number ①	Catalog Number ^①	Catalog Number ①	Lug Wire Size
		No Fuse	TMK606	_	_	1_	_	
	MCS603R	30A, 250V	_	_	FCK203▲	_	FCRK203	#14 to
30	or	30A, 600V	_	_	FCK206	FCJK603	FCRK206	#4 AWG
	MCS603L	60A, 250V	_	_	FCK206	_	FCRK206	Cu/AI
		60A, 600V	_	_	FCK606	FCJK606	FCRK606	
		No Fuse	TMK606	_	1-	1-	<u> </u>	
	MCS606R	60A, 250V	_	_	FCK206	-	FCRK206	#14 to
60	or MCS606L	60A, 600V	-	 	FCK606	FCJK606	FCRK606	#4 AWG
		100A, 250V	_	_	OFCK661▲	OFCK661▲	3	Cu/AI
		100A, 600V	_	_	OFCK661▲	OFCK661▲	3	
		No Fuse	TMK610	TMK610C	-	_	-	
	MCS610R	100A, 250V	_	_	FCK610	FCK610	3	#14 to
100	or	100A, 600V	-	_	FCK610	FCK610	3	#2/0 AWG
	MCS610L	200A, 250V	_	_	OFCK620	OFCK620	3	Cu/AI
		200A, 600V	_	_	OFCK620	OFCK620	3	
	MCS620R	No Fuse	TMK620	TMK620C▲	-	-	<u>-</u>	#6 to
200	or	200A, 250V	-	-	FCK620	FCK620	3	300 kcmil
	MCS620L	200A, 600V	_	_	FCK620	FCK620	3	Cu/AI

[▲] Built to order. Allow 6-8 weeks for delivery. For "copper only" connectors, order as follows:
 Fusible—order standard switch, standard fuse kit and copper only no fuse kit.

Non-Fusible-order standard switch and copper only no fuse kit.
2 Includes both line and load lugs.

[®] For Class R fuses order Class H kit from this table and the Class R conversion kit from the next page.

@ HP ratings for time delay fuses and for 250V DC also

apply to Non-fusible switches.

Type MCS (30-200A)

Auxiliary Switch Kits

	Contact Arrangement	
Switch Catalog Number	1 NO/1 NC Catalog Number	2 NO/2 NC Catalog Number
	-	
MCS603R	MCSAKR136	MCSAKR236
MCS603L	MCSAKL136	MCSAKL236▲
MCS606R	MCSAKR136	MCSAKR236
MCS606L	MCSAKL136	MCSAKL236▲
MCS610R	MCSAK116	MCSAK216
MCS610L	MCSAK116	MCSAK216
MCS620R	MCSAK126	MCSAK226
MCS620L	MCSAK126	MCSAK226

Class R Fuse Conversion Kits

Fuse Clip Rating	Catalog Number
100A, 600V	SSRK33
200A, 600V	SSRK34

Fuse Ejector Kits

Switch Catalog Number	Fuse Ejector Kit Catalog Number
MCS610	FE100▲
MCS620	FE200▲

Handle Operators

Fixed Depth, Flange Mounted, Types 1, 3, 3R, 1206

Switch	Complete Handle Mechanism	Handle Only	Switch Operator Only
Catalog Number	Catalog Number	Catalog Number	Catalog Number
MCS603R	FDFS06R	FDH10	FDS06R
MCS603L	FDFS06L	FDH10	FDS06L
MCS606R	FDFS06R	FDH10	FDS06R
MCS606L	FDFS06L	FDH10	FDS06L
MCS610R	FDFS06R	FDH10	FDS06R
MCS610L	FDFS06L	FDH10	FDS06L
MCS620R	FDFS20R	FDH20	FDS20R
MCS620L	FDFS20L	FDH20	FDS20L

Variable Depth, Flange Mounted Max-Flex™, Types 1, 3, 3R, 12^②

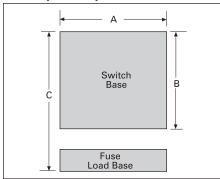
- aa							
Switch	Complete Handle Mechanism	Handle Only	Switch Operator Only	Cable Only ^③			
Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number			
MCS603R	FHOS06036R	FHOHS	FHOS06R	FHOEC036			
MCS603L	FHOS06036L	FHOHS	FHOS06L	FHOEC036			
MCS606R	FHOS06036R	FHOHS	FHOS06R	FHOEC036			
MCS606L	FHOS06036L	FHOHS	FHOS06L	FHOEC036			
MCS610R	FHOS06036R	FHOHS	FHOS06R	FHOEC036			
MCS610L	FHOS06036L	FHOHS	FHOS06L	FHOEC036			
MCS620R	FHOS20036R	FHOHS	FHOS20R	FHOJC036			
MCS620L	FHOS20036L	FHOHS	FHOS20L	FHOJC036			

Variable Depth Rotary, Through-The-Door-Mounted, Types 1, 1245

Variable Depth			Shaft Only Variable Depth	
MCS603R	CRHOS06VD	СКНОН	RHOS06	RHOSVD
MCS606R	CRHOS06VD	СКНОН	RHOS06	RHOSVD
MCS610R	CRHOS06VD	СКНОН	RHOS06	RHOSVD
MCS620R	CRHOS20VD	RHOH	RHOS20	RHOSVD

MCS Disconnect Switch Panel Space Requirements

Panel Space Requirements



▲ Built to order. Allow 6–8 weeks for delivery. ⑤For Type 4 and 4X applications, order handle only Catalog Number 100A - FDH104 200A - FDH204

100A - FDH104 200A - FDH204

© For Type 4 and 4X applications, order handle only Catalog Number FHOHS4

Minimum Dimensions (inches*)

Switch Catalog Number	Size	"A"	"B"	"C"	Fuse Class
MCS603	30A/240V	6.13	5.52	8.11	H, K, R
	30A/600V	6.13	5.52	10.11	H, K, R
	30A/600V	6.13	5.52	8.48	J
MCS606	60A/240V	6.13	5.52	7.86	H, K, R
	60A/600V	6.13	5.52	10.38	H, K, R
	60A/600V	6.13	5.52	8.35	J
MCS610	100A/240V	7.38	7.59	11.85	H, K, R
	100A/600V	7.38	7.59	13.85	H, K, R
	100A/600V	7.38	7.59	10.6	J
MCS620	200A/240V	9.17	9.00	14.7	H, K, R
	200A/600V	9.17	9.00	17.2	H, K, R
	200A/600V	9.17	9.00	13.32	J

Length	Amps	Cat. No.	
48"	30-100	FHOEC048	
60"	30-100	FHOEC060	
48"	200	FHOJC048	
60"	200	FHOJC060	

- "A" Dimension is measured from each cross bail pin.
- "B" Dimension is measured from line side barrier to load side barrier.
- "C" Dimension is measured from line side terminal of switch to load side terminal of fuse load base.

[©]For Type 3 and 3R applications, order handle only Catalog Number **RHOH**

Min. enclosure depth from mounting pan to handle mounting surfaces: 30-100A 6.44 Inches
 200A 10.93 Inches

^{*}For millimeters multiply inches by 25.4.

Switches Disconnect Switches

Type CFS Compact Fusible Switches

Features

- 30 800A ratings
- UL Listed under file #E121152 & CSA Certified under file #222227
- IEC 60947-3 Certified and CE marked
- Door mounted rotary handles with defeatable cover interlock
- Meets UL requirements for both main and branch circuit applications
- Compact size
- 100kA with Class CC fuses or up to 200kA with Class J fuses
- Load break and horsepower rated
- Quick make and break operation

- All handles are padlockable with up to (3) padlocks with 5/16" hasps in the OFF position
- Catalog number CFS361C5, CFS361J5 and CNFS361 can be DIN-rail mounted and can be either front or side operated with standard rotary handles.
- All CFS part numbers ending in N can be either front or side operated with standard rotary handles.
- Handles are available in Type 1, 3R, 4/4X & 12 ratings
- NFPA 79 field installed kits are available
- 30-400A, 200kA switches are provided with quick connect terminal provisions for voltage sensing or for 10A max. control circuits
- Fusible switches, 3-pole 600V AC Max. 30-100A & 600-800A switches are also rated 250V DC Max when poles are field connected in series.









Ordering information

- Select the panel mounted switch required based on Ampere, HP and AIC requirements. Switches with a right hand mechanism are standard, 30-100A switches with a left hand mechanism are available.
- 2. Select handle based on environmental rating required.
- 3. Select operating shaft (200 or 400mm in length). For enclosure depths of 9.0" or less from panel mounting surface to inside of door use 200mm long shafts. For deeper enclosures use 400mm long shafts. 30A 100kA switches can be used in 10" deep enclosures (panel to inside of door) with 200mm shaft and CFSH5N handles.

Note: Be sure to check shaft and handle compatibility with the switch selected by using information provided in the selection tables.

 Line & load lugs are provided as standard on 30-100A switches. Terminal kits are available for 200-800A switches if needed.

- 5. Auxiliary contact are available if needed as follows.
 - A. 30A switch CFS361C5 and non-fusible 30A switch CNFS361 will accept up to (4) aux contacts
 - B. 30A switch CFS361J5 will accept up to (2) aux contacts without an aux contact holder. If more than (2) aux contacts are required order aux contacts PLUS aux contact holder kit CFSAUXH1. All other switches will accept up to (4) aux contacts.
- If non-fusible switch is required order a shorting bar for 60-600A switches or catalog number CNFS361 for 30A.
- 7. 30-100A switches are designed to prevent inadvertent contact with live parts and shields are not required. 200 & 400A switches are not supplied with terminal shields. They are available as field installed kits for both line and load terminals. 400-800A switches are supplied as standard with line shields and terminal shroud kits are available for the load side.

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Disconnect Switches

Type CFS Compact Fusible Switches

Operating shafts for 30-400A switches®

Shaft length

in. (mm)

7.9 (200)

7.9 (200)

7.9 (200)

15.7 (400)

15.7 (400)

15.7 (400)

Fusible switches, 3-pole 600V AC Max. 30-100A & 600-800A switches are also rated 250V DC Max when poles are field connected in series®

Switch		Fuse	Fuse Max horsepower ratings				AC short
ampere rating	Catalog number	provisions provided	240V 3Ø AC	480V 3Ø AC	600V 3Ø AC	250V DC	circuit rating
Standard	– with right ha	nd mounted r	nechanisı	m			
30 ^① 30 ^① 30 ^①	CFS361C5 CFS361J5 CFS361JN CNFS361 ^{®®}	Class CC Class J Class J None	7.5 7.5 7.5 7.5	15 15 15 15	20 20 20 20 20	5 ³ 5 ³ 5 ³ 5 ³	100kA 100kA 200kA 65kA
60 ①	CFS362JN1	Class J	15	30	50	10③	100kA
60 ^① 100 ^① 200 ^② 400 ^② 600 ^②	CFS362JN CFS363JN CFS364JN [®] CFS365JN [®] CFS366J [®]	Class J	15 30 60 125 200	30 60 125 250 400	50 75 150 350 500	10 ³ 20 ³ - - -	200kA
800②	CFS367L9®	Class L	200	400	500	_	200kA
Optional – with left hand mounted mechanism®							
30 ^① 60 ^① 100 ^①	CFS361JLN CFS362JLN CFS363JLN	Class J	7.5 15 30	15 30 60	20 50 75	5 ³ 10 ³ 20 ³	200kA

Switch & handle compatibility

switches & with "CFSH5" handles only

5mm x 5mm for use with CFS361C5, CFS361J5 &CNFS361

10mm x 10mm for use with all "CFSH10" handles & with all

30-400A switches except CFS361C5, CFS361J5 & CNFS361

5mm x 5mm for use with all "CFSH10" handles & with CFS361C5, CFS361J5 & CNFS361 switches only



CFSS5400N

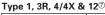


Compact rotary operating handles – door mounted (for use with CFS361C5, CFS3361J5 & CNFS361 switches only)®

			, ·
Catalog number	Color	UL Type	Operating shaft compatibility
CFSH5B12N CFSH5R12N	Blue & Black Yellow & Red	1, 3R & 12	CFSS5200N or CFSS5400N
CFSH5B4N CFSH5R4N	Blue & Black Yellow & Red	1, 3R, 12 & 4/4X	

Rotary operating handles - door mounted (for use with CFSS5200HN, ČFSS5400HN, CFSS10200HN & CFSS10400HN)

Catalog number	Color	Description
Type 1, 3R & 12 ^⑦		
CFSH10B12N	Blue & Black	Heavy duty pistol grip (2.75" long for use
CFSH10R12N	Yellow & Red	with 30A switches & CFS362JN1)
CFSH10BL12N	Blue & Black	Heavy duty pistol grip
CFSH10RL12N	Yellow & Red	(4.92" long for 30-400A switches)



Catalog

number

CFSS5200N

CFSS5400N

CFSS5200HN

CFSS5400HN

CFSS10200HN

CFSS10400HN

CFSH10B4N	Blue & Black	Heavy duty pistol grip (2.75" long for use
CFSH10R4N	Yellow & Red	with 30A switches & CFS362JN1)
CFSH10BL4N	Blue & Black	Heavy duty pistol grip
CFSH10RL4N	Yellow & Red	(4.92" long for 30-400A switches)



[©] Catalog numbers CFS361C5, CFS361J5 & CNFS361 accept 5mm x 5mm operating shafts. All other 30-400A switches accept 10mm x 10mm operating



- @ Compact pistol grip design (2.75" long) with defeatable cover interlock. Cover can be opened when handle is padlocked in the OFF position.
- Defeatable cover interlock provided. Cover cannot be opened when handle is padlocked in the OFF position. ® Catalog number CNFS361 is a non-fusible switch.
- 9 4 pole 600 & 800A switches, CFS466J & CFS467L are also available.
- ® CFS366J and CFS367L are rated 250 & 600V DC when (2) poles are connected in series.
- (1) CNFS361 is rated 65kA when protected by Class J or CC 30A max, fuses

¹ Line and load lugs included.

② Line and load lugs are not included.

Order from table on next page if required.

③ DC HP rating shown requires (3) poles to be connected

Switches Disconnect Switches

Type CFS Compact Fusible Switches

600 & 800A rotary operating handles - door mounted $(8.27" \text{ long})^{\text{1}}$

Catalog number	Color	UL Type
CFSH12BL12	Blue & Black	1, 3R & 12
CFSH12RL12	Yellow & Red	1, 3R & 12
CFSH12BL4	Blue & Black	1, 3R, 12 & 4/4X
CFSH12RL4	Yellow & Red	1, 3R, 12 & 4/4X

600 & 800A operating shafts (cross section 12 x 12 mm)

Catalog number	Shaft length in. (mm)	Enclosure depth (switch mounting surface to door OD)
CFSS12200H	12.59 (320)	10.43 – 16.68 in.
CFSS12400H	15.75 (400)	10.43 – 19.84 in.

Type CFS fusible switch accessories

number	Description
Terminals ^①	
CFSL200	200A lug kit (6 lugs per kit) (1)#6-3/0
CFSL400N	400A lug kit (6 lugs per kit) (1)#2-600kcmil (for CFS365JN only)
CFSL400	600-800A lug kit (6 lugs per kit) (2)#2-600kcmil

Shorting bars (no fuse kits)

Catalog

CFSSB60	60A shorting bar kit (3 links per kit)
CFSSB100	100A shorting bar kit (3 links per kit)
CFSSB200	200A shorting bar kit (3 links per kit)
CFSSB400	400A shorting bar kit (3 links per kit)
CFSSB680	600 & 800A shorting bar kit (1 link per kit)

Auxiliary contacts (NEMA ratings AC A600 DC N600)

	· · · · · · · · · · · · · · · · · · ·
CFSAUXH1 ²	Aux contact holder (CFS361J5, CFS361C5 & CNFS361)
CFSAUX1NO	Aux contact 1 NO (30-800A Sws)
CFSAUX1NC	Aux contact 1 NC (30-800A Sws)
CFS11AUX	1NO, 1NC aux contact kit (side mount for 200kA switches)
CFS22AUX	2NO, 2NC aux contact kit (side mount for 200kA switches)

Terminal shrouds (line or load)

CFSTS200N®	200A shroud kit (line or load 3-pole kit)
CFSTS400N®	400A shroud kit (line or load 3-pole kit for CFS365JN only)
CFSTS680 [©]	600/800A 3-pole shroud kit
CFSTS6804®	600/800A 4-pole shroud kit

30A compact switch kits

CFSPLK	Shaft padlocking kit for 30A compact switch when door is open [®]
CFSH5CDM	Direct mount handle kit for CFS361C5 & CNFS361
CFSH5JDM	Direct mount handle kit for CFS361J5

NFPA 79 kits

(if auxiliary contacts are needed, see table on page 7)

Kits provide an operating shaft suitable for use with all heavy duty handles (not for use with CFSH5 handles). Kits also provide an internal operating handle and an internal OFF padlocking provision.

CFSNFPA1®	For use with CFS361C5, CFS361J5 & CNFS361
CFSNFPA2N®	For use with CFS361JN, CFS361CN, CFS362JN1, CFS362JN, CFS363JN & CFS364JN
CFSNFPA3N ^⑤	For use with CFS365JN only

- ① Supplied as standard on 30-100A switches
- ② CFS361C5 and CNFS361 will accept (4) aux contacts without an aux contact holder. CFS361J5 will accept (2) aux contacts without an aux contact holder.
- Supplied as standard on all but 30A, 65kA & 100kA compact switches.
- 4 12.6 in. (320 mm) long operating shaft included
 5 12.7 in. (323 mm) long operating shaft included
- Line side terminal shrouds supplied with switch







- [®] Defeatable cover interlock included. Cover cannot be opened when the handle is padlocked in the OFF position.
- ® Neither line or load terminal shrouds are supplied as standard with new style 200 & 400A switches.

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Disconnect Switches

Type CFS Compact Fusible Switches

UL & CSA technical characteristics and panel space requirements

Catalog		Fuse	AC short	Electrical	Mechanical	Panel space requirements - in. (mm)				
number	Amps	Class	rating	endurance	endurance	Height	Width	Depth ^①		
CFS361C5	30	CC	100kA	6000	10000	4.56 (116)	3.78 (96)	6.00 (152)		
CFS361J5	30	J	100kA	6000	10000	4.56 (116)	4.15 (105)	6.00 (152)		
CFS361JN	30	J	200kA	6000	10000	5.35 (136)	5.89 (150)	6.00 (152)		
CFS361JLN	30	J	200kA	6000	10000	5.35 (136)	5.89 (150)	6.00 (152)		
CNFS361	30	None	65kA ^②	6000	10000	4.56 (116)	3.78 (96)	6.00 (152)		
CFS362JN1	60	J	100kA	6000	10000	5.35 (136)	5.89 (150)	6.00 (152)		
CFS362JN	60	J	200kA	6000	10000	7.32 (186)	5.89 (150)	6.00 (152)		
CFS362JLN	60	J	200kA	6000	10000	7.32 (186)	5.89 (150)	6.00 (152)		
CFS363JN	100	J	200kA	6000	10000	7.32 (186)	5.89 (150)	6.00 (152)		
CFS363JLN	100	J	200kA	6000	10000	7.32 (186)	5.89 (150)	6.00 (152)		
CFS364JN	200	J	200kA	6000	8000	11.46 (291)	7.72 (196)	6.00 (152)		
CFS365JN	400	J	200kA	1000	6000	15.35 (390)	10.19 (259)	8.00 (203)		
CFS366J	600	J	200kA	1000	5000	11.81 (300)	14.33 (364)	11 (280)		
CFS466J	600	J	200kA	1000	5000	11.81 (300)	18.03 (458)	11 (280)		
CFS367L	800	L	200kA	500	3500	11.81 (300)	14.33 (364)	11 (280)		
CFS467L	800	L	200kA	500	3500	11.81 (300)	18.03 (458)	11 (280)		

Wire ranges line & load lugs

Switch	Amperage Rating	UL approved wire size (75° C)
CFS361J5	30	(1)#14-10
CFS361C5	30	(1)#14-10
CNFS361	30	(1)#14-10
CFS361JN	30	(1)#14-6
CFS362JN1	60	(1)#14-6
CFS362JN	60	(1)#12-1
CFS363JN	100	(1)#12-1
CFS364JN	200	(1)#3/0
CFS365JN	400	(1)600MCM
CFS366J	600	(2)350 MCM
CFS367L	800	(2)600 MCM

Auxiliary contact capability when an NFPA79 kit is used

Switch	NFPA79 kit	Aux contacts that can be installed
CNFS361	CFSNFPA1	(2) Total, CFSAUX1NO
CFS361C5		or CFSAUX1NC
CFS361J5		(1) CFSAUX1NO or (1) CFSAUX1NC
CFS361JN	CFSNFPA2N	(2) Total, CFSAUX1NO or CFSAUX1NC®
CFS362JN1		
CFS362JN		
CFS363JN		
CFS364JN		
CFS365JN	CFSNFPA3N	(2) Total, CFSAUX1NO or CFSAUX1NC®

① Minimum dimensions from mounting surface to inside of cover. Dimensions shown can be decreased if aux contacts are not required.

decreased if aux contacts are not required.

© CNFS361 is rated 65kA when protected by 30A max.

Class J or CC fuses.

⑤ For additional auxiliary contacts use side mounted CFS11AUX or CFS22AUX.

Appendix General Information

Contents	Pages
UL and CSA file and guide numbers	19/2
On-line References for Industrial Control Products	19/3
General Information NEMA enclosure descriptions. IEC enclosure descriptions. IEC contactor utilization categories. Control circuit classifications. Ampere ratings for 3 phase AC induction motors. Metric to US conversions. Electrical formulas and grounding requirements. NEMA and IEC terminal markings. Electrical symbols. Control circuit schematics. Control circuit schematics and wiring diagrams. Pilot control	19/5 19/6 19/7 19/8 19/9 19/10 19/11 19/12 19/13
International Control Equipment	40/40
Quick reference list	
Spring Loaded Terminal Technique	19/17
Standard Terms & Conditions of Sale	19/18

Appendix Standards and Approvals UL and CSA file numbers and

guide card numbers

Most control equipment listed in this catalog is designed, manufactured and tested in accordance with the relevant UL and CSA standards as listed on pages 19/2 and 19/3.

	O	CSA		UL-listed			UL-recogniz		
Equipment	SEC	®		(0)	C@		977	c 71	
		Guide No.	File No.	Guide No.		File No.	Guide No.		File No.
3RV motor starter protectors	1	Class 3211 05	LR 12730	NLRV	NLRV7	E 47705	-		
3RV as self-protected controller (Type E)	1	Class 3211 08	LR 12730	NKJH	NKJH7	E 156943	-	_	
3RV17, 18, 27 & 28 as circuit breakers	1	Class 1432 01	LR 12730	DIVQ	DIVQ7	E 235044	-	_	
3RA13 & 23 reversing contactors	2	Class 3211 04	LR 12730	NLDX	NLDX7	E31519	NLDX2	NLDX8	E 31519
3RH control relays	2	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-	_	
3RT contactors	2	Class 3211 04	LR 12730	NLDX	NLDX7	E31519	NLDX2	NLDX8	E 31519
3TB contactors	2	Class 3211 04	LR 12730	NLDX	NLDX7	E 31519	NLDX2	_	E 31519
3TC4 DC Contactors	2	-	_	NLDX	NLDX7	E 31519	-	_	_
3TC5 DC Contactors	2			NLDX	_	E 31519			
3TF6 contactors	2	Class 3211 04	LR 12730	NLDX	NLDX7	E 31519	NLDX2	-	E 31519
3TX7 surge suppressors	2	Class 3211 03	LR 12730	-	-	-	NKCR2	NKCR8	E 31519
3RB20 / 21 solid-state overload relay	3	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	_	-	_
3RB22, 23 & 24 solid-state overload relay	3	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-	-	_
3RB30 / 31 solid-state overload relay	3			NKCR	NKCR7	E 44653			
3RU11 & 21 thermal overload relay	3	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-	=	-
3RU21 thermal overload relay	3			NKCR	NKCR7	E 44653			
3UF7 SIMOCODE intelligent overload relay	3	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-	_	-
3RA*1 & *2 combination starters	4	Class 3211 05	LR12730	NLDX	NLDX7	E31519	-	_	-
3RA6 compact starter as manual motor controller	4	Class 3211 05	LR 12730	NLRV	NLRV7	E 47705	-	_	-
3RA6 compact starter as self protected controller (Type E)	4	Class 3211 08	LR 12730	NKJH	NKJH7	E 156943	-	_	-
8US1 busbar components	5			NMTR	NMTR7	E328403			
8US1 busbar adapter shoes	5	2)	2)	-	_	-	NMTR2	NMTR8	E 32840
FB busbar adapter system	5	2)	2)	-	_	-	NMTR2	NMTR8	E 16077
3RM1 hybrid motor starter	6			NMFT	NMFT7	E 143112			
3RW30 Soft starters	7	Class 3211 06	LR 12730	NMFT	NMFT7	E 143112	-	_	-
3RW30/31 Soft starters	7	Class 3211 06	LR 12730	NMFT	NMFT7	E 143112	-	-	_
3RW40/44 Soft starters	7	Class 3211 06	_	NMFT	NMFT7	E 143112	-	_	_
73 enclosed soft starters	7	_	_	NJAV	NJAV7	E 43399	_	_	_
74 combination soft starters	7	_	_	NJAV	NJAV7	E 43399	1-	_	_
3RF20, 21 & 22	8			NMFT	NMFT7	E 143112	NRNT2	NRNT8	E44653
3RF23 & 24	8			NRNT	NRNT7	E44653	1		
3RF24 & 34 solid-state contactors		Class 3211 07	LR12730	NMFT	_	E 143112	-	-	_
11 manual starters	9	Class 3211	LR 6535	NLVR	NLRV7	E 10590	1-	_	_
14, 22, 30, 40, 43 starters & contactors	9		LR 6535	NLDX	NLDX7	E 14900	_	_	_
17, 18, 25, 26, 32 combination starters	9		LR 6535	NKJH	NKJH7	E 185287	1_	_	_
36, 37 reduced voltage starters	9		LR 6535	NLDX	NLDX7	E 14900	_	_	_
83, 84, 85, 87, 88 pump control panels	9		LR 6535	NKJH	NKJH7	E 185287	1_	_	_
48, 958 overload relays ESP200	9		LR 12730	NKCR	NKCR7	E 44653	_	_	_
49 field kits	9		ELR 535	NLDX	_	E 14900	NLDX2		E 14900
CLM lighting contactors	9			NRNT	NRNT7	E 27683			
LC lighting contactors - open	9			NLDX	NLDX7	E 14900			
LC lighting contactors - enclosed	9			NRNT	NRNT7	E 27683			
LEN00B, C, D, E lighting - open	9			NLDX		E31519			
LENOOF, G, H, lighting - open	9			NRNT	NRNT7	E 27683			
LE lighting contactors - enclosed	9			NRNT	NRNT7	E 27683			
MMS manual switches	9			NLRV	INI UNI /	E10590	NLRV2		E 10590
SMF manual starters	9			NLRV		E10590	NLRV2		E 10590
3SB2 16mm pushbuttons and indicator lights		Class 3211 03	LR 12730	INCI IV			NKCR2		E 44653
3SB3 22mm pushbuttons and indicator lights	_	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	INICOLE		E 44000
		Class 3211 03	LR 12730 LR 6535	NKCR	NKCR7	E 22655	NKCR2	NKCR8	E 22655
50 standard duty pilot devices	_					E 39935	INNURZ		
51 hazardous location pilot devices	_	Class 3218	LR 23889	NOIV	NOIV7		1-		_
52 30 mm pilot devices	10	Class 3211	LR 6535	NKCR	NKCR7	E 22655	-		
8WD signal columns		01	LD 10707	NMTR	NMTR7	E 148698			
3RN1 thermistor motor protection	_	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-		
3RP1 electronic time-delay relay		Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-		_
3RS10, 11, 20 & 21 temperature monitoring relay	_	-	-	NKCR	NKCR7	E 44653	-	_	
3RS17 interface converter	11	1)	1)	NKCR	NKCR7	E 44653	-		

 $^{^{\}mbox{\tiny 1)}}$ c@ listing for Canada, instead of CSA certification.

²⁾ c**91** recognition for Canada, instead of CSA certification.

Appendix Standards and Approvals

UL and CSA file numbers and guide card numbers **On-line resources for Industrial Control products**

		CSA		UL-listed	UL-listed		UL-recognized		
Equipment	SEC	®		@ c@			71. c 71.		
	0)	Guide No.	File No.	Guide No.		File No.	Guide No.		File No.
3RS18 coupling relays	11			NKCR	NKCR7	E 44653			
3TG10 power relay	11	1)	1)	NLDX	NLDX7	E31519	-	-	-
3TX70 coupling devices	11	Class 2211 03	LR 12730	NKCR	NKCR7	E 44653	NKCR2	NKCR8	E 44653
3TX71 plug-in relays	11	-	_	-	-	-	NLDX2	NLDX8	E 14900
3TX71 sockets	11	-	_	-	-	-	SWIV2	SWIV8	E 19678
3UG monitoring relay	11	1)	1)	NKCR	NKCR7	E 44653	-	_	_
7PV time-delay relay	11	Class 2211 03	LR 12730	NKCR	NKCR7	E 44653	-	_	_
8WA1 Terminal blocks	12	-	_	-	-	-	XCFR2	-	E 80027
8WA2 & 8WH Terminal blocks	12	Class 3211	LR50181	-	-	-	XCFR2	XCFR8	E 80027
3SK1 safety relays	13			NKCR	NKCR7	E 44653			
3RK3 MSS	13	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-	-	-
3SE03 North American NEMA) limit switches	13	-	_	NKCR	-	E 47512	-	-	-
3SE2 hinge switches	13			NKCR	NKCR7	E 44653			
3SE5 limit switches	13	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	NKCR2	NKCR8	E 44650
3SE6 magnetic monitoring system	13			NKCR	NKCR2	E 44653			
3SE7 rope pull switches	13	1)	1)	NKCR	-	E 44653	-	-	_
3SK1 safety relays	13								
3TK28 safety relay	13	1)	1)	NKCR	NKCR7	E 44653	-	-	_
AS-Interface components for control circuits, e.g. AS-Interface modules, gateways	14	Class 3211 03	LR 12730	NKCR	NKCR7	E 44653	-	-	-
AS-Interface components for power cir-cuits, e.g. AS-Interface motor starters, PROFIBUS motor starters	14	Class 3211 04	LR 12730	NLDX	NLDX7	E 31519	-	_	_
6ED1 programmable relays	15			NRAQ	NRAQ7	E 217227			
6EP1 DC power supplies	15	1)	1)	NRAQ	NRAQ7	E 143289	NRAQ2	NRAQ8	E 14328
6GK5 ethernet switches	15			NWGQ	NWGQ7	E 115352			
5SJ4 circuit breakers	16	-	_	DIVQ	DIVQ7	E 243414		_	
5ST Aux switch, fault signal contact, shunt trip,busbar	16	-	_	DIHS	DIHS7	E 321559	DIHS2	DIHS8	E 32155
5SY4 supplementary protectors	16	2)	2)	-	-	_	QVNU2	QVNU8	E 11638
3NW70 Fuse Holder	16	-	_	-	-	-	IZLT2	IZLT8	E 17126
3NW75 Class CC Fuse Holder	16	-	_	IZLT	IZLT7	E 171267	_	_	_
Sentron circuit breakers	17	Class 1432-01	LR 13077	DIVQ	DIVQ7	E 10848	DKPU2		3) E108
VL circuit breakers	17	Class 1432-01	LR 13077	DIVQ	DIVQ7	E 10848	DKPU2		3) E108
WL circuit breakers	17	-	-	DIVQ	DIVQ7	E 231263	-	-	-
3LD2 disconnect switches	18	1)	230576	NLRV	NLRV7	E 47705	-	=	
CFS fusible disconnect switches	18	-	222227	WHTY	-	E 121152	WHTY2	_	E 12115
LBR and LBT disconnect switches	18	-	1)	NLRV	-	E 191706	_	-	
MCS disconnect switches	18	-	154852	-	-	-	WHTY2	_	E 12115
VBII disconnect switches	18	-	154852	-	-	-	WHTY2	-	E 12115
VBII safety switches	18	_	4)	WIAX	WIAX7	E 4776	_	_	_

1) c ® listing for Canada, instead of CSA certification.

On-Line Resources for Industrial Control Products

Controls Website
- with links to all sites listed below plus much more

Siemens Industrial Controls Catalog - with updates to the print Catalog

- Siemens Industry Mall

 Quickly search for Siemens control products

 Configure products for your application

 Create and export a complete Bill of Material for your system

 Find helpful technical Information, such as:

 * Instruction Sheets & Manuals

 * 2D & 3D Dimension Drawings

Industrial Control Panels for North America - Learn the secrets of control panel design

- Improve efficiency in construction and operation of your control panels

Short Circuit Current Ratings (SCCR) to meet UL508A & NEC - Find the latest High Short Circuit testing for combinations of Siemens Power Distribution & Control Products

- Siemens Service and Support Website
 Get answers to technical and application questions
 Receive training on the latest innovations

www.usa.siemens.com/controls

www.usa.siemens.com/iccatalog

www.usa.siemens.com/industrymall

www.usa.siemens.com/controlpaneldesign

http://www.usa.siemens.com/sccr

http://support.automation.siemens.com/US

²⁾ c **91** recognition for Canada, instead of CSA certification.
3) Instantaneous only circuit breakers (ETI or MCP).

⁴⁾ CSA labeled Sws available on request.

NEMA enclosure descriptions

NEMA Standard Publications No. 250-1979

Type 1

Type 1 enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment in locations where unusual service conditions do not exist. The enclosures shall meet the rod entry and rust resistance design tests.

Type 3

Type 3 enclosures are intended for outdoor use, primarily to provide a degree of protection against wind-blown dust, rain and sleet, and to be undamaged by the formation of ice on the enclosure. They shall meet rain, external icing, dust, and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

Type 3R

Type 3R enclosures are intended for outdoor use, primarily to provide a degree of protection against falling rain, and to be undamaged by the formation of ice on the enclosure. They shall meet rod entry, rain, external icing, and rust resistance design tests. They are not intended to provide protection against conditions such as dust, internal condensation, or internal icing.

Type 4

Type 4 enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose directed water, and to be undamaged by the formation of ice on the enclosure. They shall meet hosedown, external icing, and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

Type 4X

Type 4X enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water, and to be undamaged by the formation of ice on the enclosure. They shall meet hose-down, external icing, and corrosion resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

Shall be manufactured of American Iron and Steel Institute Type 304 Stainless steel, polymerics, or materials with equivalent corrosion resistance to provide a degree of protection against specific corrosive agents.

Type 6

Type 6 enclosures are intended for indoor or outdoor use, primarily to provide a degree of protection against the entry of water during occasional temporary submersion at a limited depth.

Type 6P enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.

Type 7

Type 7 enclosures are for indoor use in locations classified as Class I, Groups C or D, as defined in the National Electrical Code.

Type 7 enclosures shall be capable of withstanding the pressures resulting from an internal explosion of specified gases and contain such an explosion sufficiently that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting explosive gas-air mixtures in the

surrounding atmosphere. Enclosures shall meet explosion, hydrostatic, and temperature design tests.

Type 9

Type 9 enclosures are intended for indoor use in locations classified as Class II Groups E, F or G, as defined in the National Electrical Code.

Type 9 enclosures shall be capable of preventing the entrance of dust. Enclosed heat generating devices shall not cause external surfaces to reach temperatures capable of igniting or discoloring dust on the enclosure or igniting dust-air mixtures in the surrounding atmosphere. Enclosures shall meet dust penetration and temperature design tests, and aging of gaskets (if used).

Class I—Flammable gases or vapors.

Class II—Combustible dust.

Class III—Ignitable fibers or flyings.

Division I—Normal situation; the hazard would be expected to be present in everyday repair and maintenance.

Division II—Abnormal situation; the material is expected to be confined within closed containers or closed systems and will be present only during accidental rupture, breakage or unusual faulty operation.

Groups

Class I—Gases and vapors are designed for use in groups C and D, depending on the ignition temperature of the substance, its explosion pressure and other flammable characteristics.

Class II—Dust locations are designed for use in groups E, F, and G, according to the ignition temperature and conductivity of the hazardous substance.

Type 12

Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids. They shall meet drip, dust, and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation.

Siemens NEMA 12 may be field modified for outdoor use. NEMA 3 requires the use of watertight conduit hubs. NEMA 3R requires the use of watertight conduit hubs at a level above the lowest live part and drain holes of 1/8" diameter shall be added at the bottom of the enclosure.

Type 13

Type 13 enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil and non-corrosive coolant. They shall meet oil explosion and rust resistance design tests. They are not intended to provide protection against conditions such as internal condensation.



SHMES

Type 3/3R









Type 4X Type 3, 4, 7 & 9

Type 12 & 13

IEC enclosure descriptions

Comparison	of NEMA	Enclosures

This table summarizes the information provided on the previous page.

Provides a Degree of Protection Against						
the Following Environmental Conditions	1	3R	4	4X	12	13
Incidental contact with the enclosed equipment	×	×	×	×	×	×
Rain, snow, and sleet	_	×	×	×	_	_
Windblown dust	_	_	×	×	_	_
Falling dirt	×	_	×	×	×	×
Falling liquids and light splashing	_	_	×	×	×	×
Circulating dust, lint, fibers, and flyings	_	_	×	×	×	×
Settling airborne dust, lint, fibers, and flyings	_	_	×	×	×	×
Hosedown and splashing water	_	_	×	×	_	_
Oil and coolant seepage	_	_	_	_	×	×
Oil or coolant spraying and splashing	_	_	_	_	_	×
Corrosive agents	_	_	_	×	_	_

IEC Environmental Enclosure Ratings for Global Applications

IEC enclosures use a two digit numbering system to define the degree of protection they provide. The first digit specifies the degree of protection against incidental contact and penetration of solid objects. The second digit specifies the level of protection against the ingress of water.

Example: An IP65 enclosure is dust tight and protected against water jets. An IP66 enclosure is dust tight and protected against powerful water jets.

First Numeral	Second Numeral
Protection of persons against access to hazardous par protection against penetration of solid foreign objects.	
0 Non-protected	0 Non-protected
1 Back of hand; objects greater than 50 mm in diameter	1 Vertically falling drops of water
2 Finger; objects greater than 12.5 mm in diameter	Vertically falling drops of water with enclosure
	tilted 15 degrees
3 Tools or objects greater than 2.5 mm in diameter	3 Spraying water
4 Tools or objects greater than 1 mm in diameter	4 Splashing water
5 Dust-protected (Dust may enter but must not interfere with operation of the equipment or impair safety)	5 Water jets
6 Dust tight (No dust observable inside enclosure	6 Powerful water jets
at end of test)	·
	7 Temporary submersion
	8 Continuous submersion

Comparison of NEMA Type Numbers to IEC Classification Designations

This table shows the IP classification designation to which NEMA enclosures may be applied. The table cannot be used to convert IEC designations to NEMA type numbers.

NEMA Enclosure Type Number	IEC Enclosure Classification Designation
1	IP10
3	IP54
3R	IP54
4 and 4X	IP56
6 and 6P	IP67
12	IP52
13	IP54

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General Information

IEC contactor utilization catagories

Contactors designed for international applications are tested and rated per IEC 947-4. The IEC rating system is broken down into different utilization categories that define the value of the current that the contactor must make, maintain, and break. The following category definitions are the most commonly used for IEC Contactors.

Ratings for Siemens contactors per these categories can be found in Section 3.

AC Categories

AC-1

This applies to all AC loads where the power factor is at least 0.95. These are primarily non-inductive or slightly inductive loads. Breaking remains easy.

AC-3

This category applies to squirrel cage motors where the breaking of the power contacts would occur while the motor is running. On closing, the contactor experiences an inrush which is 5 to 8 times the nominal motor current, and at this instant, the voltage at the terminals is approximately 20% of the line voltage. Breaking remains easy.

AC-4

This applies to the starting and breaking of a squirrel cage motor during an inch or plug reverse. On energization, the contactor closes on an inrush current approximately 5 to 8 times the nominal current. On de-energization, the contactor breaks the same magnitude of nominal current at a voltage that can be equal to the supply voltage. Breaking is severe.

DC Categories

DC-1

This applies to all DC loads where the time constant (L/R) is less than or equal to one msec. These are primarily noninductive or slightly inductive loads.

DC-2

This applies to the breaking of shunt motors while they are running. On closing, the contactor makes the inrush current around 2.5 times the nominal rated current. Breaking is easy.

DC-3

This applies to the starting and breaking of a shunt motor during inching or plugging. The time constant shall be less than or equal to 2 msec. On energization, the contactor sees current similar to that in Category DC-2. On de-energization, the contactor

will break around 2.5 times the starting current at a voltage that may be higher than the line voltage. This would occur when the speed of the motor is low because the back e.m.f. is low. Breaking is severe.

DC-5

This applies to the starting and breaking of a series motor during inching or plugging. The time constant being less than or equal to 7.5 msec. On energization, the contactor sees about 2.5 times the nominal full load current. On denergization, the contactor breaks the same amount of current at a voltage which can be equal to the line voltage. Breaking is severe.

Special Contactor Utilization Categories

Some contactors also have ratings for the following specialty utilization categories. For specific applications, please contact your local Siemens sales office.

	,	
Kind of Current	Utilization Categories	Typical Applications
AC	AC-2	Slip-ring motors: starting, switching off
	AC-5a	Switching of electric discharge lamp controls
	AC-5b	Switching of incandescent lamps
	AC-6a	Switching of transformers, welders
	AC-6b	Switching of capacitor banks
	AC-7a	Slightly inductive loads in household appliances and similar applications
	AC-7b	Motor-loads for household applications
	AC-8a	Hermetic refrigerant compressor motor ¹) control with manual resetting of overload releases
	AC-8b	Hermetic refrigerant compressor motor¹) control with automatic resetting of overload releases
DC	DC-6	Switching of incandescent lamps

Electrical Quantities Symbols According to DIN, VDE and IEC Symbol Characteristic Electrical Quantity

Symbol	Characteristic Electrical Quantity
U _i	Rated insulation voltage to DIN VDE 0110/DIN VDE 0660
U	Rated operational voltage
U _c	Rated control voltage (IEC 947-1) at which an operating mechanism
	or release is rated, e.g. coil voltage to DIN VDE 0660 Part 102
U_s	Rated control supply voltage (Control voltage) to DIN VDE 0660 Part 102, IEC 947
U	No-load voltage to IEC 947-2, -3, -5
U_r	Power-frequency recovery voltage (IEC 947)
U	Transformer no-load voltage to DIN VDE 0532
U_k	Short-circuit impedance voltage to DIN VDE 0532
Ukr	Rated value of the impedance voltage in % to DIN VDE 0102, 01.90
I _n	Rated current to IEC 947
I _{th}	Eight-hour-current to DIN VDE 0660, conventional free-air thermal
	current to IEC 947- (defined as eight-hour-current) thermally equivalent
	short-time current (r.m.s. value) to DIN VDE 0103
the	Conventional enclosed thermal current
ļ.	Rated uninterrupted current to IEC 947-1
l _e	Rated operational current
s	Selectivity (discrimination) limit current (DIN VDE 0660, IEC 947-1)
cm	Rated short-circuit making capacity to IEC 947-1
cn	Rated short-circuit breaking capacity to IEC 947-1
cm	Rated ultimate short-circuit breaking capacity to IEC 947-1

1)Hermetic refrigerant compressor motor is a combination consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant.

	Symbol	Characteristic Electrical Quantity
	l _{cw}	Rated short-time current withstand capacity to IEC 947-1
	l _p	Test current (general) to DIN VDE 0660, prospective current to DIN VDE 0636 Breaking current (r.m.s. value) to DIN VDE 0102
-1	l _p l _k	Peak short-circuit current (maximum instantaneous value) to DIN VDE 0102 Sustained (symmetrical) short-circuit current (r.m.s. value), DIN VDE 0102. Rated short-time withstand current to DIN VDE 0660
	i _p	Let-through current of fuses and rapidly operating switching devices (maximum instantaneous value during the break time) to DIN VDE 0102
_	I _o	No-load current at the input side of a transformer (unloaded output side) to DIN VDE 0532
	x sr r _B	Current carrying capacity (ampacity) Rated rotor operational current (DIN VDE 0660, IEC 947-1) Setting current ("current setting") to DIN VDE 0660 Take-over current
•	R S" _k X Z	Ohmic resistance Initial symmetrical AC short-circuit power (simplified: apparent short-circuit power) Reactance, reactive impedance Impedance (apparent resistance) Factor to determine the peak short-circuit current ip
	X	

NEMA and IEC control circuit classifications

AC-Control Circuit Classifications—NEMA

NEMA designates Control Circuit Rating with a code letter (for current) and a voltage code.

Ratings & Test Values for AC Control Circuit Contacts at 50 or 60Hz

Contact	Thermal Continuous	Maximum Current, Amperes									
Rating	Test Current,	120 Volts	;	240 Volts		480 Volts	;	600 Volts		Voltampe	res
Designation	Amperes	Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A150	10	60	6	_	_	_	_	_	_	7200	720
A300	10	60	6	30	3	_	_	_	_	7200	720
A600	10	60	6	30	3	15	1.5	12	1.2	7200	720
B150	5	30	3	_	_	_	_	_	_	3600	360
B300	5	30	3	15	1.5	_	_	_	_	3600	360
B600	5	30	3	15	1.5	7.5	0.75	6	0.6	3600	360
C150	2.5	15	1.5	_	_	_	_	_	_	1800	180
C300	2.5	15	1.5	7.5	0.75	_	_	_	_	1800	180
C600	2.5	15	1.5	7.5	0.75	3.75	0.375	3	0.3	1800	180
D150	1	3.6	0.6	_	_	_	_	_	_	432	72
D300	1	3.6	0.6	1.8	0.3	_	_	l —	_	432	72
E150	0.5	1.8	0.3	_	_	_	_	_	_	216	36

DC-Control Circuit Classifications—NEMA

Rating codes for DC Control Circuit Contacts

Contact Rating	Thermal Continuous Test Current,	Maximum Make Current, Amper	Maximum Make or Break Voltamperes		
Designation ¹)	Amperes	125 Volt	250 Volt	301 to 600 Volt	at 300 Volts or Less
N150	10	2.2	_	_	275
N300	10	2.2	1.1	_	275
N600	10	2.2	1.1	0.4	275
P150	5	1.1	_	_	138
P300	5	1.1	0.55	_	138
P600	5	1.1	0.55	0.2	138
Q150	2.5	0.55	_	_	69
Q300	2.5	0.55	0.27	_	69
Q600	2.5	0.55	0.27	0.1	69
R150	1	0.22	_	_	28
R300	1	0.22	0.11	_	28

Control Circuit Classifications—IEC3)

IEC 947-5-1 Uses Utilization Categories AC-15 to Specify Control Circuit Ranges. Current at each voltage is specified by the manufacturer, not by the standard.

AC Control Circuit Utilization Categories	Make		Break		
per IEC 947-5-1	I/I _e	U/U _e	I/I _e	U/U _e	
AC-12	1	1	1	1	
AC-13	2	1	1	1	
AC-14	6	1	1	1	
AC-15	10	1	1	1	

DC Control Circuit Utilization Categories	Make		Break		
per IEC 947-5-1	I/I _e	U/U _e	I/I _e	U/U _e	
DC-12	1	1	1	1	
DC-13	1	1	1	1	
DC-14	10	1	1	1	

Example of a Typical IEC Control Circuit Ratings Table⁴)

I _e /AC-12 (Continuous Amps)	U _。 AC Voltage	I _e /AC-15 Amps	Voltage	I _e /DC-12	I _e /DC-13
	24V	6A	24	6A	3A
10	110V	6A	60	5A	1.5A
10	220/230V	6A	110	2.5A	0.7A
	380/440V	4A	230	1A	0.3A

¹⁾The numerical suffix designates the maximum voltage design values, which are to be 600, 300, and 150 volts for suffixes 600, 300, and 150 respectively. Test voltage shall be 600, 250, or 125 volts. MLLDLL.

²⁾For maximum ratings at 300 volts or less, the maximum make and break ratings are to be obtained by dividing the volt-ampere rating by the application voltage, but the current value is not to exceed the thermal

³⁾ I Ů e Rated operational current

Rated operational voltage

Current to be made or broken Voltage before make

⁴⁾Example: A control circuit contact having an AC-15 rating of 6 amps at 230 volts is capable of making 60 amps and breaking 6 amps at 230 volts. KRE.

Ampere ratings for 3 phase AC induction motors

Amperes 60Hz Amperes 60Hz											
Нр	Syn Speed RPM	200 Volts	230 Volts	460 Volts	575 Volts	Нр	Syn Speed RPM	200 Volts	230 Volts	460 Volts	575 Volts
•	1800	1.09	0.95	0.48	0.38		3600	69.9	60.8	30.4	24.3
1/4	1200	1.61	1.40	0.70	0.56	25	1800	74.5	64.8	32.4	25.9
/ 4	900	1.84	1.60	0.80	0.64	20	1200	75.4	65.6	32.8	26.2
	1800	1.37	1.19	0.60	0.48	•	900	77.4	67.3	33.7	27.0
1/3	1200	1.83	1.59	0.80	0.64		3600	84.8	73.7	36.8	29.4
/3	900	2.07	1.80	0.90	0.72	30	1800	86.9	75.6	37.8	30.2
	1800	1.98	1.72	0.86	0.69	. 00	1200	90.6	78.8	39.4	31.5
1/2	1200	2.47	2.15	1.08	0.86		900	94.1	81.8	40.9	32.7
/2	900	2.47	2.38	1.19	0.95		3600	111	96.4	48.2	38.5
		2.83	2.46	1.23	0.98	40	1800	116	101	50.4	40.3
3/4	1800 1200	3.36	2.46	1.23	0.98 1.17	40	1200	117	102	50.4	40.3
9/4	900	3.75	3.26				900	121	105	52.2	41.7
				1.63	1.30		3600	138	120	60.1	48.2
	3600	3.22	2.80	1.40	1.12	50	1800	143	120	62.2	46.2 49.7
1	1800	4.09	3.56	1.78	1.42	50	1200	145	124	63.0	50.4
	1200	4.32	3.76	1.88	1.50		900	150	130	65.0	52.0
	900	4.95	4.30	2.15	1.72						
	3600	5.01	4.36	2.18	1.74	00	3600	164	143	71.7	57.3
1/2	1800	5.59	4.86	2.43	1.94	60	1800	171	149	74.5	59.4
	1200	6.07	5.28	2.64	2.11		1200	173	150	75.0	60.0
	900	6.44	5.60	2.80	2.24		900	177	154	77.0	61.5
	3600	6.44	5.60	2.80	2.24	7.5	3600	206	179	89.6	71.7
2	1800	7.36	6.40	3.20	2.56	75	1800	210	183	91.6	73.2
	1200	7.87	6.84	3.42	2.74		1200	212	184	92.0	73.5
	900	9.09	7.90	3.95	3.16		900	222	193	96.5	77.5
	3600	9.59	8.34	4.17	3.34		3600	266	231	115	92.2
3	1800	10.8	9.40	4.70	3.76	100	1800	271	236	118	94.8
	1200	11.7	10.2	5.12	4.10		1200	275	239	120	95.6
	900	13.1	11.4	5.70	4.55		900	290	252	126	101
	3600	15.5	13.5	5.76	5.41		3600	_	292	146	116
5	1800	16.6	14.4	7.21	5.78	125	1800	_	293	147	117
	1200	18.2	15.8	7.91	6.32		1200	_	298	149	119
	900	18.3	15.9	7.92	6.33		900		305	153	122
	3600	22.4	19.5	9.79	7.81		3600	_	343	171	137
1/2	1800	24.7	21.5	10.7	8.55	150	1800	_	348	174	139
	1200	25.1	21.8	10.9	8.70		1200	_	350	174	139
	900	26.5	23.0	11.5	9.19		900	_	365	183	146
	3600	29.2	25.4	12.7	10.1		3600	_	458	229	184
10	1800	30.8	25.8	13.4	10.7	200	1800	_	452	226	181
-	1200	32.2	28.0	14.0	11.2		1200	_	460	230	184
	900	35.1	30.5	15.2	12.2		900	_	482	241	193
	3600	41.9	36.4	18.2	14.5		3600	_	559	279	223
15	1800	45.1	39.2	19.6	15.7	250	1800	_	568	284	227
	1200	47.6	41.4	20.7	16.5		1200	_	573	287	229
	900	51.2	44.5	22.2	17.8		900	_	600	300	240
	3600	58.0	50.4	25.2	20.1	-	1800		278	339	271
20	1800	58.9	51.2	25.2	20.5	300	1200	_	684	342	274
_0	1200	60.7	52.8	26.4	20.5	400	1800		896	448	358
	900	63.1	54.9	27.4	21.9	400	1000		030	440	000

Full load ampere ratings of motors vary depending upon a number of factors. The full load currents listed above are "average values" for horsepower rated motors of several manufacturers at the most commonly rated voltages and speeds. These "average values" along with the similar values listed in the N.E.C. should be used as a guide only for selecting suitable components for the motor branch circuit. The rated full load current shown on the motor nameplate

may vary considerably from the listed value, depending on the specified motor design.

Note: RPM shown for 60Hz motors. For 50Hz motors, multiply the 60HZ FLA value by 1.2.

Overload Relay Selection Multi-Speed/Part-Winding/Wye-Delta

Special attention should be given to the selection of the overload relay adjustment range for multispeed, part-winding and wye-delta controllers, as follows: **Multi-Speed Controllers:** Each speed requires a separate set of overloads. The adjustment range must be selected on the basis of the full-load current for each particular speed.

Part-Winding Controllers: Each winding of the motor must have its own set of overloads. The adjustment range should be selected on the basis of one-half the motor full-load current; that is, the full load current of each winding current.

Wye-Delta Controllers: Only one set of overloads is required. Since the overload relay is located electrically "inside the delta connection," the adjustment range must be selected on the basis of the full-load motor current (delta connection) divided by 1.73.

Single Phase: See page 9/120 for ampere ratings of single phase AC induction motors.

Metric to US conversions

3.6.5	_		
Wire	Conve	rsion	Lable

Comparison of Cross-sectional Areas to Metric and US Standards

Metric Cross-				
sectional Areas (in line with VDE)	American Wire Gauge			
Cross-sectional Area	Equivalent Metric C.S.A. mm ²	AWG or MCM		
		Ava or mon		
	0.005	40 414/0		
0.75	0.635	19 AWG		
	0.823	18		
	1.04	17		
1.5	1.31	16		
	1.65	15		
2.5	2.08	14		
2.3	2.62	13		
4	3.31	12		
	4.17	11		
6	5.26	10		
	6.63	9		
10	8.37	8		
10	10.55	7		
	13.30	6		
—— 16 ——	16.77	5		
25	21.15	4		
23	26.67	3		
 35	33.63	2		
	42.41	1		
50 <u></u>	53.48	1/0		
70	67.43	2/0		
95	85.03	3/0		
	107.20	4/0		
120 <u></u>	126.64	250 MCM		
 150 	152.00	300		
	177.35	350		
——— 185 ———	202.71	400		
240	253.35	500		
300 ——	304.00	600		
	354.71	700		
	405.35	800		
500	506.71	1000		
 625				

S-11	_	
Ither (Convers	ions

Power Conversions		
1 kilowatt (kW)	=	1.341 horsepower (hp)
1 horsepower (hp)	=	0.7457 kilowatt (kW)
Dimensions Conversions		
1 inch (in.)	=	25.4 millimeters (mm)
1 inch (in.)	=	2.54 centimeters (cm)
1 centimeter (cm)	=	0.3937 inches (in.)
1 meter (m)	=	39.37 inches (in.)
Weight Conversions		
1 ounce (oz.)	=	28.35 grams (g)
1 pound (lb.)	=	0.454 kilograms (kg)
1 kilogram (kg)	=	2.205 pounds (lbs.)
Temperature Conversions		•
100 Celsius	=	212 Fahrenheit
80 Celsius	=	176 Fahrenheit
60 Celsius	=	140 Fahrenheit
40 Celsius	=	104 Fahrenheit
20 Celsius	=	68 Fahrenheit
0 Celsius	=	32 Fahrenheit
Torque		
1 Newton-meter (Nm)	=	8.85 pound-inches (lb. in.)

General Information

Electrical formulas and grounding requirements

Electrical Formulas for Finding Amperes, Horsepower, Kilowatts and kVA					
To Find	Single-Phase	Alternating Current Two-Phase¹), Four-Wire	Three-Phase	Direct Current	
Kilowatts	$\frac{1 \times E \times pf}{1000}$	$\frac{1 \times E \times 2 \times pf}{1000}$	$\frac{1 \times E \times 1.73 \times pf}{1000}$	<u>I × E</u> 1000	
kVA	<u>I × E</u> 1000	1 × E × 2 1000	1 × E × 1.73 1000	_	
Horsepower	$I \times E \times \% EFF \times pf$	$I \times E \times 2 \times \% EFF \times pf$	$I \times E \times 1.73 \times \% EFF \times pf$	I × E × % EFF	
(Output)	746	746	746	746	
Amperes when Horsepower	HP × 746	HP × 746	HP × 746	HP × 746	
is Known	$E \times \% EFF \times pf$	$2 \times E \times \% EFF \times pf$	$1.73 \times E \times \% EFF \times pf$	E × % EFF	
Amperes when Kilowatts	KW × 1000	KW × 1000	_KW × 1000_	KW × 1000	
is Known	$E \times pf$	$2 \times E \times pf$	$1.73 \times E \times pf$	E	
Amperes when	kVA × 1000	kVA × 1000	kVA × 1000	_	
kVA is Known	E	2 × E	1.73 × E	_	

Average Efficiency and Power Factor Values of Motors

When the actual efficiencies and power factors of the motors to be controlled are not known, the following approximations may be used.

Efficiencies3)

Туре	Power Factor
DC motors, 35 horsepower and less	80% to 85%
DC motors, above 35 horsepower	85% to 90%
Synchronous motors (at 100% power factor)	92% to 95%
"Apparent" Efficiencies (= Efficiency × Power Factor); Three-phase induction motors, 25 horsepower and less	70%
Three-phase induction motors above 25 horsepower	80%

Fault-Current Calculation on Low-Voltage AC Systems

In order to determine the maximum interrupting rate of the circuit breakers in a distribution system, it is necessary to calculate the current which could flow under a three-phase bolted short circuit condition. For a three-phase system the maximum available fault current at the secondary side of the transformer can be obtained by use of the formula:

$$I_{SC} = \frac{kVA \times 100}{KV \times \sqrt{3} \times \% Z}$$

where:

= Symmetrical RMS amperes of fault current.

kVA = Kilovolt-ampere rating of transformers.

KV = Secondary voltage in kilovolts.

% Z = Percent impedance of primary line and transformer.

Minimum Size Grounding Conductors for Grounding Raceways and Equipment (From NEC Table 250-95)2)

Rating or Setting of		Size			
	Automatic Overcurrent Device in Circuit Ahead of Equipment, Conduit etc., Not Exceeding (Amperes)	Copper Wire Number	Aluminum or Copper Clad Aluminum Wire Number		
	15	14	12		
	20	12	10		
	30	10	8		
	40	10	8		
	60	10	8		
	100	8	6		
	200	6	4		
	300	4	2		
	400	3	1		
	500	2	1/0		
	600	1	2/0		
_	800	1/0	3/0		
	1000	2/0	4/0		
	1200	3/0	250 kcmil		
	1600	4/0	350 kcmil		
	2000	250 kcmil	400 kcmil		
-	2500	350 kcmil	600 kcmil		
	3000	400 kcmil	600 kcmil		
	1000	500 kcmil	800 kcmil		
	5000	700 kcmil	1200 kcmil		
6	5000	800 kcmil	1200 kcmil		

Grounding Electrode Conductor for AC Systems (From NEC Table 250-94)2)

Size of Largest Service Entrance Equivalent Area for Parallel Cond		Size of Grounding Electrode Conductor		
Copper	Aluminum or Copper Clad Aluminum	Copper	Aluminum or Copper Clad Aluminum	
2 or smaller	1/0 or smaller	8	6	
1 or 1/0	2/0 or 3/0	6	4	
2/0 or 3/0	4/0 or 250 kcmil	4	2	
Over 3/0 to 350 kcmil	Over 250 kcmil to 500 kcmil	2	1/0	
Over 350 kcmil to 600 kcmil	Over 500 kcmil to 900 kcmil	1/0	3/0	
Over 600 kcmil to 1100 kcmil	Over 900 kcmil to 1750 kcmil	2/0	4/0	
Over 1100 kcmil	Over 1750 kcmil	3/0	250 kcmil	

¹⁾In three-wire, two-phase circuits the current in the common conductor is 1.41 times that in either other conductor.

E = Volts | = Amperes

% EFF = Percent Efficiency | pf = Power Factor

²⁾Additional information and exceptions are stated in Article 250—Grounding, National Electric Code.

³⁾These figures may be decreased slightly for singlephase and two-phase induction motors.

NEMA and IEC terminal markings

Symbols and Terminal Markings—IEC

Per DIN standards, the terminals of auxiliary contacts on contactors and control devices are marked with a two digit number. Terminals that belong together are marked with the same location digit (first digit).

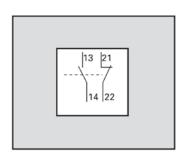
The second digits (called the function digits) identify the function of each contact per the following designation.

Type of Contact	Function Digits	
Normally Open	3 and 4	
Normally Closed	1 and 2	
Normally Open (Special Function) Normally Closed (Special Function)	5 and 6 i.e. Time-Delay or Overload 7 and 8 Contacts	

Symbols and Terminal Markings

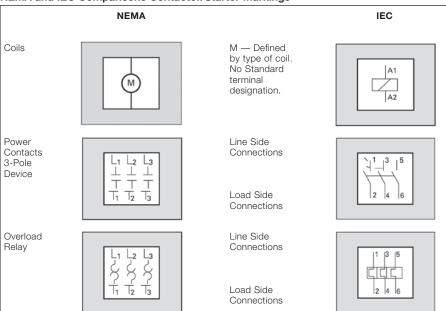
Control Circuits	NEMA	IEC
Normally Open (NO)	$\dashv\vdash$	\
Normally Closed (NC)	#	}
Time Delay Circuits	•	
On Delay Normally Open (Timed Closed)	~\tau^{\circ}	-(\
Normally Closed (Timed Open)	丁。	-{-}
Off Delay Normally Open (Timed Open)	%	->\
Normally Closed (Timed Closed)	0 10	-> ├

Example:

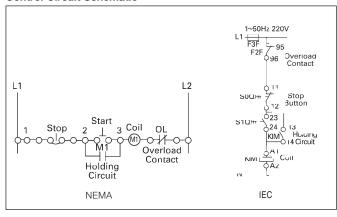


- **1.** The numbers 13 and 14 represent an auxiliary contact
- 2. The number 1 identifies that this is the first contact in the sequence
- **3.** The numbers 3 and 4 identify this as a normally open contact
- **4.** The numbers 21 and 22 represent another auxiliary contact
- **5.** The number 2 identifies that this is the second contact in the sequence
- **6.** The numbers 1 and 2 identify this as a normally closed contact

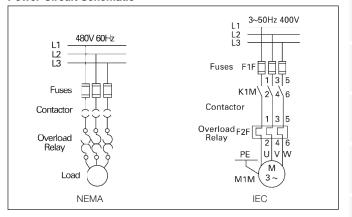
NEMA and IEC Comparisons Contactor/Starter Markings



Control Circuit Schematic



Power Circuit Schematic



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General Information

Electrical symbols

Disconnect

Circuit Interrupter

Circuit Breaker

Thermal



Limit Switch—Spring Return



Held Closed

Normally Closed



Held Open

Maintained **Neutral Position**



Liquid Level

Normally Open Normally Closed

Vacuum & Pressure

Normally Open Normally Closed

Temperature Activated

Normally Open Normally Closed

Flow (Air, Water, etc.)

Normally Open Normally Closed





Push Buttons

Normally Open

Normally Closed

Double Circuit

Mushroom Head

0

Maintained

Foot Switch Normally Open

Normally Closed

00

Selector Switch



J - K - L0 0 A2 <u>ဝါဝ</u> B1 O O B2



Lamps PUSH TO TEST



Denote Lens Color by Letter **Time Delay Contact**

Normally Open Normally Closed Normally Closed



General Contacts

Normally Open Normally Closed Not Connected

Conductors

Connected

Magnet Coil

Meter



Control Transformer

Ground

Full Wave Rectifier



Horn, Siren



Bell, Buzzer



Motor

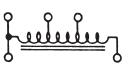


Overload Relay

Thermal

Fuse

Auto Transformer



Fixed Adjustable Res

Resistor

Location of Relay Contacts ICR (2 - 3 - 4)



Numbers in parentheses designate the location of relay contacts. A line underneath a location number signifies a normally closed contact.

Control circuit schematics

Figure 1 Three Wire Control Giving Low Voltage Protection Using Single Two Button Station

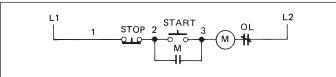


Figure 2 Three Wire Control Giving Low Voltage Protection Using Multiple Two Button Stations

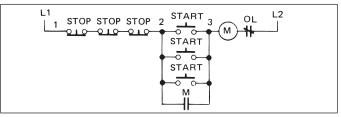


Figure 3 Three Wire Control Giving Low Voltage Protection with Safe-Run Selector Switch

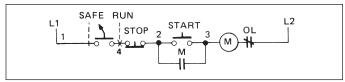


Figure 4 Three Wire Control for Jog or Run Using Start Stop Push Buttons and Jog-Run Selector Switch

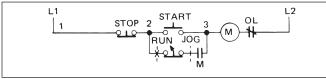


Figure 5 Control for Jog or Run Using Stop Push Button and Jog-Run Selector Push Selector Switch. Selector Push Contacts are Shown for "Run" (Three Wire Operation). Rotate Switch Sleeve and Selector Contact Opens Between "2" and "Stop" Button (Two Wire Operation)

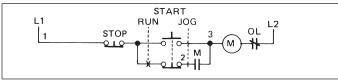


Figure 6 Three Wire Control for Jogging, Start, Stop Using Push Buttons

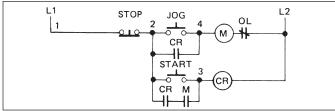


Figure 7 Two Wire Control Giving Low Voltage Release Only Using Hand-Off-Auto Selector Switch

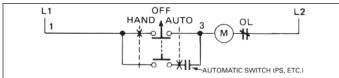


Figure 8 Two Wire Control for Reversing Jogging Using Single Two Button Station

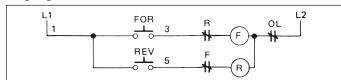


Figure 9 Three Wire Control for Instant Reversing Applications Using Single Three Button Station

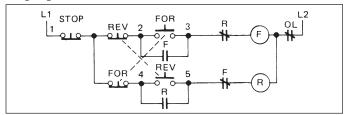


Figure 10 Three Wire Control for Reversing After Stop Using Single Three Button Station

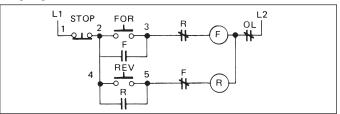


Figure 11 Control for Three Speed with Selective Circuitry to Insure the Stop Button is Pressed Before Going to a Lower Speed

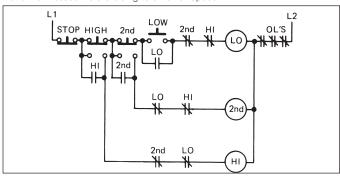
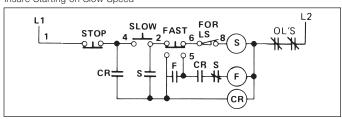


Figure 12 Three Wire Control for Two Speed with a Compelling Relay to Insure Starting on Slow Speed



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General Information

Control circuit schematics and wiring diagrams with transformers

Figure 13 Control for Three Speed with a Compelling Relay to Insure Starting on Low Speed

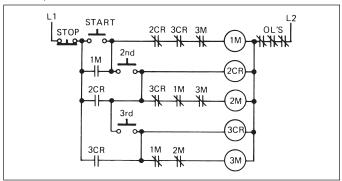


Figure 14 Control for Two Speed to Provide Automatic Acceleration from Low to High Speed

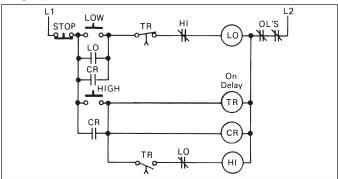


Figure 15 Control for Two Speed to Provide Automatic Deceleration from High to Low Speed

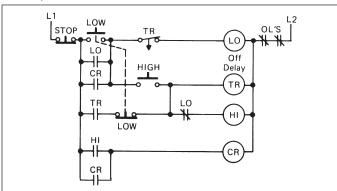
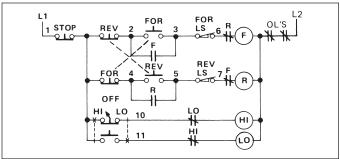
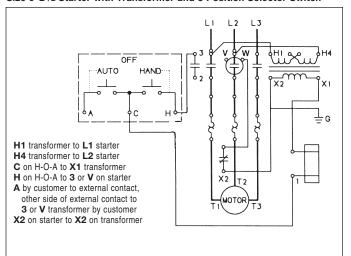


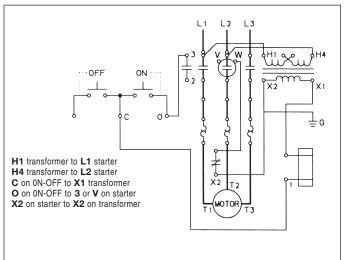
Figure 16 Control for Two Speed Reversing Starter Using Forward, Reverse, Stop Push Buttons and High-Low-Off Selector Switch



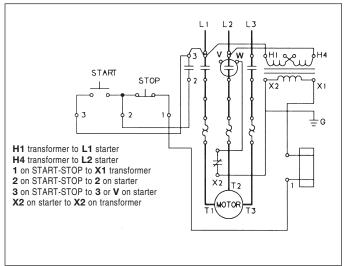
Size 0-21/2 Starter with Transformer and 3 Position Selector Switch



Size 0-21/2 Starter with Transformer and 2 Position Selector Switch

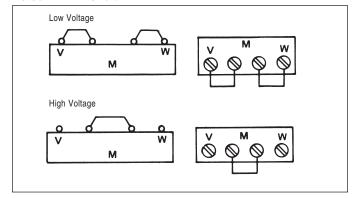


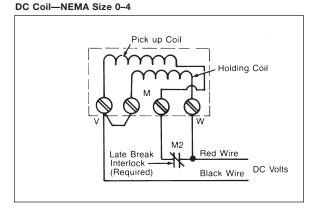
Size 0-21/2 Starter with Transformer and START-STOP Push Button



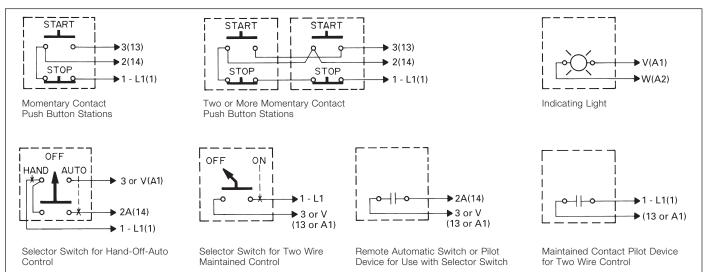
Pilot control

AC Coil-NEMA Size 0-4

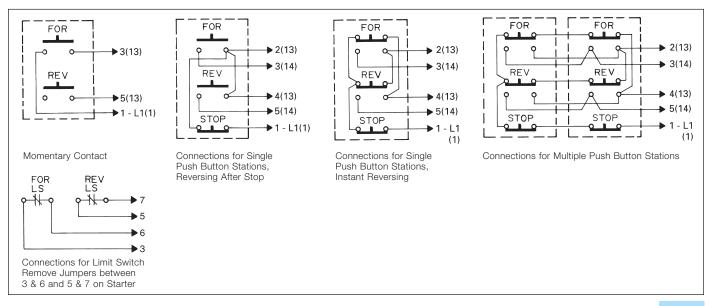




Non Reversing Pilot Control Terminal Markings shown in () indicate IEC Style. For separate control voltage source remove Jumper A shown individual in wiring diagrams. Connect separate voltage source to terminal 1 on the pilot device as shown and to the terminal **X2** on the overload relay, or **W(A2)** on the coil if there is no overload.



Reversing Pilot Control For Separate control voltage source remove Jumper A shown in individual wiring diagrams. Connect separate voltage source to terminal 1 on the pilot device as shown and to the terminal **X2** on the overload relay, or **W(A2)** on the coil if there is no overload.



Appendix International Control Equipment (IEC)

Quick reference list

Siemens is a manufacturer of equipment for the global market and manufactures products for global applications. The products listed in Sections 1 through 18 of this catalog are the products best suited for application in the U.S., Canada and Mexico. There are a host of other Industrial Control products that can be made available for export applications or for replacement in OEM equipment imported in to the U.S. The most common Siemens components are listed in the table below. We refer to these as Industrial Control Equipment components or ICE products.

If you are trying to identify a Siemens ID that is not listed in the Catalog Number Index on pages 0/12 to 0/15 of this catalog or in the table below, please contact our Call Center at 800-241-4453 or 423-262-5700. The Siemens Call Center maintains an extensive data base on all Siemens Operating Companies, and they can direct you for the appropriate support.

Catalog		Catalog		Catalog	
Number		Number		Number	
Prefix	Description	Prefix	Description	Prefix	Description
2CC	Low-Pressure Axial Ventilator Fan	3WY3	3WN Accessories	4FL	Transformer Voltage Regulator
2CF7	Medium-Pressure Radial-flow Fan	4AC	Bell transformers, power supply units	4NC	Window-type Current Transformer
2CQ	Medium-Pressure Axial Ventilator Fan	4AJ	Standard Transformers	4PK	Reactance coils with layer winding of copper flat wire
2CT	Low-Pressure Axial Ventilator Fan	4AM	Control Transformer	5SA	DIAZED Fuse Links (E16) Miniature Fuses 1)
3KA	Disconnect Switch	4AN	Single-phase transformers YUI 1 (UI)	5SB	DIAZED Fuse Links, Size II and III 1)
3KE	Disconnect Switch	4AP	Transformer for rectifier operation	5SC	DIAZED Fuse Links, Size IV and V 1)
3KL	Load Disconnect Switch w/Fuses	4AT	Safety Isolation Transformer, 1 phase	5SD	DIAZED Fuses
ЗКМ	Load Disconnect Switch w/Fuses	4AU	Safety Isolation Transformer, 3 phase	5SE	Fuses 1)
зкх	3KE4 Accessories	4AV	Special Transformers and DC power supplies	5SF	DIAZED Fuse Base
3KY	3KL Accessories	4AW	Ring core transformers	5SG	NEOZED & MINIZED Fuse Disconnectors
3NA	LV HRC Fuses	4AX	Non-Siemens transformers	5SH	DIAZED Fuse Accessories
3NC	SITOR Semiconductor fuse-links to 1000 V 1)	4AY	Transformer housings, accessories and spare parts	5SM	Residual Current Protective Devices 1)
3ND1	LV HRC Fuses	4BT	Transformer > 16 kVA, 1 Phase	5SQ	Miniature Circuit Breaker
3ND2	LV HRC Fuses	4BU	Transformer > 16 kVA, 3 Phase	5SU	Ground Fault and Line-Prot. Circuit Breaker
3NE	SITOR Semiconductor fuse-links to 2500 V 1)	4BV	Special Transformers	5 SV 8	SFJ Fault and Line-Prot. Circuit Breaker
3NG1	LV HRC Fuses	4BX	Transformer, 3-phase	5SW	Wall Enclosure
3NH	Fuse Bases	4CH	Variac 1 Phase	5SZ	Ground Fault Circuit Breakers
3NJ	Fused Disconnect Switch	4CJ	Variac 3 Phase	5TE	Toggle Switch
3NP	Fused Disconnect Switch	4CP	Pillar-type, Variac, 1ph	5TG	Signal Light
3NW1	Fuse Material to BS and NF Standards 1)	4CQ	Pillar-type, Variac, 3ph	5TT	Switch Relay
3NW6	Cylindrical Fuses	4EA	Reactance Coils with Iron-Core Reactors	7KM	Meters
3NW8	Fuse Material to BS and NF Standards	4EF	Reactance Coils with Iron-Core Reactors	7KT	Time meters, impulsing meters and accessories
3NX	Accessories and spare parts for NH-fuses	4EJ	Reactance Coils with Iron-Core Reactors	7LF	Digital time switches and accessories
3NY	3NP Accessories	4EM	Single-phase reactance coils YEI 1 (EI)	7LQ	Quarz-controlled time switches
3TK	Specialty Contactor	4EN9	Choke	7PV	Timers
3UL22	Summation Current Transformers	4EP	Line Reactor	7ZX	Instruction Manual 1)
3VU2	Phase Out Announced	4ET	Single-phase reactance coils YUI 1 (UI)	8JH	Distribution Enclosure Accessories
	Circuit Breaker Accessories and Components	4EU	Three-phase reactance coils YUI 2 (3UI)	8UB	Handle Accessories
3WX	3W Accessories	4EV	RFI Suppression Choke	8WC	Distribution System Accessories
3WY1	3WF Accessories	4FB	Power supplies	8ZX	Instruction Sheets 1)
3WY2	3WE Accessories	4FK	Magnetic Voltage Regulator 1 phase	LZX	Plug-in Relays 1)

¹⁾ Standard Control Product - Not Considered ICE Product.

Appendix Connection Technology

Spring loaded terminal technique

Spring Loaded Terminals

As an alternative to screw-type terminals, many products may be supplied with spring loaded terminals. With this screwless connection technique, the wires are clamped securely against shock and vibration by a spring clamp. Solid, stranded and finely-stranded wires can be connected with or without end sleeves.

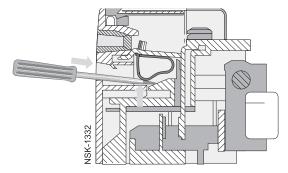
Each terminal connection is equipped with two independently operated spring clamps. Each spring can accept one wire. The clamping force of the spring automatically adjusts to the size of the wire and compensates for any deformation of the wire, such as settling of the strands. The flat clamping face of the spring presses the wire against the current bar without damaging the wire. To prevent stranded or finely-stranded wire from being divided, the end can be tinned or amalgamated using ultrasound.

The terminal is opened by inserting the screwdriver. The wire is then inserted and will remain clamped after the screwdriver is removed (see below). The chromium-nickel steel of the spring clamp provides corrosion-resistant contact of the wire-end in the clamp.

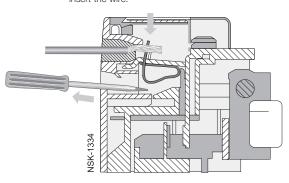
Advantages:

- Quick: The connection is made easily without the need to add on wire end sleeves or torque down terminal screws—reducing wiring time
- Reliable: The terminal is gas-tight and resistant to shock and vibration—for maximum contact reliability
- Maintenance-free: With the spring loaded terminals, there is no need to inspect the connections following transport—eliminating time-consuming and costly inspection

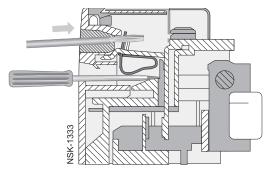
Step 1: Insert screwdriver; spring opens.



Step 2: The screwdriver holds the spring open; insert the wire.



Step 3: Remove the screwdriver; the spring closes and the wire is securely clamped.



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Siemens Industry, Inc. (Seller)

Standard terms and conditions of sale

- 1. APPLICABLE TERMS. These terms govern the sale of Products by Siemens. Whether these terms are included in an offer or an acceptance by Siemens, such offer or acceptance is conditioned on Buyer's assent to these terms. Any additional, different or conflicting terms contained in Buyer's request for proposal, specifications, purchase order or any other written or oral communication from Buyer shall not be binding in any way on Siemens. Siemens failure to object to any such additional, different or conflicting terms shall not operate as a waiver of these terms.
- 2. PRICING & PAYMENT. The prices shall be: (a.) as stated in Siemens' proposal, or if none are stated, (b.) Siemens' standard prices in effect at the time of release for shipment. In the event of a price increase or decrease, the price of Products on order shall be adjusted to reflect such increase or decrease. This does not apply to a shipment held by request of Buyer. Products already shipped are not subject to price increase or decrease.

Discounts, if any, are as specified on the latest discount sheets issued from time to time. Cash discounts are not applicable to notes or trade acceptances, to prepaid transportation charges when added to Siemens' invoices or to discountable items if there are undisputed past due items on the account. Cash discounts shall only be allowed on that portion of the invoice paid within the normal discount period.

- (a) Payment Unless otherwise stated, all payments shall be net 30 days from invoice date payable in United States Dollars.
- (b) Credit Approval All orders are subject to credit approval by Siemens. The amount of credit or terms of payment may be changed or credit withdrawn by Siemens at any time for any reason without advance notice. Siemens may, in its discretion, withhold further manufacture or shipment; require immediate cash payments for past and future shipments; or require other security satisfactory to Siemens before further manufacture or shipment is made; and may, if shipment has been made, recover the Products from the carrier, pending receipt of such assurances.
- (c) Installment Shipment If these terms require or authorize delivery of Products in separate shipments to be separately accepted by Buyer, Buyer may only refuse such portion of such shipment that fails to comply with the requirements of these terms. Buyer may not refuse to receive any lot or portion of hereunder for failure of any other lot or portion of a lot to be delivered or to comply with these terms, unless such right of refusal is expressly provided for on the face hereof. Buyer shall pay for each lot in accordance with the terms hereof. Payment shall be made for the Products without regard to whether Buyer has made or may make any inspection of the Products. Products held for Buyer are at Buyer's sole risk and expense.
- (d) Taxes, Shipping, Packing, Handling Except to the extent expressly stated in these terms, Siemens' prices do not include any freight, storage, insurance, taxes, excises, fees, duties or other government charges related to the Product, and Buyer shall pay such amounts or reimburse Siemens for any amounts Siemens pays. If Buyer claims a tax or other exemption or direct payment permit, it shall provide Siemens with a valid exemption certificate or permit and indemnify, defend and hold Siemens harmless from any taxes, costs and penalties arising out of same. Siemens' prices include the costs of its standard domestic packing only. Any deviation from this standard packing (domestic or export), including U.S. Government sealed packing, shall result in extra charges. To determine such extra charges, consult Siemens' sales offices. Any and all increases, changes, adjustments or surcharges (including, without limitation, fuel surcharges) which may be in connection with the freight charges, rates or classification included as part of these terms, shall be for the Buyer's account. Orders of less than \$400 are subject to a \$25 handling fee.
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- (b.) Conditions to the Limited Warranties. The Limited Warranties are conditioned on (i) Buyer storing, installing, operating and maintaining the Product in accordance with Siemens' instructions, (ii) no repairs, modifications or alterations being made to the Product other than by Siemens or its authorized representatives, (iii) using the Product within any conditions or in compliance with any parameters set forth in specifications that are attached to, or expressly incorporated by reference into, these terms, (iv) Buyer discontinuing use of the Product after it has, or should have had, knowledge of any defect in the Product, (v) Buyer providing prompt written notice of any warranty claims within the warranty period described below, (vi) at Siemens' discretion, Buyer either removing and shipping the Product or non-conforming part thereof to Siemens, at Buyer's expense, or Buyer granting Siemens access to the Products at all reasonable times and locations to assess the warranty claims, and (vii) Buyer not being in default of any payment obligation to Siemens under these terms.
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Appendix Siemens Industry, Inc. (Seller)

Standard terms and conditions of sale

(d.) Limited Warranty Period. Buyer shall have 12 months from initial operation of the Product or 18 months from shipment, whichever occurs first, to provide Siemens with prompt, written notice of any claims of breach of the Limited Warranties. Continued use or possession of the Product after expiration of the warranty period shall be conclusive evidence that the Limited Warranties have been fulfilled to the full satisfaction of Buyer, unless Buyer has previously provided Siemens with notice of a breach of the Limited Warranties.

- (e.) Remedies for Breach of Limited Warranty. Buyer's sole and exclusive remedies for any breach of the Limited Warranties are limited to Siemens' choice of repair or replacement of the Product, or non-conforming parts thereof, or refund of all or part of the purchase price. The warranty on repaired or replaced parts of the Product shall be limited to the remainder of the original warranty period. Unless otherwise agreed to in writing by Siemens, (i) Buyer shall be responsible for any labor required to gain access to the Product so that Siemens can assess the available remedies and (ii) Buyer shall be responsible for all costs of installation of repaired or replaced Products. All exchanged Products replaced under this Limited Warranty will become the property of Siemens.
- (f.) Transferability. The Limited Warranties shall be transferable during the warranty period to the initial end-user of the Product.

THE LIMITED WARRANTIES SET FORTH IN THIS SECTION ARE SIEMENS' SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO THE LIMITS OF LIABILITY SET FORTH IN SECTION 8 BELOW. SIEMENS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING AND USAGE OF TRADE.

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- 11. CHANGES IN WORK. Siemens shall not implement any changes in the scope of work unless Buyer and Siemens agree in writing to the details of the change and any resulting price, schedule or other contractual modifications. Any change to any law, rule, regulation, order, code, standard or requirement which requires any change hereunder shall entitle Siemens to an equitable adjustment in the prices and any time of performance.
- 12. NON-WAIVER OF DEFAULT. Each shipment made hereunder shall be considered a separate transaction. In the event of any default by Buyer, Siemens may decline to make further shipments. If Siemens elects to continue to make shipments, Siemens' actions shall not constitute a waiver of any default by Buyer or in any way affect Siemens' legal remedies for any such default. Any waiver of Siemens to require strict compliance with the provisions of this contract shall be in writing and any failure of Siemens to require such strict compliance shall not be deemed a waiver of Siemens' right to insist upon strict compliance thereafter.
- 13. FINAL WRITTEN AGREEMENT; MODIFICATION OF TERMS. These terms, together with any quotation, purchase order or acknowledgement issued or signed by Siemens, comprise the complete and exclusive agreement between the parties (the "Agreement") and supersede any terms contained in Buyer's documents, unless separately signed by Siemens. These terms may only be modified by a written instrument signed by authorized representatives of both parties.
- **14. ASSIGNMENT.** Neither party may assign the Agreement, in whole or in part, nor any rights or obligations hereunder without the prior written consent of the other; provided however that Siemens may assign its rights and obligations under these terms to its affiliates and Siemens may grant a security interest in the Agreement and/or assign proceeds of the Agreement without Buyer's consent.
- **15. APPLICABLE LAW AND JURISDICTION.** These terms are governed and construed in accordance with the laws of the State of Delaware, without regard to its conflict of laws principles. The application of the United Nations Convention on Contracts for the International Sale of Goods is excluded. BUYER WAIVES ALL RIGHTS TO A JURY TRIAL IN ANY ACTION OR PROCEEDING RELATED IN ANY WAY TO THESE TERMS.
- **16. SEVERABILITY.** If any provision of these terms is held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions will not in any way be affected or impaired, and such provision will be deemed to be restated to reflect the original intentions of the parties as nearly as possible in accordance with applicable law.
- 17. EXPORT COMPLIANCE. Buyer acknowledges that Siemens is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal, and usage of the Products provided under the Contract, including any export license requirements. Buyer agrees that such Products shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Siemens of its obligations hereunder that compliance with such export laws and regulations be maintained at all times. BUYER AGREES TO INDEMNIFY AND HOLD SIEMENS HARMLESS FROM ANY AND ALL COSTS, LIABILITIES, PENALTIES, SANCTIONS AND FINES RELATED TO NON-COMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.

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Notes



www.usa.siemens.com/3RM1

The new SIRIUS 3RM1 motor starters are distinguished by their narrow width of just 22.5 mm. That saves room in the control cabinet and provides the ideal conditions for systems and machines with small motors up to 3 HP. The 3RM1 starters are available as direct or reversing starters, all in a uniform housing design. Every motor starter is equipped with integrated electronic overload protection—you no longer need a separate overload relay. The result is lower wiring costs, shorter installation time, and more room on the DIN rail. To meet the requirements for safe shutdowns, SIRIUS 3RM1 Motor Starters are rated up to SIL 3, PL e and Cat 4. Using the 3RM1 starters with the 3SK1 modular safety relay system provides additional reductions in control wiring.

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