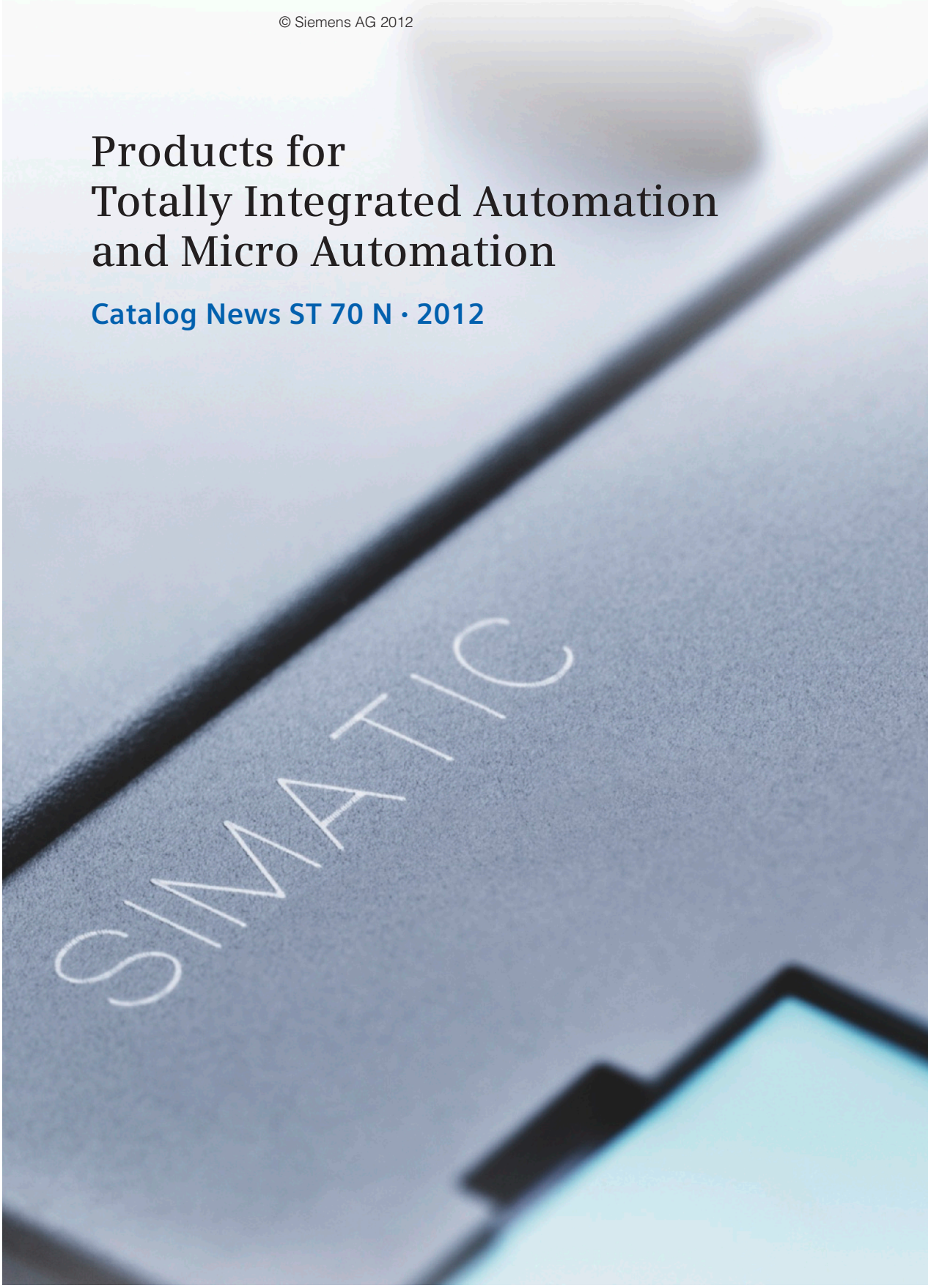
Products for Totally Integrated Automation and Micro Automation

Catalog News ST 70 N · 2012



SIMATIC

Answers for industry.

SIEMENS

Related catalogs

SIMATIC ST 70
Products for
Totally Integrated Automation
and Micro Automation

E86060-K4670-A101-B3-7600

SIMATIC TOP connect KT 10.2
System Cabling for SIMATIC S7

PDF (E86060-K2410-A201-A5-7600)

Industrial Communication IK PI
SIMATIC NET

E86060-K6710-A101-B7-7600

SIMATIC Ident ID 10
Industrial Identification Systems

E86060-K8310-A101-A7-7600

SIMATIC HMI /
PC-based Automation ST 80/ST PC
Human Machine Interface Systems
PC-based Automation

E86060-K4680-A101-B8-7600

SITRAIN ITC
Training for Automation and
Industrial Solutions

Only available in German
E86060-K6850-A101-C2

SIMATIC ST PCS 7
SIMATIC PCS 7
Process Control System

E86060-K4678-A111-B6-7600

Products for Automation
and Drives CA 01
Interactive Catalog

DVD: E86060-D4001-A510-D1-7600

SITOP KT 10.1
Power supply
SITOP

E86060-K2410-A111-A8-7600

Industry Mall
Information and Ordering Platform
in the Internet:

www.siemens.com/industrymall

SIMATIC

Products for Totally Integrated Automation and Micro Automation

Catalog News ST 70 N · 2012

The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. 1323-QM08). The certificate is recognized by all IQNet countries.

Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall

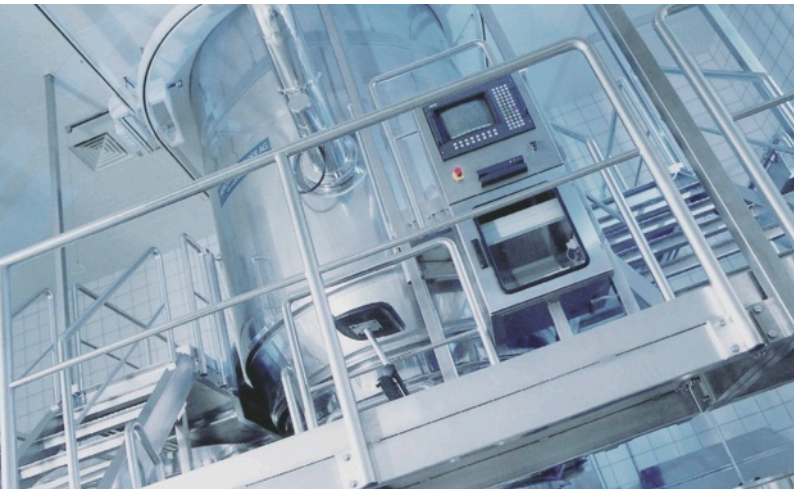
The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Order No.:
E86060-D4001-A510-D1-7600

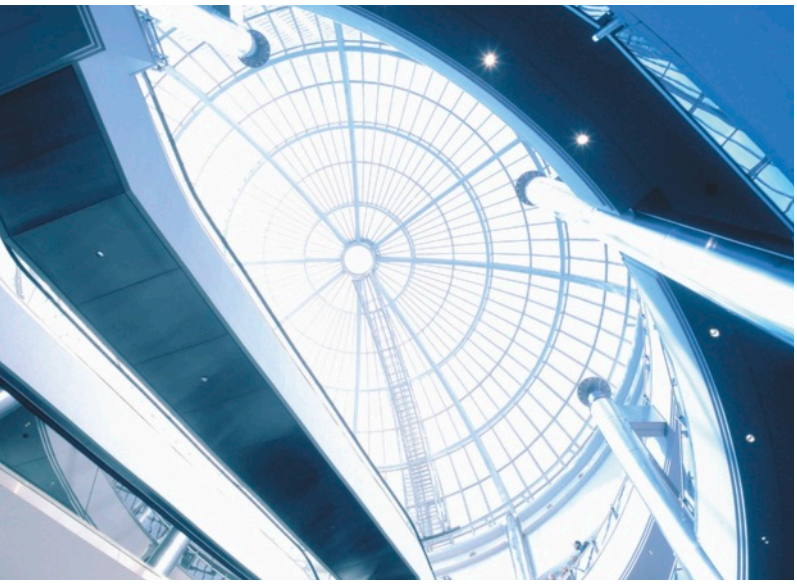
Please contact your local Siemens branch

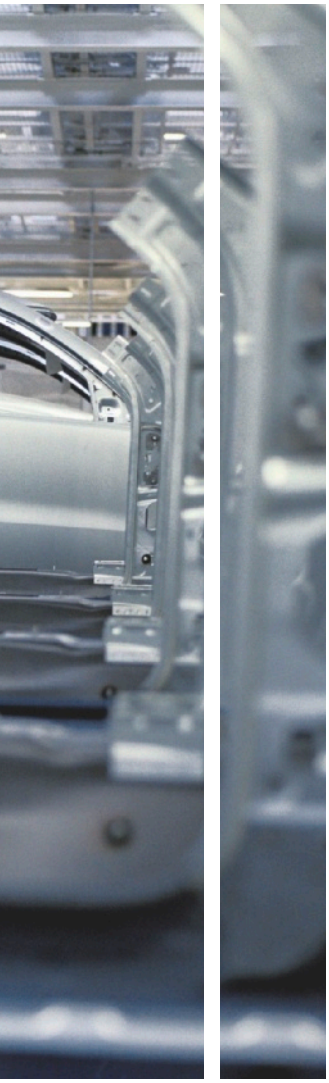
PEFC/04-31-0835

Content printed on paper from sustainably managed forests and controlled sources.

www.pefc.org







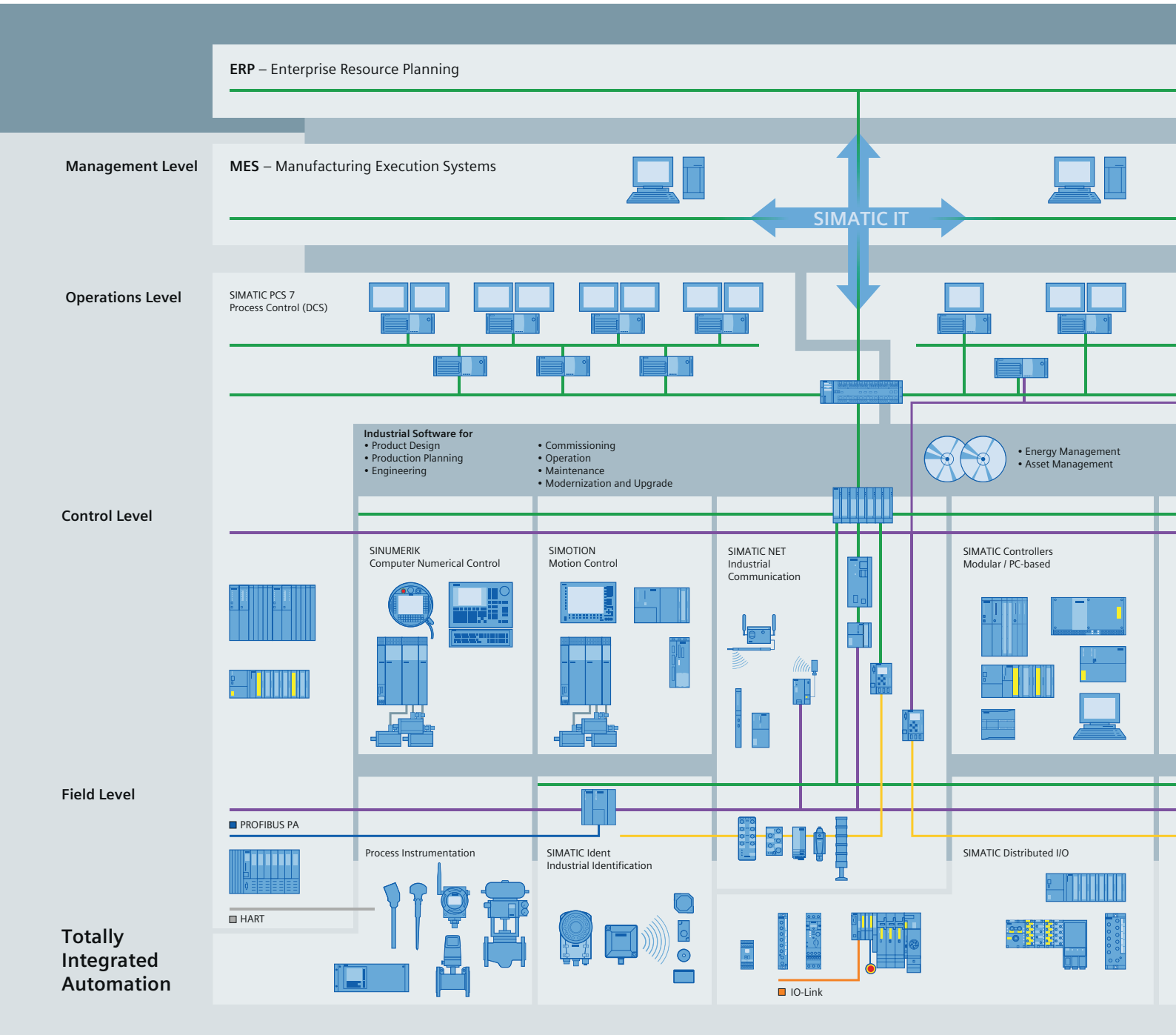
Answers for industry.

Siemens Industry answers the challenges in the manufacturing and the process industry as well as in the building automation business. Our drive and automation solutions based on Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) are employed in all kinds of industry. In the manufacturing and the process industry. In industrial as well as in functional buildings.

Siemens offers automation, drive, and low-voltage switching technology as well as industrial software from standard products up to entire industry solutions. The industry software enables our industry customers to optimize the entire value chain – from product design and development through manufacture and sales up to after-sales service. Our electrical and mechanical components offer integrated technologies for the entire drive train – from couplings to gear units, from motors to control and drive solutions for all engineering industries. Our technology platform TIP offers robust solutions for power distribution.

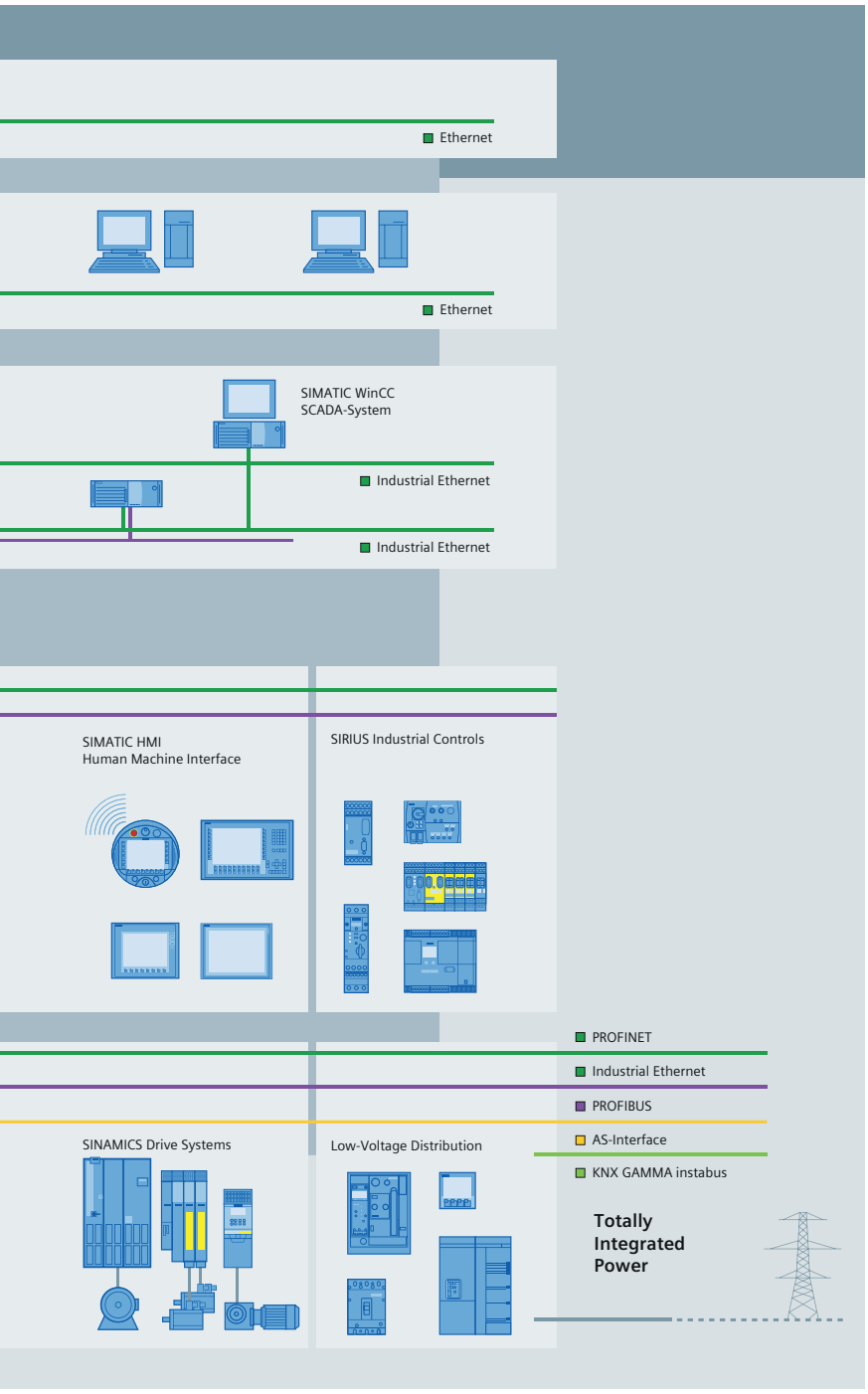
The high quality of our products sets industry-wide benchmarks. High environmental aims are part of our eco-management, and we implement these aims consistently. Right from product design, possible effects on the environment are examined. Hence many of our products and systems are RoHS compliant (Restriction of Hazardous Substances). As a matter of course, our production sites are certified according to DIN EN ISO 14001, but to us, environmental protection also means most efficient utilization of valuable resources. The best example are our energy-efficient drives with energy savings up to 60 %.

Check out the opportunities our automation and drive solutions provide. And discover how you can sustainably enhance your competitive edge with us.



Setting standards in productivity and competitiveness.

Totally Integrated Automation.



TIA is characterized by its unique continuity.

It provides maximum transparency at all levels with reduced interfacing requirements – covering the field level, production control level, up to the corporate management level. With TIA you also profit throughout the complete life cycle of your plant – starting with the initial planning steps through operation up to modernization, where we offer a high measure of investment security resulting from continuity in the further development of our products and from reducing the number of interfaces to a minimum.

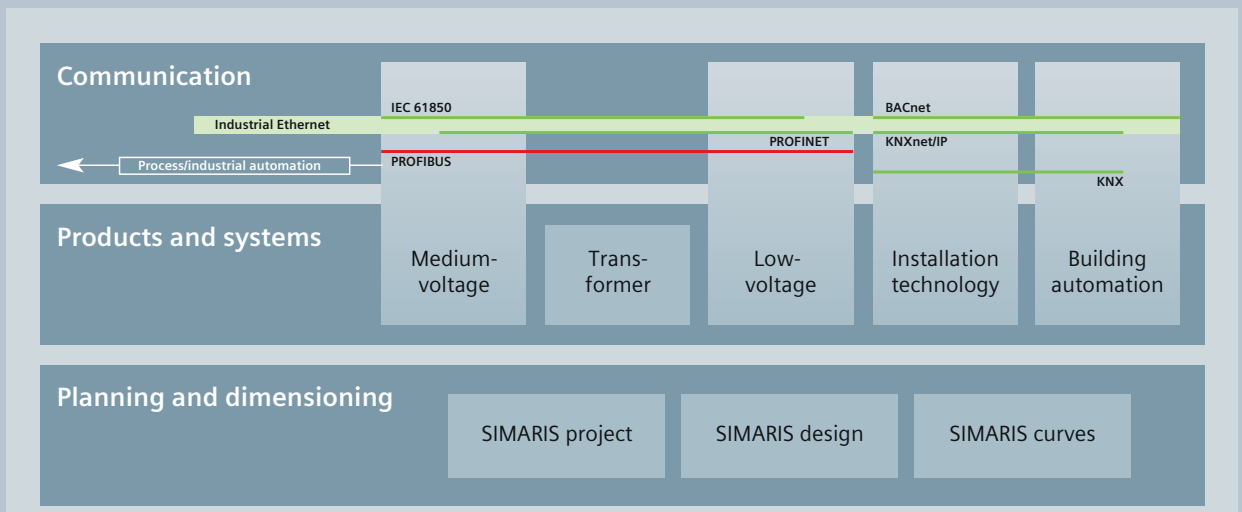
The unique continuity is already a defined characteristic at the development stage of our products and systems.

The result: maximum interoperability – covering the controller, HMI, drives, up to the process control system. This reduces the complexity of the automation solution in your plant. You will experience this, for example, in the engineering phase of the automation solution in the form of reduced time requirements and cost, or during operation using the continuous diagnostics facilities of Totally Integrated Automation for increasing the availability of your plant.

Thanks to Totally Integrated Automation, Siemens provides an integrated basis for the implementation of customized automation solutions – in all industries from inbound to outbound.

Integrated power distribution from one source.

Totally Integrated Power.



Electrical power distribution requires integrated solutions. Our answer: Totally Integrated Power (TIP). This includes tools and support for planning and configuration and a complete, optimally harmonized product and system portfolio for integrated power distribution from medium-voltage switchgear right to socket outlets.

The power distribution products and systems can be interfaced to building or industrial automation systems (as part of Total Building Solutions or Totally Integrated Automation) via communication capable circuit breakers and modules, allowing the full potential for optimization that an integrated solution offers to be exploited throughout the product cycle – from planning right through to installation and operation.

Thanks to a comprehensive energy management system, power flows can be made transparent and the energy consumption of individual loads can be calculated and allocated. Building operators can thus identify power-intensive loads and implement effective optimization measures. With its products and systems, Totally Integrated Power forms the basis for this functionality and guarantees greater cost-efficiency in industrial applications, infrastructure and buildings.

Much more than a catalog. The Industry Mall.

You have a catalog in your hands that will serve you well for selecting and ordering your products. But have you heard of the electronic online catalog (the Industry Mall) and all its benefits? Take a look around it sometime:

www.siemens.com/industrymall

Selecting

Find your products in the structure tree, in the new "Bread-crumb" navigation or with the integral search machine with expert functions. Electronic configurators are also integrated into the Mall. Enter the various characteristic values and the appropriate product will be displayed with the relevant order numbers. You can save configurations, load them and reset them to their initial status.

Ordering

You can load the products that you have selected in this way into the shopping basket at a click of the mouse. You can create your own templates and you will be informed about the availability of the products in your shopping cart. You can load the completed parts lists directly into Excel or Word.

Delivery status

When you have sent the order, you will receive a short e-mail confirmation which you can print out or save. With a click on "Carrier", you will be directly connected to the website of the carrier where you can easily track the delivery status.

Added value due to additional information

So you have found your product and want more information about it? In just a few clicks of the mouse, you will arrive at the image data base, manuals and operating instructions. Create your own user documentation with My Documentation Manager.
Also available are FAQs, software downloads, certificates and technical data sheets as well as our training programs. In the image database you will find, depending on the product, 2D/3D graphics, dimension drawings and exploded drawings, characteristic curves or circuit diagrams which you can download.

Convinced? We look forward to your visit!

LOGO! logic module

2

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

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

Technical specifications

	6ED1 052-1CC01-0BA6	6ED1 052-1MD00-0BA6	6ED1 052-1HB00-0BA6	6ED1 052-1FB00-0BA6
Installation type/mounting				
Mounting	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide	on 35 mm DIN rail, 4 spacing units wide
Supply voltage				
12 V DC		Yes		
24 V DC	Yes	Yes	Yes	
115 V DC				Yes
230 V DC				Yes
Permissible range, lower limit (DC)	20.4 V	10.8 V	20.4 V	100 V
Permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	253 V
24 V AC			Yes	
115 V AC				Yes
230 V AC				Yes
Time of day				
Time switching clocks				
• Power reserve	80 h	80 h	80 h	80 h
Digital inputs				
Number of inputs	8; Of which 4 can be used in analog mode (0 to 10 V)	8; Of which 4 can be used in analog mode (0 to 10 V)	8	8
Digital outputs				
Number of outputs	4; Transistor	4; Relay	4; Relay	4; Relay
Short-circuit strength	Yes; electrical (1 A)	No; external fusing necessary	No; external fusing necessary	No; external fusing necessary
Output current				
• for signal "1" permissible range for 0 to 55 °C, max.	0.3 A			
Relay outputs				
• Switching capacity of contacts				
- with inductive load, max.		3 A	3 A	3 A
- with ohmic load, max.		10 A	10 A	10 A
EMC				
Emission of radio interference acc. to EN 55 011				
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes; Radio interference suppression according to EN55011, Limit Value Class B	Yes	Yes	Yes

Technical specifications (continued)

	6ED1 052-1CC01-0BA6	6ED1 052-1MD00-0BA6	6ED1 052-1HB00-0BA6	6ED1 052-1FB00-0BA6
Degree and class of protection				
IP20	Yes	Yes	Yes	Yes
Standards, approvals, certificates				
CSA approval	Yes	Yes	Yes	Yes
UL approval	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes	Yes
Developed according to IEC 61131	Yes	Yes	Yes	Yes
According to VDE 0631	Yes	Yes	Yes	Yes
Ambient conditions				
Operating temperature				
• Min.	0 °C	0 °C	0 °C	0 °C
• Max.	55 °C	55 °C	55 °C	55 °C
Dimensions				
Width	72 mm	72 mm	72 mm	72 mm
Height	90 mm	90 mm	90 mm	90 mm
Depth	55 mm	55 mm	55 mm	55 mm

	6ED1 052-1MD00-0BA7	6ED1 052-1FB00-0BA7
Installation type/mounting		
Mounting	On 35 mm DIN rail, 6 spacing units wide	On 35 mm DIN rail, 6 spacing units wide
Supply voltage		
12 V DC	Yes	
24 V DC	Yes	
115 V DC		Yes
230 V DC		Yes
Permissible range, lower limit (DC)	10.8 V	100 V
Permissible range, upper limit (DC)	28.8 V	253 V
115 V AC		Yes
230 V AC		Yes
Time of day		
Time switching clocks		
• Power reserve	480 h	480 h
Digital inputs		
Number of inputs	8; Of which 4 can be used in analog mode (0 to 10 V)	8
Digital outputs		
Number of outputs	4; Relay	4; Relay
Short-circuit strength	No; external fusing necessary	No; external fusing necessary
Relay outputs		
• Switching capacity of contacts		
- with inductive load, max.	3 A	3 A
- with ohmic load, max.	10 A	10 A

	6ED1 052-1MD00-0BA7	6ED1 052-1FB00-0BA7
EMC		
Emission of radio interference acc. to EN 55 011		
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes; Radio interference suppression according to EN55011, Limit Value Class B	Yes; Radio interference suppression according to EN55011, Limit Value Class B
Degree and class of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CSA approval	Yes	Yes
UL approval	Yes	Yes
FM approval	Yes	Yes
Marine approval	Yes	Yes
Developed according to IEC 61131	Yes	Yes
According to VDE 0631	Yes	Yes
Ambient conditions		
Operating temperature		
• Min.	0 °C	0 °C
• Max.	55 °C	55 °C
Dimensions		
Width	107 mm	107 mm
Height	90 mm	90 mm
Depth	55 mm	55 mm

LOGO! modular basic variants

Ordering data	Order No.
LOGO! logic module 24C 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 interlinked, modular expansion capability	**6ED1 052-1CC01-0BA6**
LOGO! logic module 12/24RC 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 interlinked, modular expansion capability	**6ED1 052-1MD00-0BA6**
LOGO! logic module 24RC 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 interlinked, modular expansion capability	**6ED1 052-1HB00-0BA6**
LOGO! logic module 230RC 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 interlinked, modular expansion capability	**6ED1 052-1FB00-0BA6**
LOGO! logic module 12/24RCE 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; 400 function blocks can be interlinked, Ethernet interface, modular expansion capability	**6ED1 052-1MD00-0BA7**
LOGO! logic module 230RCE 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 interlinked, Ethernet interface, modular expansion capability	**6ED1 052-1FB00-0BA7**

	Order No.
Accessories	
LOGO! TD text display 4-line text display, can be connected to all LOGO! 0BA6 Basic and Pure versions, including connecting cable	**6ED1 055-4MH00-0BA0**
SIPLUS LOGO! TD text display (extended temperature range -10 ... +60 °C and medial loading) 4-line text display, can be connected to all LOGO! Basic and Pure versions as of -0BA6, including connecting cable	**6AG1 055-4MH00-2BA0**
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 Program module for copying, with know-how protection	**6ED1 056-1DA00-0BA0**
LOGO! battery card Battery module for backing up the integral real-time clock (not LOGO! 24)	**6ED1 056-6XA00-0BA0**
LOGO! memory/battery card Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 24)	**6ED1 056-7DA00-0BA0**
LOGO! PROM Programming device used to simultaneously reproduce program module contents on up to 8 program modules	**6AG1 057-1AA01-0BA6**
LOGO!Soft Comfort V7.0 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	**6ED1 058-0BA02-0YA1**

Ordering data	Order No.
LOGO!Soft Comfort V7.0 upgrade Upgrade from V1.0 to V7.0	**6ED1 058-0CA02-0YE1**
LOGO! PC cable For program transfer between LOGO! and the PC	**6ED1 057-1AA00-0BA0**
LOGO! USB PC cable For transferring the program between LOGO! and PC, including driver on CD-ROM	**6ED1 057-1AA01-0BA0**
LOGO! modem cable Adapter cable for analog modem communication	**6ED1 057-1CA00-0BA0**
Front panel mounting set	
Width 4 width units	**6AG1 057-1AA00-0AA0**
Width 4 width units, with keys	**6AG1 057-1AA00-0AA3**
Width 8 width units	**6AG1 057-1AA00-0AA1**
Width 8 width units, with keys	**6AG1 057-1AA00-0AA2**

	Order No.
LOGO! Starter kits (0BA6) In TANOS box, with USB cable, LOGO!, LOGO! Soft Comfort V6	
LOGO! Starter kit 12/24 V Language-neutral with LOGO! 12/24RC (0BA6)	**6ED1 057-3BA00-0AA6**
LOGO! Starter kit 230 V Language-neutral with LOGO! 230RC (0BA6)	**6ED1 057-3BA02-0AA6**
LOGO! Starter kits (0BA7) In TANOS box, with Ethernet cable, LOGO!, LOGO! Soft Comfort V7, WinCC Basic V11	
LOGO! Starter kit 12/24 V Language-neutral with LOGO! 12/24RCE (0BA7) + LOGO! Power 24 V 1.3 A	**6ED1 057-3BA00-0AA7**
LOGO! Starter kit 230 V Language-neutral with LOGO! 230RCE (0BA7)	**6ED1 057-3BA02-0AA7**

LOGO! CM EIB/KNX communication module

Overview

- Expansion module for LOGO! basic variants
- For communication between the LOGO! master and external *EIB* components through *EIB*

Technical specifications

CM EIB/KNX	
Supply voltage	24 V AC/DC
Inputs, max.	16 DI/12 DO/8 AI/2 AO
Outputs, max.	16 digital
Continuous current	25 mA
Short-circuit protection	External fuse protection is required
Integrated time switches/ power reserve	-
Ambient temperature	0 … +55 °C
RI specification	To EN 55 011 (limit class B)
Degree of protection	IP20
Certification	to VDE 0631, IEC61131-2, cULus, FM
Mounting	On DIN rail 35 mm, 2 module widths wide
Dimensions (W x H x D) in mm	36 (2 MW) × 90 × 55

Ordering data

Ordering data	Order No.
LOGO! communication module CM EIB KNX for connection to *EIB*, supply voltage 24 V DC	**6BK1 700-0BA00-0AA2**
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**

Overview

The module is used to connect a LOGO! and up to three other nodes to an Industrial Ethernet network with 10/100 Mbit/s in an electrical linear, tree or star topology.

The essential features of the LOGO! CSM are:

- Unmanaged 4-port switch, of which one port is on the front for easy diagnostics access
- Two versions for the voltage ranges 12/24 V DC or 230 V AC/DC
- Problem-free connection using four RJ45 standard connectors
- Space-saving, optimized for connection to LOGO!
- Low-cost solution for implementing small, local Ethernet networks
- Stand-alone use for networking any Ethernet devices

Technical specifications

Order No.	6GK7 177-1FA10-0AA0	6GK7 177-1MA10-0AA0
Product type designation	**LOGO! CSM 230**	**LOGO! CSM 12/24**
Transfer rate		
Transfer rate 1	10 Mbit/s	10 Mbit/s
Transfer rate 2	100 Mbit/s	100 Mbit/s
Interfaces		
Number of electrical/optical connections for network components or terminal devices, maximum	4	4
Number of electrical connections		
• for network components or terminal devices	4	4
• for signaling contact	-	-
• for voltage supply	1	1
Electrical connection version		
• for network components or terminal devices	RJ45 port / 1 connection on the front of the module	RJ45 port / 1 connection on the front of the module
• for signaling contact	-	-
• for voltage supply	3-pole terminal block	3-pole terminal block
Supply voltage, current consumption, power loss		
Type of power supply voltage	115 ... 240 V AC/DC	12/24 V DC
Supply voltage, external	230 V	24 V
• Minimum	100 V	10.2 V
• Maximum	240 V	30.2 V
Product component, fusing at power supply input	Yes	Yes
Type of fusing at input for supply voltage	-	-
Current consumed, maximum	0.02 A	0.15 A
Power loss at 24 V with DC	-	1.5 W
Permissible ambient conditions		
Ambient temperature		
• during operation	0 … 55 °C	0 … 55 °C
• during storage	-40 °C ... 70 °C	-40 °C ... 70 °C
• during transport	-40 °C	-40 °C
Relative humidity at 25 °C, no condensation during operating phase, maximum	90%	90%
IP degree of protection	IP20	IP20
Design, dimensions and weights		
Type of construction	LOGO! module	LOGO! module
Width	72 mm	72 mm
Height	90 mm	90 mm
Depth	55 mm	55 mm
Net weight	0.155 kg	0.14 kg

LOGO! CSM unmanaged

Technical specifications (continued)

Order No.	6GK7 177-1FA10-0AA0	6GK7 177-1MA10-0AA0
Product type designation	**LOGO! CSM 230**	**LOGO! CSM 12/24**
Type of mounting		
• 35 mm DIN rail mounting	Yes	Yes
• Wall mounting	Yes	Yes
• S7-300 rail mounting	No	No
Type of mounting	-	-
Product properties, functions, components General		
Cascading in case of star structure	-	-
Product functions Management, configuration, engineering		
Product function switch-managed	No	No
Standards, specifications, approvals		
Standard		
• for EMC of FM	Available soon	Available soon
• for hazardous zone	-	-
• for safety of CSA and UL	Available soon	Available soon
• for hazardous area of CSA and UL	-	-
• for emitted interference	-	-
• for noise immunity	-	-
Certificate of suitability	-	-
• CE marking	Yes	Yes
• C-Tick	Yes	Yes

Ordering data

	Order No.
LOGO! CSM Compact Switch Modules	
Unmanaged switch for connecting a LOGO! (...0BA7) and up to three further nodes on Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; LED diagnostics, LOGO! module	
• **LOGO! CSM 12/24** external 12 V DC or 24 V DC voltage supply,	**6GK7 177-1MA10-0AA0**
• **LOGO! CSM 230** external 115 ... 240 V AC voltage supply	**6GK7 177-1FA10-0AA0**

	Order No.
Accessories	
IE TP Cord RJ45/RJ45	
TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
• 1 m	**6XV1 870-3QH10**
• 2 m	**6XV1 870-3QH20**
• 6 m	**6XV1 870-3QH60**
• 10 m	**6XV1 870-3QN10**
IE FC Outlet RJ45	**6GK1 901-1FC00 0AA0**
For connecting Industrial Ethernet FC cables and TP cords; graduated prices for 10 and 50 units or more	

Overview

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS LOGO!Power 1.3 A	
Order number	**6AG1 331-1SH03-7AA0**
Order number based on	**6EP1 331-1SH03**
Ambient temperature range	-25 °C to +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold spores, fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m), see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

For technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme

Technical specifications

Order No.	**6EP1 331-1SH03**
Product	**LOGO!Power**
Power supply, type	**24 V/1.3 A**
Input	
Input	1-phase AC or DC
Rated voltage value Vin rated	100 … 240 V
Voltage range	85 … 264 V
Input voltage at DC	110 … 300 V
Overvoltage resistance	2.3 × Vin rated, 1.3 ms
Mains buffering at Iout rated, min.	40 ms
Mains buffering	at Vin = 187 V
Rated line frequency	
• 1	50 Hz
• 2	60 Hz
Rated line range	47 … 63 Hz
Input current	
• at nominal level of the input voltage 120 V nominal value	0.7 A
• at nominal level of the input voltage 230 V nominal value	0.35 A
Switch-on current limiting (+25 °C), max.	25 A
I^2t, max.	0.8 $A^2 \cdot s$
Built-in incoming fuse	Internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A, characteristic B or from 10 A, characteristic C
Output	
Output	Controlled, isolated DC voltage
Rated voltage Vout DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	1.5 %
Residual ripple peak-peak, max.	0.2 V
Residual ripple peak-peak, typ.	0.01 V
Spikes peak-peak, max. (bandwidth: 20 MHz)	0.3 V
Spikes peak-peak, typ. (bandwidth: 20 MHz)	0.02 V
Adjustment range	22.2 … 26.4 V
Product feature output voltage adjustable	Yes
Output voltage setting	via potentiometer
Status display	Green LED for output voltage OK
On/off behavior	No overshoot of Vout (soft start)
Startup delay, max.	0.5 s
Voltage rise, typ.	0.015 s
Rated current value Iout rated	1.3 A
Current range	0 … 1.3 A
Note	1.3 A up to +55 °C, 0.9 A up to +70 °C
Delivered active power typ.	30 W
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2
Efficiency	
Efficiency at Vout rated, Iout rated, approx.	85 %
Power loss at Vout rated, Iout rated, approx.	6 W

SIPLUS LOGO!Power

2

Technical specifications (continued)

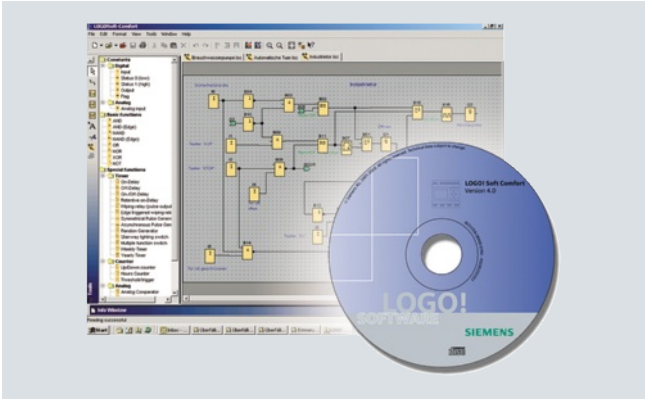
Order No.	6EP1 331-1SH03
Product	**LOGO!Power**
Power supply, type	**24 V/1.3 A**
Closed-loop control	
Dynamic mains compensation (Vin rated ±15 %), max.	0.2 %
Dynamic load smoothing (Iout: 10/90/10 %), Uout ± typ.	1 %
Load step setting time 10 to 90%, typ.	1 ms
Load step setting time 90 to 10%, typ.	1 ms
Protection and monitoring	
Output overvoltage protection	Yes, according to EN 60950
Current limitation, typ.	1.7 A
Characteristic feature of the output short-circuit protected	Yes
Short-circuit protection	Constant current characteristic
Enduring short circuit current Effective level maximum	2.4 A
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Potential separation	Safety extra low output voltage Vout according to EN 60950-1 and EN 50178
Protection class	Class II (without protective conductor)
CE mark	Yes
UL/CSA approval	Yes
UL/cUL (CSA) approval	cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-recognized (UL 60950, CSA C22.2 No. 60950), File E151273
Explosion protection	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA E60079, UL 60079), Class I, Div. 2, Group ABCD, T4
FM approval	Yes
FM approval	Class I, Div. 2, Group ABCD, T4
CB approval	Yes
Marine approval	GL (ABS, BV, DNV, LRS in process)
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	Not applicable
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• in operation	-20 … +70 °C
- Note	with natural convection
• on transport	-40 … +85 °C
• in storage	-40 … +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation

Order No.	6EP1 331-1SH03
Product	**LOGO!Power**
Power supply, type	**24 V/1.3 A**
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-
Width of the housing	54 mm
Height of the housing	90 mm
Depth of the housing	55 mm
Installation width	54 mm
Installation height	130 mm
Weight, approx.	0.17 kg
Product feature of the housing housing for side-by-side mounting	Yes
Type of mounting wall mounting	No
Type of fixing DIN rail mounting	Yes
Type of mounting S7-300 rail mounting	No
Installation	Snaps onto DIN rail EN 60715 35x7.5/15

Ordering data

	Order No.
SIPLUS LOGO!Power 24 V 1.3 A	**6AG1 331-1SH03-7AA0**
(extended temperature range and medial exposure)	
Input 100 ... 240 V AC Output 24 V DC, 1.3 A	

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

The connection between LOGO! and the PC is established using the LOGO! PC cable (serial interface) or the LOGO! USB PC cable (USB interface).

For LOGO! 0BA7 the connection is established via the integrated Ethernet interface.

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

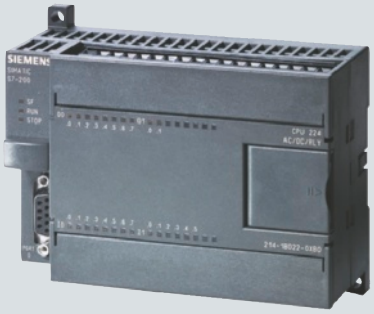
Linux

- 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

Ordering data	Order No.
LOGO!Soft Comfort V7.0 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	**6ED1 058-0BA02-0YA1**
LOGO!Soft Comfort V7.0 upgrade Upgrade from V1.0 to V7.0	**6ED1 058-0CA02-0YE1**

Notes



Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

SIPLUS PROFIBUS DP EM 277

Overview

- For connecting the S7-22x to PROFIBUS DP (as slave) and MPI
- Simultaneous operation as MPI slave and DP slave possible
- Max. transmission rate 12 Mbit/s
- Can be used with CPU version 6ES7 2xx-xxx**21**-xxxx and higher

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS EM 277 PROFIBUS DP module	
Order number	**6AG1 277-0AA22-2XA0**
Order No. based on	**6ES7 277-0AA22-0XA0**
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Ambient conditions	Suitable for exceptional exposure to media (e.g. sulfur chlorine atmosphere).
Compliant with the standards for electronic equipment used on railway rolling stock (EN 50155, temperature T1, category 1).	Yes
Technical data	The technical data of the standard product applies except for the environmental conditions.
Ambient conditions	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust [2)]
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m), see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

[1)] ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 17.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NOX < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:
http://www.siemens.com/siplus-extreme

Ordering data	**Order No.**
SIPLUS EM 277 input module for PROFIBUS DP	
(extended temperature range and medial exposure)	
For CPU 222/224/224 XP/226; for connecting to PROFIBUS DP (slave) and MPI	**6AG1 277-0AA22-2XA0**

SIMATIC S7-1200

4

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

CPU 1215C

Overview

- The compact high-performance CPU
- With 24 integral input/outputs
- Expandable by:
  - 1 signal board (SB) or communication board (CB)
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

Technical specifications

	6ES7 215-1BG31-0XB0 CPU 1215C AC/DC/Relay	**6ES7 215-1AG31-0XB0** CPU 1215C DC/DC/DC	**6ES7 215-1HG31-0XB0** CPU 1215C DC/DC/Relay
General information			
Engineering with			
• Programming package	as of STEP 7 V11.0 SP2	as of STEP 7 V11.0 SP2	as of STEP 7 V11.0 SP2
Supply voltage			
24 V DC		Yes	Yes
Permissible range, lower limit (DC)		20.4 V	20.4 V
Permissible range, upper limit (DC)		28.8 V	28.8 V
120 V AC	Yes		
230 V AC	Yes		
Permissible range, lower limit (AC)	85 V		
Permissible range, upper limit (AC)	265 V		
Line frequency			
• Frequency of the supply voltage	47 Hz		
• Frequency of the supply voltage	63 Hz		
Load voltage L+			
• Rated value (DC)		24 V	24 V
• Permissible range, lower limit (DC)		5 V	5 V
• Permissible range, upper limit (DC)		250 V	250 V
Input current			
Current consumption (rated value)	100 mA at 120 V AC; 50 mA at 240 V AC	500 mA; typical	500 mA; typical
Current consumption, max.		1 500 A; 24 V DC	1 500 A; 24 V DC
Inrush current, max.	20 A; at 264 V	12 A; at 28.8 V DC	12 A; at 28.8 V DC
Output current			
Current output to backplane bus (5 V DC), max.	1 600 mA; max. 5 V DC for SM and CM	1 600 mA; max. 5 V DC for SM and CM	1 600 mA; max. 5 V DC for SM and CM
Power losses			
Power loss, typ.	12 W	12 W	12 W
Memory			
Usable memory for user data	100 kbyte	100 kbyte	100 kbyte
Work memory			
• Integrated	100 kbyte	100 kbyte	100 kbyte
• Expandable	No	No	No
Load memory			
• Integrated	4 Mbyte	4 Mbyte	4 Mbyte
Backup			
• Present	Yes; (maintenance-free)	Yes; (maintenance-free)	Yes; (maintenance-free)
• without battery	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 215-1BG31-0XB0 CPU 1215C AC/DC/Relay	6ES7 215-1AG31-0XB0 CPU 1215C DC/DC/DC	6ES7 215-1HG31-0XB0 CPU 1215C DC/DC/Relay
CPU processing times			
for bit operations, min.	0.085 µs; / instruction	0.085 µs; / instruction	0.085 µs; / instruction
for word operations, min.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, min.	2.5 µs; / instruction	2.5 µs; / instruction	2.5 µs; / instruction
CPU-blocks			
Number of blocks (total)	DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used	DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used	DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used
OB			
• number, max.	limited only by RAM for code	limited only by RAM for code	limited only by RAM for code
Data areas and their retentivity			
Retentive data area in total (incl. times, counters, flags), max.	10 kbyte	10 kbyte	10 kbyte
Flag			
• Number, max.	8 kbyte; size of bit memory address area	8 kbyte; size of bit memory address area	8 kbyte; size of bit memory address area
Address area			
I/O address area			
• I/O address area, overall	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs	1024 bytes for inputs / 1024 bytes for outputs
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Hardware configuration			
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules	3 comm. modules, 1 signal board, 8 signal modules	3 comm. modules, 1 signal board, 8 signal modules
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
• Deviation per day, max.	+/- 60 s/month at 25 °C	+/- 60 s/month at 25 °C	+/- 60 s/month at 25 °C
• Backup time	480 h; typical	480 h; typical	480 h; typical
Digital inputs			
Number/binary inputs	14; integrated	14; integrated	14; integrated
• of which, inputs usable for technological functions	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
Integrated channels (DI)	14	14	14
m/p-reading	Yes	Yes	Yes
Number of simultaneously controllable inputs			
• all mounting positions			
- up to 40 °C, max.	14	14	14
Input voltage			
• Rated value, DC	24 V	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current			
• for signal "1", typ.	1 mA	1 mA	1 mA

CPU 1215C

Technical specifications (continued)

	6ES7 215-1BG31-0XB0 CPU 1215C AC/DC/Relay	**6ES7 215-1AG31-0XB0** CPU 1215C DC/DC/DC	**6ES7 215-1HG31-0XB0** CPU 1215C DC/DC/Relay
Input delay (for rated value of input voltage)			
• for standard inputs			
- parameterizable	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four	Yes; 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of four
- at "0" to "1", min.	0.2 ms	0.2 ms	0.2 ms
- at "0" to "1", max.	12.8 ms	12.8 ms	12.8 ms
• for interrupt inputs			
- parameterizable	Yes	Yes	Yes
• for counter/technological functions			
- parameterizable	Yes; single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz	Yes; single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz	Yes; single phase : 3 at 100 kHz & 3 at 30 kHz, differential: 3 at 80 kHz & 3 at 30 kHz
Cable length			
• Cable length, shielded, max.	500 m; 50 m for technological functions	500 m; 50 m for technological functions	500 m; 50 m for technological functions
• Cable length unshielded, max.	300 m; for technological functions: No	300 m; for technological functions: No	300 m; for technological functions: No
Digital outputs			
Number of outputs	10; Relay	10	10; Relay
• of which high-speed outputs		4	
Integrated channels (DO)	10	10	10
Short-circuit strength	No; to be provided externally	No; to be provided externally	No; to be provided externally
Switching capacity of the outputs			
• with resistive load, max.	2 A	0.5 A	2 A
• on lamp load, max.	30 W DC; 200 W AC		30 W DC; 200 W AC
Output delay with resistive load			
• "0" to "1", max	10 ms; max.		10 ms; max.
• "1" to "0", max	10 ms; max.		10 ms; max.
Switching frequency			
• of the pulse outputs, with resistive load, max.	1 Hz		1 Hz
Relay outputs			
• Number of relay outputs	10		10
• Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100,000		mechanically 10 million, at rated load voltage 100,000
Cable length			
• Cable length, shielded, max.	500 m	500 m	500 m
• Cable length unshielded, max.	150 m	150 m	150 m
Analog inputs			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Number of analog inputs	2	2	2
Input ranges			
• Voltage	Yes	Yes	Yes
Input ranges (rated values), voltages			
• 0 to +10 V	Yes	Yes	Yes
• Input resistance (0 to 10 V)	≥100 kOhms	≥100 kOhms	≥100 kOhms
Cable length			
• Cable length, shielded, max.	100 m; twisted and shielded	100 m; twisted and shielded	100 m; twisted and shielded
Analog outputs			
Integrated channels (AO)	2; 0 to 20 mA	2; 0 to 20 mA	2; 0 to 20 mA
Number of analog outputs	2	2	2
Output ranges, voltage			
• 0 to 10 V	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 215-1BG31-0XB0 CPU 1215C AC/DC/Relay	6ES7 215-1AG31-0XB0 CPU 1215C DC/DC/DC	6ES7 215-1HG31-0XB0 CPU 1215C DC/DC/Relay
Cable length			
• Cable length, shielded, max.	100 m; shielded, twisted wire pair	100 m; shielded, twisted wire pair	100 m; shielded, twisted wire pair
Analog value creation			
Integrations and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	10 bit	10 bit	10 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Conversion time (per channel)	625 µs	625 µs	625 µs
Encoder			
Connectable encoders			
• 2-wire sensor	Yes	Yes	Yes
1st interface			
Type of interface	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Isolated	Yes	Yes	Yes
Automatic detection of transmission speed	Yes	Yes	Yes
Autonegotiation	Yes	Yes	Yes
Autocrossing	Yes	Yes	Yes
Functionality			
• PROFINET IO Controller	Yes	Yes	Yes
2nd interface			
DP master			
• Services			
- S7 communication	Yes	Yes	Yes
Communication functions			
S7 communication			
• Supported	Yes	Yes	Yes
• as server	Yes	Yes	Yes
• as client	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• Supported	Yes	Yes	Yes
• User-defined websites	Yes	Yes	Yes
Test commissioning functions			
Status/control			
• Status/control variable	Yes	Yes	Yes
• Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing			
• Forcing	Yes	Yes	Yes
Diagnostic buffer			
• Present	Yes	Yes	Yes
Integrated Functions			
Number of counters	6	6	6
Counter frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency meter	Yes	Yes	Yes
Controlled positioning	Yes	Yes	Yes
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs	4	4	4

4

Technical specifications (continued)

	6ES7 215-1BG31-0XB0 CPU 1215C AC/DC/Relay	6ES7 215-1AG31-0XB0 CPU 1215C DC/DC/DC	6ES7 215-1HG31-0XB0 CPU 1215C DC/DC/Relay
Galvanic isolation			
Galvanic isolation digital inputs			
• Galvanic isolation digital inputs	No	No	No
• Between the channels, in groups of	1	1	1
Galvanic isolation digital outputs			
• Galvanic isolation digital outputs	relay		relay
• Between the channels	No	No	No
Permissible potential difference			
Between different circuits	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC	500 V DC between 24 V DC and 5 V DC
EMC			
Interference immunity against discharge of static electricity			
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes	Yes
- Test voltage at air discharge	8 kV	8 kV	8 kV
- Test voltage at contact discharge	6 kV	6 kV	6 kV
Interference immunity to cable-borne interference			
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes	Yes
Surge immunity			
• on the supply lines acc. to IEC 61000-4-5	Yes	Yes	Yes
Immunity against conducted interference induced by high-frequency fields			
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes	Yes
Emission of radio interference acc. to EN 55 011			
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; group 1	Yes; group 1	Yes; group 1
• Emission of radio interference acc. to EN 55 011 (limit class B)	Yes; when appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011	Yes; when appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011	Yes; when appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011
Degree and class of protection			
IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
CSA approval	Yes	Yes	Yes
UL approval	Yes	Yes	Yes
cULus	Yes	Yes	Yes
C-TICK	Yes	Yes	Yes
FM approval	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes
Ambient conditions			
Operating temperature			
• Min.	-20 °C	-20 °C	-20 °C
• Max.	60 °C	60 °C	60 °C
• Vertical installation, min.	-20 °C	-20 °C	-20 °C
• Vertical installation, max.	50 °C	50 °C	50 °C
• Horizontal installation, min.	-20 °C	-20 °C	-20 °C
• Horizontal installation, max.	60 °C	60 °C	60 °C

Technical specifications (continued)

	6ES7 215-1BG31-0XB0 CPU 1215C AC/DC/Relay	6ES7 215-1AG31-0XB0 CPU 1215C DC/DC/DC	6ES7 215-1HG31-0XB0 CPU 1215C DC/DC/Relay
Storage/transport temperature			
• Min.	-40 °C	-40 °C	-40 °C
• Max.	70 °C	70 °C	70 °C
Air pressure			
• Operation, min.	795 hPa	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
Relative humidity			
• Operation, max.	95 %; no condensation	95 %; no condensation	95 %; no condensation
Vibrations			
• Vibrations	2G wall mounting, 1G DIN rail	2G wall mounting, 1G DIN rail	2G wall mounting, 1G DIN rail
• Operation, checked according to IEC 60068-2-6	Yes	Yes	Yes
Shock test			
• Checked according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Climatic and mechanical conditions for storage and transport			
Climatic conditions for storage and transport			
• Free fall			
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
• Temperature			
- Permissible temperature range	-40 °C to +70 °C	-40 °C to +70 °C	-40 °C to +70 °C
• Relative humidity			
- Permissible range (without condensation) at 25°C	95%	95%	95%
Mechanical and climatic conditions during operation			
Climatic conditions in operation			
• Temperature			
- Min.	-20 °C	-20 °C	-20 °C
- Max.	60 °C	60 °C	60 °C
• Air pressure acc. to IEC 60068-2-13			
- Permissible air pressure	1080 to 795 hPa	1080 to 795 hPa	1080 to 795 hPa
- Permissible operating height	-1000 to 2000 m	-1000 to 2000 m	-1000 to 2000 m
• Pollutant concentrations			
- SO_2 at RH < 60% without condensation	$S0_2$: < 0.5 ppm; H_2S: < 0.1 ppm; RH < 60% condensation-free	$S0_2$: < 0.5 ppm; H_2S: < 0.1 ppm; RH < 60% condensation-free	$S0_2$: < 0.5 ppm; H_2S: < 0.1 ppm; RH < 60% condensation-free
Configuration			
Programming			
• Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Cycle time monitoring			
• Adjustable	Yes	Yes	Yes
Dimensions			
Width	130 mm	130 mm	130 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weight			
Weight, approx.	550 g	520 g	585 g

CPU 1215C

Ordering data	Order No.
CPU 1215C	
Compact CPU, AC/DC/relay; integral program/data memory 100 KB, load memory 4 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/ communication board; digital inputs can be used as HSC at 100 kHz	**6ES7 215-1BG31-0XB0**
Compact CPU, DC/DC/DC; integrated program/data memory 100 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/ communication board; digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7 215-1AG31-0XB0**
Compact CPU, DC/DC/relay; integrated program/data memory 100 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/ communication board; digital inputs can be used as HSC at 100 kHz	**6ES7 215-1HG31-0XB0**

	Order No.
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7 221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7 221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7 222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7 222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7 223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7 223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7 223-3BD30-0XB0**
SB 1231 signal board	**6ES7 231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7 231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7 231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7 232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS485 communication board	**6ES7 241-1CH30-1XB0**
for point-to-point connection, with 1 RS485 interface	
BB 1297 battery board	**6ES7 297-0AX30-0XA0**
for long-term backup of real-time clock; can be plugged into the signal board slot of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	

Ordering data	Order No.
Simulator (optional)	
14 input switches, for CPU 1214C/1215C	**6ES7 274-1XH30-0XA0**
SIMATIC Memory Card (optional)	
2 MB	**6ES7 954 -8LB01-0AA0**
12 MB	**6ES7 954 -8LE01-0AA0**
24 MB	**6ES7 954 -8LF01-0AA0**
Extension cable for two-tier configuration	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
for CPU 1215C	
for DI, with 20 screws, tin-plated; 4 units	**6ES7 292-1AV30-0XA0**
for DO, with 12 screws, tin-plated; 4 units	**6ES7 292-1AM30-0XA0**
for analog signals, with 6 screws, gold-plated; 4 units	**6ES7 292-1BF30-0XA0**
Front flap set (spare part)	
for CPU 1215C	**6ES7 291-1AC30-0XA0**
S7-1200 automation system, System Manual	
for SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7 298-8FA30-8AH0**
English	**6ES7 298-8FA30-8BH0**
French	**6ES7 298-8FA30-8CH0**
Spanish	**6ES7 298-8FA30-8DH0**
Italian	**6ES7 298-8FA30-8EH0**
Chinese	**6ES7 298-8FA30-8KH0**

	Order No.
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7 298-8FA30-8AQ0**
English	**6ES7 298-8FA30-8BQ0**
French	**6ES7 298-8FA30-8CQ0**
Spanish	**6ES7 298-8FA30-8DQ0**
Italian	**6ES7 298-8FA30-8EQ0**
Chinese	**6ES7 298-8FA30-8KQ0**
STEP 7 Professional / Basic V11	
Target system: SIMATIC S7-1200, S7-300, S7-400, WinAC Requirement: Windows XP Home SP3 (STEP 7 Basic only), Windows XP Professional SP3 (32 bit), Windows 7 Home Premium (STEP 7 Basic only), Windows 7 Professional (32 bit), Windows 7 Enterprise (32 bit), Windows 7 Ultimate (32 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32 bit) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
STEP 7 Basic V11, single license	**6ES7 822-0AA01-0YA0**

SM 1222 digital output module

Overview

- Digital outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional outputs

Technical specifications

	6ES7 222-1XF30-0XB0
	SM 1222 DQ 8x relay changeover contact
Supply voltage	
Permissible range, lower limit (DC)	5 V
Permissible range, upper limit (DC)	30 V
Input current	
from backplane bus 5 V DC, max.	140 mA
Digital inputs	
• from load voltage L+ (without load), max.	16.7 mA/relay coil
Power losses	
Power loss, typ.	5 W
Digital outputs	
Number of outputs	8
• in groups of	1
Short-circuit strength	No; to be provided externally
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	30 W DC ; 200 W AC
Output voltage	
• Rated value (AC)	5 to 250 V AC
• Rated value (DC)	5 to 30 V DC
Output current	
• for signal "1" permissible range, max.	2 A
Output delay with resistive load	
• "0" to "1", max.	10 ms
• "1" to "0", max.	10 ms
Aggregate current of outputs (per group)	
• Horizontal installation	
- up to 50 °C, max.	2 A; current per mass
Relay outputs	
• Number of relay outputs	8
• Rated input voltage of relay coil L+ (DC)	24 V
• Number of operating cycles, max.	Mechanically 10 million, at rated load voltage 100,000
• Switching capacity of contacts	
- with inductive load, max.	2 A
- on lamp load, max.	30 W DC ; 200 W AC

	6ES7 222-1XF30-0XB0
	SM 1222 DQ 8x relay changeover contact
Cable length	
• Cable length, shielded, max.	500 m
• Cable length unshielded, max.	150 m
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes
Diagnostics indication LED	
• for status of the outputs	Yes
• for maintenance	Yes
• Status indicator digital output (green)	Yes
Permissible potential difference	
Between different circuits	750 V AC for 1 minute
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
C-TICK	Yes
FM approval	Yes

Technical specifications (continued)

	6ES7 222-1XF30-0XB0
	SM 1222 DQ 8x relay changeover contact
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 660 hPa
• Relative humidity	
- Permissible range (without condensation) at 25°C	95%
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Permissible temperature range	0 °C to 55 °C horizontal installation 0 °C to 45 °C vertical installation
- Permissible temperature change	5°C to 55°C, 3°C / minute
Connection method	
Required front connector	Yes
Mechanics/material	
Type of housing (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weight	
Weight, approx.	310 g

Ordering data

	Order No.
SM 1222 digital output signal module 8 relay outputs, change-over contact, 5 ... 30 V DC / 5 ... 250 V AC, 2 A, 30 W DC / 200 W AC	**6ES7 222-1XF30-0XB0**
Extension cable for two-tier configuration for connecting digital/analog signal modules; length 2 m	**6ES7 290-6AA30-0XA0**
Terminal block (spare part) for 8/16-channel digital signal modules with 7 screws, zinc-plated; 4 units	**6ES7 292-1AG30-0XA0**
Front flap set (spare part) for 8/16-channel signal modules	**6ES7 291-1BA30-0XA0**
S7-1200 automation system, System Manual for SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7 298-8FA30-8AH0**
English	**6ES7 298-8FA30-8BH0**
French	**6ES7 298-8FA30-8CH0**
Spanish	**6ES7 298-8FA30-8DH0**
Italian	**6ES7 298-8FA30-8EH0**
Chinese	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book Brief instructions	
German	**6ES7 298-8FA30-8AQ0**
English	**6ES7 298-8FA30-8BQ0**
French	**6ES7 298-8FA30-8CQ0**
Spanish	**6ES7 298-8FA30-8DQ0**
Italian	**6ES7 298-8FA30-8EQ0**
Chinese	**6ES7 298-8FA30-8KQ0**
STEP 7 Professional / Basic V11 Target system: SIMATIC S7-1200, S7-300, S7-400, WinAC Requirement: Windows XP Home SP3 (STEP 7 Basic only), Windows XP Professional SP3 (32 bit), Windows 7 Home Premium (STEP 7 Basic only), Windows 7Professional (32 bit), Windows 7 Enterprise (32 bit), Windows 7 Ultimate (32 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32 bit) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
STEP 7 Basic V11, single license	**6ES7 822-0AA01-0YA0**

SM 1231 analog input module

Overview

- Analog inputs for SIMATIC S7-1200
- With extremely short conversion times
- For connecting analog sensors without additional amplifiers
- For solving even more complex automation tasks

Technical specifications

	6ES7 231-5ND30-0XB0
	SM 1231 AI 4 x 16 bit
Supply voltage	
24 V DC	Yes
Input current	
Current consumption, typ.	65 mA
from backplane bus 5 V DC, typ.	80 mA
Power losses	
Power loss, typ.	1.8 W
Analog inputs	
Number of analog inputs	4; current or voltage differential inputs
Permissible input frequency for current input (destruction limit), max.	± 35 V
Permissible input voltage for voltage input (destruction limit), max.	35 V
Permissible input current for voltage input (destruction limit), max.	40 mA
Cycle time (all channels) max.	625 µs
Permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
• Voltage	Yes; ±10 V, ±5 V, ±2.5 V o. ±1.25 V
• Current	Yes; 4 to 20 mA, 0 to 20 mA
Input ranges (rated values), voltages	
• -1.25 to +1.25 V	Yes
• -10 V to +10 V	Yes
• -2.5 V to +2.5 V	Yes
• -5 V to +5 V	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 to 20 mA	Yes
Thermocouple (TC)	
• Temperature compensation - parameterizable	No

	6ES7 231-5ND30-0XB0
	SM 1231 AI 4 x 16 bit
Analog value creation	
Integrations and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit; + sign
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values	
• Parameterizable	Yes
• Step: None	Yes
• Step: Low	Yes
• Step: Medium	Yes
• Step: High	Yes
Errors/accuracies	
Temperature error (relative to input area)	25 °C ±0.1% / ±0.3% total measurement range
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input area	+/- 0.1 %
• Current, relative to input area	+/- 0.1 %
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency	
• Common mode voltage, max.	12 V
Interrupts/diagnostics/status information	
Alarms	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes
• Monitoring the supply voltage	Yes
• Wire break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Galvanic isolation	
Galvanic isolation analog outputs	
• between the channels and the power supply of the electronics	No

Technical specifications (continued)

	6ES7 231-5ND30-0XB0
	SM 1231 AI 4 x 16 bit
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
C-TICK	Yes
FM approval	Yes
Marine approval	Yes
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 660 hPa
• Relative humidity	
- Permissible range (without condensation) at 25°C	95%
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Permissible temperature range	
- Min.	-20 °C
- Max.	60 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 795 hPa
• Pollutant concentrations	
- SO_2 at RH < 60% without condensation	$S0_2$: < 0.5 ppm; H_2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
Required front connector	Yes
Mechanics/material	
Type of housing (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weight	
Weight, approx.	180 g

Ordering data

	Order No.
SM 1231 analog input signal module	
4 analog inputs, ± 10V, ± 5V, ± 2.5V, or 0 ... 20 mA, 16 bits	**6ES7 231-5ND30-0XB0**
Extension cable for two-tier configuration	**6ES7 290-6AA30-0XA0**
for connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
for 8/16-channel analog signal modules	
with 7 screws, gold-plated; 4 units	**6ES7 292-1BG30-0XA0**
Front flap set (spare part)	
for 8/16-channel signal modules	**6ES7 291-1BA30-0XA0**
S7-1200 automation system, System Manual	
for SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7 298-8FA30-8AH0**
English	**6ES7 298-8FA30-8BH0**
French	**6ES7 298-8FA30-8CH0**
Spanish	**6ES7 298-8FA30-8DH0**
Italian	**6ES7 298-8FA30-8EH0**
Chinese	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7 298-8FA30-8AQ0**
English	**6ES7 298-8FA30-8BQ0**
French	**6ES7 298-8FA30-8CQ0**
Spanish	**6ES7 298-8FA30-8DQ0**
Italian	**6ES7 298-8FA30-8EQ0**
Chinese	**6ES7 298-8FA30-8KQ0**
STEP 7 Professional / Basic V11	
Target system: SIMATIC S7-1200, S7-300, S7-400, WinAC Requirement: Windows XP Home SP3 (STEP 7 Basic only), Windows XP Professional SP3 (32 bit), Windows 7 Home Premium (STEP 7 Basic only), Windows 7Professional (32 bit), Windows 7 Enterprise (32 bit), Windows 7 Ultimate (32 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32 bit) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
STEP 7 Basic V11, single license	**6ES7 822-0AA01-0YA0**

BB 1297 battery board

Overview

- Battery board for extending the power reserve for the S7-1200 real-time clock

Technical specifications

	6ES7 297-0AX30-0XA0
	BB 1297 battery board
Interrupts/diagnostics/status information	
Alarms	
• Alarms	Yes
Diagnostic messages	
• Diagnostic functions	Yes
Diagnostics indication LED	
• for maintenance	Yes; The maintenance LED (MAINT) of the PLC signals that the battery needs to be replaced.
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
C-TICK	Yes
FM approval	Yes
Marine approval	Yes
Marine approval according to American Bureau of Shipping	Yes
Marine approval according to Bureau Veritas	Yes
Marine approval according to Det Norske Veritas	Yes
Marine approval according to Germanischer Lloyd	Yes
Marine approval according to Lloyds Register of Shipping	Yes
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 660 hPa
• Relative humidity	
- Permissible range (without condensation) at 25°C	95%
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	-20 °C
- Max.	60 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 795 hPa
Mechanics/material	
Type of housing (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weight	
Weight, approx.	40 g

Ordering data

	Order No.
BB 1297 battery board for long-term backup of real-time clock; can be plugged into the signal board slot of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	**6ES7 297-0AX30-0XA0**

Overview

- For quick, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can also be loaded
- Simple parameterization with STEP 7 Basic

Technical specifications

	6ES7 241-1CH31-0XB0
	CM 1241 RS422/485
Supply voltage	
24 V DC	Yes
Permissible range, lower limit (DC)	20.4 V
Permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, max.	240 mA; From L5+; logic
Power losses	
Power loss, typ.	1.2 W
Interfaces	
Number of interfaces	1
Interface physics, RS 422/RS 485 (X.27)	Yes
Point-to-point	
• Cable length, max.	1 000 m
• Integrated protocol driver	
- ASCII	Yes; Available as library function
- USS	Yes; Available as library function
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 660 hPa
• Relative humidity	
- Permissible range (without condensation) at 25°C	95%

	6ES7 241-1CH31-0XB0
	CM 1241 RS422/485
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Permissible temperature range	0 °C to 55 °C horizontal installation 0 °C to 45 °C vertical installation
- Permissible temperature change	5°C to 55°C, 3°C / minute
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 795 hPa
Software	
Runtime software	
• Target system	
- S7-1200	Yes
Dimensions	
Width	30 mm
Height	100 mm
Depth	75 mm
Weight	
Weight, approx.	155 g

CM 1241 communication module

Ordering data	Order No.
CM 1241 communication module	
Communication module for point-to-point connection, with one RS422/485 interface	**6ES7 241-1CH31-0XB0**
Accessories	
Front flap set (spare part)	
for communication modules	**6ES7 291-1CC30-0XA0**
S7-1200 automation system, System Manual	
for SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7 298-8FA30-8AH0**
English	**6ES7 298-8FA30-8BH0**
French	**6ES7 298-8FA30-8CH0**
Spanish	**6ES7 298-8FA30-8DH0**
Italian	**6ES7 298-8FA30-8EH0**
Chinese	**6ES7 298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7 298-8FA30-8AQ0**
English	**6ES7 298-8FA30-8BQ0**
French	**6ES7 298-8FA30-8CQ0**
Spanish	**6ES7 298-8FA30-8DQ0**
Italian	**6ES7 298-8FA30-8EQ0**
Chinese	**6ES7 298-8FA30-8KQ0**

	Order No.
STEP 7 Professional / Basic V11	
Target system: SIMATIC S7-1200, S7-300, S7-400, WinAC Requirement: Windows XP Home SP3 (STEP 7 Basic only), Windows XP Professional SP3 (32 bit), Windows 7 Home Premium (STEP 7 Basic only), Windows 7Professional (32 bit), Windows 7 Enterprise (32 bit), Windows 7 Ultimate (32 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32 bit) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
STEP 7 Basic V11, single license	**6ES7 822-0AA01-0YA0**

Overview

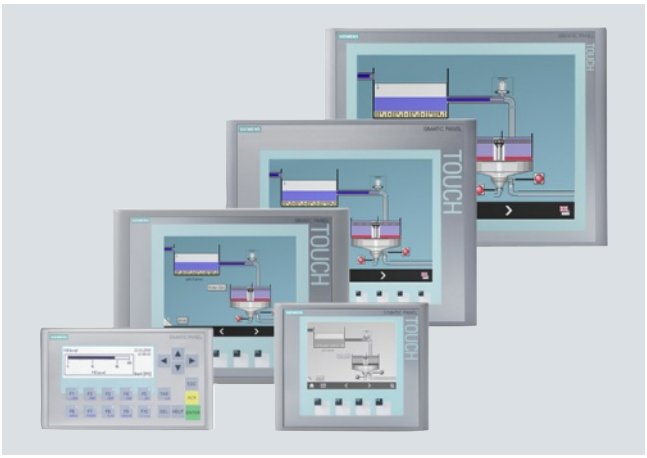
The CM 1243-2 communication module is the AS-Interface master for the SIMATIC S7-1200 and has the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission (Analog profiles 7.3 and 7.4)
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Indication of the operating state on the front of the device displayed via LED
- Display of operating mode, AS-Interface voltage faults, configuration faults and peripheral faults via LED behind the front flap
- Compact enclosure in the design of the SIMATIC S7-1200
- Suitable for AS-i power 24V: used together with the optional DCM 1271 data decoupling module, a standard 24-V power supply unit can be used.
- Configuration and diagnostics via the TIA portal

Ordering data

	Order No.
CM 1243-2 communication module • AS-Interface masters for SIMATIC S7-1200 • Corresponds to AS-Interface Specification V3.0 • Dimensions (W × H × D / mm): 30 × 100 × 75	**3RK7 243-2AA30-0XB0**
5-pole screw terminal for AS-i CM 1243-2 master and AS-i DCM 1271 data decoupling module; with screw terminals	**3RK1 901-3MA00**

Overview



SIMATIC HMI Basic Panels – concentrating on essentials

- Ideal entry-level series from 3" to 15" for operating and monitoring compact machines and systems
- Clear process representation through the use of full-graphic displays
- Intuitive operation via touch and tactile function keys
- Equipped with all the necessary basic functions such as reporting, recipe management, curve representation, vector graphics, and language selection
- Easy connection to the controller via integrated Ethernet interface or a separate version with RS485/422

Ordering data

	Order No.
KP300 Basic mono PN 10 function keys; 3" LCD FSTN display, mono, with colored backlit display (white, red, green, yellow); PROFINET interface	**6AV6 647-0AH11-3AX0**
KTP400 Basic mono PN Key/touch-screen operation; 4" display, mono; 4 shades of gray; PROFINET interface	**6AV6 647-0AA11-3AX0**
KP400 Basic color PN Key operation; high-resolution 4" widescreen color display; 256 colors; PROFINET interface	**6AV6 647-0AJ11-3AX0**
KTP400 Basic color PN Key/touch-screen operation; high-resolution 4" widescreen color display; 256 colors; PROFINET interface	**6AV6 647-0AK11-3AX0**
KTP600 Basic mono PN Key/touch-screen operation; 6" display, mono; 4 shades of gray; PROFINET interface	**6AV6 647-0AB11-3AX0**
KTP600 Basic color DP Key/touch-screen operation; 6" LCD TFT display; 256 colors; PROFIBUS interface	**6AV6 647-0AC11-3AX0**
KTP600 Basic color PN Key/touch-screen operation; 6" LCD TFT display; 256 colors; PROFINET interface	**6AV6 647-0AD11-3AX0**
KTP600 Basic color DP Key/touch-screen operation; 10" LCD TFT display; 256 colors; PROFIBUS interface	**6AV6 647-0AE11-3AX0**
KTP600 Basic color PN Key/touch-screen operation; 10" LCD TFT display; 256 colors; PROFINET interface	**6AV6 647-0AF11-3AX0**
TP1500 Basic color PN Touch-screen operation; 15" LCD TFT display; 256 colors; PROFINET interface	**6AV6 647-0AG11-3AX0**

More information

Further information can be found on the Internet at:

http://www.siemens.com/basic-panels

Overview

SIMATIC HMI Comfort Panels – Brilliant, intelligent, user-friendly

- Excellent HMI functionality for demanding applications
- Widescreen TFT displays with 4", 7", 9", 12", 15", 19" and 22" diagonals (all 16 million colors) with up to 40% more visualization area as compared to the predecessor devices
- Integrated high-end functionality with archives, scripts, PDF/Word/Excel viewer, Internet Explorer, Media Player
- Dimmable displays from 0 to 100% via PROFIenergy, via the HMI project or via a controller
- Up-to-date industrial design
- Upright installation for all touch devices
- Optimal selection option: seven touch-screen and five key versions are available
- Data security in the event of a power failure for the device and for the SIMATIC HMI Memory Card
- Innovative service and commissioning concept through second SD card (automatic backup)
- Easy project transfer via standard cable (standard Ethernet cable, standard USB cable)
- Maximum performance with short screen refresh times
- Suitable for harsh industrial environments thanks to extended approvals, such as ATEX 2/22 and marine approval, cast aluminum fronts for 7" upwards
- Wide range of communication options: PROFIBUS and PROFINET onboard; 2x PROFINET with integrated switch for 7" models or larger; plus 1 additional PROFINET with Gigabit support for 15" models or larger
- All variants can be used as an OPC UA client or as an OPC DA server.
- Key-operated devices with LED in every function key and new text input mechanism, similar to the keypads of mobile phones
- Key-operated devices with embossed keys for optimum tactile feedback
- All keys have a service life of 2 million operations
- Configuring with the WinCC engineering software of the TIA Portal

Ordering data

Ordering data	Order No.
KP400 Comfort Key operation; high-resolution 4" widescreen display, 16 million colors	**6AV2 124-1DC01-0AX0**
KTP400 Comfort Key/touch-screen operation; high-resolution 4" widescreen display, 16 million colors	**6AV2 124-2DC01-0AX0**
KP700 Comfort Key operation; high-resolution 7" widescreen display, 16 million colors	**6AV2 124-1GC01-0AX0**
TP700 Comfort Touch-screen operation; high-resolution 7" widescreen display, 16 million colors	**6AV2 124-0GC01-0AX0**
KP900 Comfort Key operation; high-resolution 9" widescreen display, 16 million colors	**6AV2 124-1JC01-0AX0**
TP900 Comfort Touch-screen operation; high-resolution 9" widescreen display, 16 million colors	**6AV2 124-0JC01-0AX0**
KP1200 Comfort Key operation; high-resolution 12" widescreen display, 16 million colors	**6AV2 124-1MC01-0AX0**
TP1200 Comfort Touch-screen operation; high-resolution 12" widescreen display, 16 million colors	**6AV2 124-0MC01-0AX0**
KP1500 Comfort Key operation; high-resolution 15" widescreen display, 16 million colors	**6AV2 124-1QC02-0AX0**
TP1500 Comfort Touch-screen operation; high-resolution 15" widescreen display, 16 million colors	**6AV2 124-0QC02-0AX0**
TP1900 Comfort Touch-screen operation; high-resolution 19" widescreen display, 16 million colors	**6AV2 124-0UC02-0AX0**
TP2200 Comfort Touch-screen operation; high-resolution 22" widescreen display, 16 million colors	**6AV2 124-0XC02-0AX0**

More information

Further information can be found on the Internet at:

http://www.siemens.com/comfort-panels

Notes

SIMATIC S7-300

5

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Overview

- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing power in binary and floating-point arithmetic
- 2 PROFIBUS DP master/slave interfaces
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of the CPU.

5

Technical specifications

	6ES7 317-2AK14-0AB0
General information	
Hardware product version	01
Firmware version	V3.3
Engineering with	
• Programming package	STEP7 as of V5.5 + SP1 or STEP 7 V5.2 + SP1 or higher with HSP 202
Supply voltage	
24 V DC	Yes
Input current	
Current consumption (rated value)	870 mA
Current consumption (in no-load operation), typ.	120 mA
Inrush current, typ.	4 A
I^2t	1 $A^2 \cdot s$
Power losses	
Power loss, typ.	4.5 W
Memory	
Work memory	
• Integrated	1 024 kbyte
• Expandable	No
• Size of retentive memory for retentive data blocks	256 kbyte
Load memory	
• Pluggable (MMC)	Yes
• Pluggable (MMC), max.	8 Mbyte
• Data management on MMC (after last programming), min.	10 a
Backup	
• Present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
CPU processing times	
for bit operations, min.	0.025 µs
for word operations, min.	0.03 µs
for fixed point arithmetic, min.	0.04 µs
for floating point arithmetic, min.	0.16 µs

	6ES7 317-2AK14-0AB0
CPU-blocks	
Number of blocks (total)	2 048; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
• Number, max.	2 048; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
• Number, max.	2 048; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	2 048; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• Size, max.	64 kbyte
Nesting depth	
• per priority class	16
• Additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
• Number	512
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	511
- Preset	Z 0 to Z 7
• Counting range	
- Lower limit	0
- Upper limit	999
IEC counter	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)

Technical specifications (continued)

	6ES7 317-2AK14-0AB0
S7 times	
• Number	512
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	511
- Preset	No retentivity
• Time range	
- Lower limit	10 ms
- Upper limit	9 990 s
IEC timer	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area, total	All, max. 256 KB
Flag	
• Number, max.	4 096 byte
• Retentivity available	Yes; MB 0 to MB 4095
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Data blocks	
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes
Local data	
• per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
• Inputs	8 192 byte
• Outputs	8 192 byte
• Of which, distributed	
- Inputs	8 192 byte
- Outputs	8 192 byte
Process image	
• Inputs, adjustable	8 192 byte
• Outputs, adjustable	8 192 byte
• Inputs, default	256 byte
• Outputs, default	256 byte
Subprocess images	
• Number of subprocess images, max.	1
Digital channels	
• Inputs	65 536
• Outputs	65 536
• Inputs, of which central	1 024
• Outputs, of which central	1 024
Analog channels	
• Inputs	4 096
• Outputs	4 096
• Inputs, of which central	256
• Outputs, of which central	256

	6ES7 317-2AK14-0AB0
Hardware configuration	
Racks, max.	4
Modules per rack, max.	8
Expansion devices, max.	3
Number of DP masters	
• Integrated	2
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, point-to-point	8
• CP, LAN	10
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• Battery-backed and synchronizable	Yes
• Deviation per day, max.	10 s; Typ.: 2 s
• Backup time	6 wk; At 40 °C ambient temperature
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
• Number	4
• Number/Number range	0 to 3
• Range of values	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour
• Retentive	Yes; Must be restarted at each restart
Clock synchronization	
• Supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
• on Ethernet via NTP	No
Interfaces	
Number of USB interfaces	0
1st interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	Yes
• DP master	Yes
• DP slave	Yes
• Point-to-point connection	No

Technical specifications (continued)

	6ES7 317-2AK14-0AB0
MPI	
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	Yes
- S7 basic communication	Yes
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
• Transmission rate, max.	12 Mbit/s
DP master	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
- Equidistance mode support	Yes
- Isochronous mode	No
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Number of DP slaves that can be simultaneously activated/ deactivated, max.	8
- Direct data exchange (slave-to-slave communication)	Yes; As subscriber
- DPV1	Yes
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124
• Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
DP slave	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes; Connection configured on one side only
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	No
• Transmission rate, max.	12 Mbit/s
• Automatic baud rate search	Yes; only with passive interface
• Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
• Address area, max.	32
• User data per address area, max.	32 byte

	6ES7 317-2AK14-0AB0
2nd interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	No
• DP master	Yes
• DP slave	Yes
• Local Operating Network	No
DP master	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
- Equidistance mode support	Yes
- Isochronous mode	Yes; OB 61
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Number of DP slaves that can be simultaneously activated/ deactivated, max.	8
- Direct data exchange (slave-to-slave communication)	Yes; As subscriber
- DPV1	Yes
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124
• Address area	
- Inputs, max.	8 192 byte
- Outputs, max.	8 192 byte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
DP slave	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	No
• GSD file	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
• Transmission rate, max.	12 Mbit/s
• Automatic baud rate search	Yes; only with passive interface
• Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
• Address area, max.	32
• User data per address area, max.	32 byte

Technical specifications (continued)

	6ES7 317-2AK14-0AB0
Communication functions	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
• Supported	Yes
• Number of GD loops, max.	8
• Number of GD packets, max.	8
• Number of GD packets, transmitter, max.	8
• Number of GD packets, receiver, max.	8
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
• Supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
• Supported	Yes
• as server	Yes
• as client	Yes; Via CP and loadable FB
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5-compatible communication	
• Supported	Yes; via CP and loadable FC
Number of connections	
• Overall	32
• Usable for routing	X1 as a MPI, max. 10; X1 as DP Master max. 24; X1 as DP Slave (active) max. 14; X2 as DP Master max. 24; X2 as DP Slave (active) max. 14
S7 message functions	
Number of login stations for message functions, max.	32; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
Simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status/control	
• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
• of which status variables, max.	30
• of which control variables, max.	14

	6ES7 317-2AK14-0AB0
Forcing	
• Forcing	Yes
• Force, variables	Inputs, outputs
• Number of variables, max.	10
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Diagnostic buffer	
• Present	Yes
• Number of entries, max.	500
- Adjustable	No
- of which powerfail-proof	100; Only the last 100 entries are retained
• Number of entries readable in RUN, max.	499
- Adjustable	Yes; From 10 to 499
- Preset	10
Ambient conditions	
Operating temperature	
• Min.	0 °C
• Max.	60 °C
Configuration	
Configuration software	
• STEP 7 Lite	No
Programming	
• Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
- HiGraph	Yes
• Command set	See instruction list
• Nesting levels	8
Know-how protection	
• User program protection/ password protection	Yes
• Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weight	
Weight, approx.	360 g

Ordering data	Order No.
CPU 317-2 DP Work memory 1 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7 317-2AK14-0AB0**
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL20-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7 901-0BF00-0AA0**
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**
Power supply connector 10 units, spare part	**6ES7 391-1AA00-0AA0**

	Order No.
Manual "Communication for SIMATIC S7-300/-400"	
German	**6ES7 398-8EA00-8AA0**
English	**6ES7 398-8EA00-8BA0**
SIMATIC S7 training case with mounting components for mounting S7-200 and S7-300	**6ES7 910-3AA00-0XA0**
PC adapter USB for connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)	**6ES7 972-0CB20-0XA0**
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7 972-0BA12-0XA0**
- with PG interface	**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7 972-0AA02-0XA0**
PROFIBUS bus components for establishing MPI/PROFIBUS communication	See catalogs IK PI, CA 01

Overview

- The CPU with a large program memory and quantity framework for demanding applications
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET IO Controller for operating distributed I/O on PROFINET
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- High processing power in binary and floating-point arithmetic
- Combined MPI/PROFIBUS DP master/slave interface
- Optionally supports the use of SIMATIC engineering tools

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS CPU 317-2 PN/DP	
Order number	**6AG1 317-2EK14-7AB0**	**6AG1 317-2EK14-2AY0**
Order number based on	**6ES7 317-2EK14-0AB0**	**6ES7 317-2EK14-0AB0**
Ambient temperature range	-25 ... +70 °C	
Conforms with standard for electronic equipment used on rolling stock (EN 50155)	No	Yes
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	
Ambient conditions		
Relative humidity	5 ... 100 % Condensation permissible	
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)	
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]	
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust [2)]	
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

[1)] ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 17.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NOX < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 317-2 PN/DP	
(extended temperature range and medial exposure)	
Work memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required	**6AG1 317-2EK14-7AB0**
Additional conformance with EN 50155	**6AG1 317-2EK14-2AY0**
Accessories	See SIMATIC CPU 317-2 PN/DP

Compact CPUs

Overview CPU 312C

- The compact CPU with integral digital inputs/outputs
- For small applications with increased processing performance requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 313C-2 PtP

- The compact CPU with integrated digital inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 313C

- The compact CPU with integral digital and analog inputs/outputs
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 313C-2 DP

- The compact CPU with integral digital inputs/outputs and PROFIBUS DP master/slave interface
- For plants with high processing performance and response time requirements
- With technological functions
- For tasks with special functions
- For connecting distributed I/Os

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 314C-2 PtP

- The compact CPU with integrated digital and analog inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 314C-2 DP

- The compact CPU with integral digital and analog inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For plants with high processing performance and response time requirements
- For connecting distributed I/Os

SIMATIC Micro Memory Card required for operation of the CPU.

Technical specifications

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
General information				
Hardware product version	01	01	01	01
Firmware version	V3.3	V3.3	V3.3	V3.3
Engineering with				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage				
24 V DC	Yes	Yes	Yes	Yes
Input current				
Current consumption (rated value)	570 mA	650 mA	580 mA	800 mA
Current consumption (in no-load operation), typ.	90 mA	150 mA	110 mA	110 mA
Inrush current, typ.	5 A	5 A	5 A	5 A
I^2t	0.7 $A^2 \cdot s$	0.7 $A^2 \cdot s$	0.7 $A^2 \cdot s$	0.7 $A^2 \cdot s$
Power losses				
Power loss, typ.	8 W	12 W	9 W	9 W
Memory				
Work memory				
• Integrated	64 kbyte	128 kbyte	128 kbyte	128 kbyte
• Expandable	No	No	No	No
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte	64 kbyte
Load memory				
• Pluggable (MMC)	Yes	Yes	Yes	Yes
• Pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
• Data management on MMC (after last programming), min.	10 a	10 a	10 a	10 a

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Backup				
• Present	Yes; Guaranteed by MMC (maintenance-free)	Yes; Guaranteed by MMC (maintenance-free)	Yes; Guaranteed by MMC (maintenance-free)	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data	Yes; Program and data	Yes; Program and data	Yes; Program and data
CPU processing times				
for bit operations, min.	0.1 µs	0.07 µs	0.07 µs	0.07 µs
for word operations, min.	0.24 µs	0.15 µs	0.15 µs	0.15 µs
for fixed point arithmetic, min.	0.32 µs	0.2 µs	0.2 µs	0.2 µs
for floating point arithmetic, min.	1.1 µs	0.72 µs	0.72 µs	0.72 µs
CPU-blocks				
Number of blocks (total)	1 024; (DBs, FCs, FBs); The maximum number of loadable blocks can be reduced by the MMC used.	1 024; (DBs, FCs, FBs); The maximum number of loadable blocks can be reduced by the MMC used.	1 024; (DBs, FCs, FBs); The maximum number of loadable blocks can be reduced by the MMC used.	1 024; (DBs, FCs, FBs); The maximum number of loadable blocks can be reduced by the MMC used.
DB				
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
FB				
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
FC				
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
OB				
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
Nesting depth				
• per priority class	16	16	16	16
• Additional within an error OB	4	4	4	4
Counters, timers and their retentivity				
S7 counter				
• Number	256	256	256	256
• Retentivity				
- Adjustable	Yes	Yes	Yes	Yes
- Lower limit	0	0	0	0
- Upper limit	255	255	255	255
- Preset	Z 0 to Z 7	Z 0 to Z 7	Z 0 to Z 7	Z 0 to Z 7
• Counting range				
- Adjustable			Yes	
- Lower limit	0	0	0	0
- Upper limit	999	999	999	999
IEC counter				
• Present	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
S7 times				
• Number	256	256	256	256
• Retentivity				
- Adjustable	Yes	Yes	Yes	Yes
- Lower limit	0	0	0	0
- Upper limit	255	255	255	255
- Preset	No retentivity	No retentivity	No retentivity	No retentivity
• Time range				
- Lower limit	10 ms	10 ms	10 ms	10 ms
- Upper limit	9 990 s	9 990 s	9 990 s	9 990 s

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
IEC timer				
• Present	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
Data areas and their retentivity				
Retentive data area, total	All, max. 64 KB	All, max. 64 KB	All, max. 64 KB	All, max. 64 KB
Flag				
• Number, max.	256 byte	256 byte	256 byte	256 byte
• Retentivity available	Yes; MB 0 to MB 255	Yes; MB 0 to MB 255	Yes; MB 0 to MB 255	Yes; MB 0 to MB 255
• Retentivity preset	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte
Data blocks				
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	Yes	Yes	Yes	Yes
Local data				
• per priority class, max.	32 kbyte; Max. 2048 bytes per block	32 kbyte; Max. 2048 bytes per block	32 kbyte; Max. 2048 bytes per block	32 kbyte; Max. 2048 bytes per block
Address area				
I/O address area				
• Inputs	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• of which, distributed				
- Inputs	None	None	None	2 030 byte
- Outputs	None	None	None	2 030 byte
Process image				
• Inputs, adjustable	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Outputs, adjustable	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Inputs, default	128 byte	128 byte	128 byte	128 byte
• Outputs, default	128 byte	128 byte	128 byte	128 byte
• Default addresses of the integrated channels				
- Digital inputs	124.0 to 125.1	124.0 to 126.7	124.0 to 125.7	124.0 to 125.7
- Digital outputs	124.0 to 124.5	124.0 to 125.7	124.0 to 125.7	124.0 to 125.7
- Analog inputs		752 to 761		
- Analog outputs		752 to 755		
Digital channels				
• Inputs	266	1 016	1 008	16 256
• Outputs	262	1 008	1 008	16 256
• Inputs, of which central	266	1 016	1 008	1 008
• Outputs, of which central	262	1 008	1 008	1 008
Analog channels				
• Inputs	64	253	248	1 015
• Outputs	64	250	248	1 015
• Inputs, of which central	64	253	248	248
• Outputs, of which central	64	250	248	248
Hardware configuration				
Racks, max.	1	4	4	4
Modules per rack, max.	8	8; In rack 3 max. 7	8; In rack 3 max. 7	8; In rack 3 max. 7
Expansion devices, max.	0	3	3	3
Number of DP masters				
• Integrated	None	None	None	1
• via CP	4	4	4	4

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Number of operable FMs and CPs (recommended)				
• FM	8	8	8	8
• CP, point-to-point	8	8	8	8
• CP, LAN	4	6	6	6
Time of day				
Clock				
• Hardware clock (real-time clock)		Yes	Yes	Yes
• Software clock	Yes			
• Battery-backed and synchronizable	No; Buffered No Can be synchronized Yes	Yes	Yes	Yes
• Deviation per day, max.	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s
• Backup time		6 wk; At 40 °C ambient temperature	6 wk; At 40 °C ambient temperature	6 wk; At 40 °C ambient temperature
• Behavior of the clock following POWER-ON	The clock continues at the time of day it had when power was switched off	Clock continues running after POWER OFF	Clock continues running after POWER OFF	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period		The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off
Operating hours counter				
• Number	1	1	1	1
• Number/Number range	0	0	0	0
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour	1 hour	1 hour	1 hour
• Retentive	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart
Clock synchronization				
• Supported	Yes	Yes	Yes	Yes
• to MPI, master	Yes	Yes	Yes	Yes
• to MPI, slave	Yes	Yes	Yes	Yes
• to DP, master				Yes; With DP slave only slave clock
• to DP, slave				Yes
• in AS, master	Yes	Yes	Yes	Yes
• in AS, slave	No	No	No	No
Digital inputs				
Number of inputs	10	24	16	16
• of which, inputs usable for technological functions	8	12	12	12
Integrated channels (DI)	10	24	16	16
Input characteristic curve acc. to IEC 61131, Type 1	Yes	Yes	Yes	Yes
Number of simultaneously controllable inputs				
• Horizontal installation				
- up to 40 °C, max.	10	24	16	16
- up to 60 °C, max.	5	12	8	8
• Vertical installation				
- up to 40 °C, max.	5	12	8	8
• Technological functions				
- Shielded, max.	100 m; at maximum count frequency	100 m; at maximum count frequency	100 m; at maximum count frequency	100 m; at maximum count frequency
- Unshielded, max.	Not allowed	Not allowed	Not allowed	Not allowed
• Standard DI				
- Shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
- Unshielded, max.	600 m	600 m	600 m	600 m

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Input voltage				
• Rated value, DC	24 V	24 V	24 V	24 V
• for signal "0"	-3 to +5 V	-3 to +5 V	-3 to +5 V	-3 to +5 V
• for signal "1"	15 to 30 V	15 to 30 V	15 to 30 V	15 to 30 V
Input current				
• for signal "1", typ.	8 mA	8 mA	8 mA	8 mA
Input delay (for rated value of input voltage)				
• for standard inputs				
- Parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)
- Rated value	3 ms	3 ms	3 ms	3 ms
• for counter/technological functions				
- at "0" to "1", max.	48 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency	16 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency	16 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency	16 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency
Cable length				
• Cable length, shielded, max.	1 000 m; 100 m for technological functions	1 000 m; 100 m for technological functions	1 000 m; 100 m for technological functions	1 000 m; 100 m for technological functions
• Cable length unshielded, max.	600 m; For technological functions: No	600 m; For technological functions: No	600 m; For technological functions: No	600 m; For technological functions: No
Digital outputs				
Number of outputs	6	16	16	16
• of which high-speed outputs	2; Notice: You cannot connect the fast outputs of your CPU in parallel	4; Notice: You cannot connect the fast outputs of your CPU in parallel	4; Notice: You cannot connect the fast outputs of your CPU in parallel	4; Notice: You cannot connect the fast outputs of your CPU in parallel
Integrated channels (DO)	6	16	16	16
Short-circuit strength	Yes; Clocked electronically	Yes; Clocked electronically	Yes; Clocked electronically	Yes; Clocked electronically
• Response threshold, typ.	1 A	1 A	1 A	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)	L+ (-48 V)	L+ (-48 V)	L+ (-48 V)
Lamp load, max.	5 W	5 W	5 W	5 W
Controlling a digital input	Yes	Yes	Yes	Yes
Load resistance range				
• Lower limit	48 Ω	48 Ω	48 Ω	48 Ω
• Upper limit	4 kΩ	4 kΩ	4 kΩ	4 kΩ
Output voltage				
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output current				
• for signal "1" rated value	500 mA	500 mA	500 mA	500 mA
• for signal "1" permissible range, min.	5 mA	5 mA	5 mA	5 mA
• for signal "1" permissible range, max.	0.6 A	0.6 A	0.6 A	0.6 A
• for signal "1" minimum load current	5 mA	5 mA	5 mA	5 mA
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0.5 mA

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Parallel switching of 2 outputs				
• for increased power	No	No	No	No
• for redundant control of a load	Yes	Yes	Yes	Yes
Switching frequency				
• with resistive load, max.	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	100 Hz	100 Hz	100 Hz	100 Hz
• of the pulse outputs, with resistive load, max.	2.5 kHz	2.5 kHz	2.5 kHz	2.5 kHz
Aggregate current of outputs (per group)				
• Horizontal installation				
- up to 40 °C, max.	2 A	3 A	3 A	3 A
- up to 60 °C, max.	1.5 A	2 A	2 A	2 A
• Vertical installation				
- up to 40 °C, max.	1.5 A	2 A	2 A	2 A
Cable length				
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m
Analog inputs				
Integrated channels (AI)	0	5; 4 x current/voltage, 1 x resistance	0	0
Number of analog inputs for voltage/current measurement		4		
Number of analog inputs for resistance/resistance thermometer measurement		1		
Permissible input frequency for current input (destruction limit), max.		5 V; Permanent		
Permissible input voltage for voltage input (destruction limit), max.		30 V; Permanent		
Permissible input current for voltage input (destruction limit), max.		0.5 mA; Permanent		
Permissible input current for current input (destruction limit), max.		50 mA; Permanent		
Technical unit for temperature measurement adjustable		Yes; Degrees Celsius / degrees Fahrenheit / Kelvin		
Input ranges				
• Voltage		Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ		
• Current		Yes; ±20 mA / 100 Ω; 0 mA to 20 mA / 100 Ω; 4 mA to 20 mA / 100 Ω		
• Resistance thermometer		Yes; Pt 100 / 10 MΩ		
• Resistance		Yes; 0 Ω to 600 Ω / 10 MΩ		
Input ranges (rated values), voltages				
• 0 to +10 V		Yes		
• Input resistance (0 to 10 V)		100 kΩ		

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Input ranges (rated values), currents				
• 0 to 20 mA		Yes		
• Input resistance (0 to 20 mA)		100 Ω		
• -20 to +20 mA		Yes		
• Input resistance (-20 to +20 mA)		100 Ω		
• 4 to 20 mA		Yes		
• Input resistance (4 to 20 mA)		100 Ω		
Input ranges (rated values), resistance thermometers				
• Pt 100		Yes		
• Input resistance (Pt 100)		10 MΩ		
Input ranges (rated values), resistors				
• No-Load voltage, typ.		3.3 V		
• Measured current, typ.		1.25 mA		
• 0 to 600 ohms		Yes		
• Input resistance (0 to 600 ohms)		10 MΩ		
Thermocouple (TC)				
• Temperature compensation				
- Parameterizable		No		
Resistance thermometer (RTD)				
• Characteristic linearization				
- for resistance thermometer		Pt 100		
Characteristic linearization				
• Parameterizable		Yes; by software		
Cable length				
• Cable length, shielded, max.		100 m		
Analog outputs				
Integrated channels (AO)	0	2	0	0
Number of analog outputs		2		
Voltage output, short-circuit protection		Yes		
Voltage output, short-circuit current, max.		55 mA		
Current output, no-load voltage, max.		14 V		
Output ranges, voltage				
• 0 to 10 V		Yes		
• -10 to +10 V		Yes		
Output ranges, current				
• 0 to 20 mA		Yes		
• -20 to +20 mA		Yes		
• 4 to 20 mA		Yes		
Connection of actuators				
• for voltage output 2-conductor connection		Yes; Without compensation of the line resistances		
• for voltage output 4-conductor connection		No		
• for current output 2-conductor connection		Yes		

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Load impedance (in rated range of output)				
• with voltage outputs, min.		1 kΩ		
• with voltage outputs, capacitive load, max.		0.1 µF		
• with current outputs, max.		300 Ω		
• with current outputs, inductive load, max.		0.1 mH		
Destruction limits against externally applied voltages and currents				
• Voltages at the outputs towards MANA		16 V; Permanent		
• Current, max.		50 mA; Permanent		
Cable length				
• Cable length, shielded, max.		200 m		
Analog value creation				
Measurement principle		Actual value encryption (successive approximation)		
Integrations and conversion time/ resolution per channel				
• Resolution with overrange (bit including sign), max.		12 bit		
• Integration time, parameterizable		Yes; 16.6 / 20 ms		
• Permissible input frequency, max.		400 Hz		
• Interference voltage suppression for interference frequency f1 in Hz		60 / 50 Hz		
• Conversion time (per channel)		1 ms		
• Time constant of the input filter		0.38 ms		
• Basic execution time of the module (all channels released)		1 ms		
Settling time				
• for resistive load		0.6 ms		
• for capacitive load		1 ms		
• for inductive load		0.5 ms		
Encoder				
Connection of signal encoders				
• for voltage measurement		Yes		
• for current measurement as 2-wire transducer		Yes; with external supply		
• for current measurement as 4-wire transducer		Yes		
• for resistance measurement with 2-conductor connection		Yes; Without compensation of the line resistances		
• for resistance measurement with 3-conductor connection		No		
• for resistance measurement with 4-conductor connection		No		
Connectable encoders				
• 2-wire sensor	Yes	Yes	Yes	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA	1.5 mA

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Errors/accuracies				
Temperature error (relative to input area)		+/- 0.006 %/K		
Crosstalk between the inputs, min.		60 dB		
Repeat accuracy in settled status at 25 °C (relative to input area)		+/- 0.06 %		
Output ripple (based on output area, bandwidth 0 to 50 kHz)		+/- 0.1 %		
Linearity error (relative to output area)		+/- 0.15 %		
Temperature error (relative to output area)		+/- 0.01 %/K		
Crosstalk between the outputs, min.		60 dB		
Repeat accuracy in settled status at 25 °C (relative to output area)		+/- 0.06 %		
Operational limit in overall temperature range				
• Voltage, relative to input area		+/- 1 %		
• Current, relative to input area		+/- 1 %		
• Impedance, relative to input area		+/- 1 %		
• Voltage, relative to output area		+/- 1 %		
• Current, relative to output area		+/- 1 %		
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input area		+/- 0.8 %; Linearity error +/- 0.06 %		
• Current, relative to input area		+/- 0.8 %; Linearity error +/- 0.06 %		
• Impedance, relative to input area		+/- 0.8 %; Linearity error +/- 0.2%		
• Resistance-type thermometer, relative to input area		+/- 0.8 %		
• Voltage, relative to output area		+/- 0.8 %		
• Current, relative to output area		+/- 0.8 %		
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency				
• Series mode interference (peak value of interference < rated value of input range), min.		30 dB		
• Common mode interference, min.		40 dB		
Interfaces				
Number of USB interfaces	0	0	0	0
1st interface				
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485
Isolated	No	No	No	No
Power supply to interface (15 to 30 V DC), max.	200 mA	200 mA	200 mA	200 mA

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Functionality				
• MPI	Yes	Yes	Yes	Yes
• DP master	No	No	No	No
• DP slave	No	No	No	No
• Point-to-point connection	No	No	No	No
MPI				
• Services				
- PG/OP communication	Yes	Yes	Yes	Yes
- Routing	No	No	No	Yes
- Global data communication	Yes	Yes	Yes	Yes
- S7 basic communication	Yes	Yes	Yes	Yes
- S7 communication	Yes; Only server, configured on one side	Yes; Only server, configured on one side	Yes; Only server, configured on one side	Yes; Only server, configured on one side
- S7 communication, as client	No; (but via CP and loadable FBs)	No; (but via CP and loadable FBs)	No; (but via CP and loadable FBs)	No; (but via CP and loadable FBs)
- S7 communication, as server	Yes	Yes	Yes	Yes
• Transmission rate, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
2nd interface				
Type of interface			Integrated RS 422/ 485 interface	Integrated RS 485 interface
Physics			RS 422/RS 485 (X.27)	RS 485
Isolated			Yes	Yes
Power supply to interface (15 to 30 V DC), max.			No	200 mA
Functionality				
• MPI			No	No
• DP master			No	Yes
• DP slave			No	Yes
• PROFINET IO Controller			No	No
• PROFINET IO Device			No	No
• PROFINET CBA			No	No
DP master				
• Services				
- PG/OP communication				Yes
- Global data communication				No
- S7 basic communication				Yes; I blocks only
- S7 communication				Yes; Yes (only server; connection configured at one end)
- S7 communication, as client				No
- S7 communication, as server				Yes
- Equidistance mode support				Yes
- Isochronous mode				No
- SYNC/FREEZE				Yes
- Activation/deactivation of DP slaves				Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.				8
- Direct data exchange (slave-to-slave communication)				Yes; As subscriber
- DPV1				Yes
• Transmission rate, max.				12 Mbit/s
• Number of DP slaves, max.				124
• Address area				
- Inputs, max.				2 kbyte
- Outputs, max.				2 kbyte

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
DP master				
• User data per DP slave				
- Inputs, max.				244 byte
- Outputs, max.				244 byte
DP slave				
• Services				
- PG/OP communication				Yes
- Global data communication				No
- S7 basic communication				No
- S7 communication				Yes; Yes (only server; connection configured at one end)
- S7 communication, as client				No
- S7 communication, as server				Yes
- Direct data exchange (slave-to-slave communication)				Yes
- DPV1				No
• GSD file			-	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
• Transmission rate, max.				12 Mbit/s
• Automatic baud rate search				Yes; only with passive interface
• Transfer memory				
- Inputs				244 byte
- Outputs				244 byte
• Address area, max.				32
• User data per address area, max.				32 byte
Point-to-point connection				
• Transmission rate, max.			19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex	
• Cable length, max.			1 200 m	
• Interface from the user program controllable			Yes	
• Interface can trigger alarm/interrupt in the user program			Yes; Message on break - identification	
• Protocol driver			3964 (R); ASCII	
Communication functions				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	No	Yes
Global data communication				
• Supported	Yes	Yes	Yes	Yes
• Number of GD loops, max.	8	8	8	8
• Number of GD packets, max.	8	8	8	8
• Number of GD packets, transmitter, max.	8	8	8	8
• Number of GD packets, receiver, max.	8	8	8	8
• Size of GD packets, max.	22 byte	22 byte	22 byte	22 byte
• Size of GD packet (of which consistent), max.	22 byte	22 byte	22 byte	22 byte
S7 basic communication				
• Supported	Yes	Yes	Yes; Server	Yes
• User data per job, max.	76 byte	76 byte	76 byte	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
S7 communication				
• Supported	Yes	Yes	Yes	Yes
• as server	Yes	Yes	Yes	Yes
• as client	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB
• User data per job, max.	180 byte; (with PUT/GET)	180 byte; With PUT/GET	180 byte; With PUT/GET	180 kbyte; With PUT/GET
• User data per job (of which consistent), max.	240 byte; as server	240 byte; as server	240 byte; as server	240 byte; as server
S5-compatible communication				
• Supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections				
• Overall	6	8	8	8
• Usable for routing				4; max.
S7 message functions				
Number of login stations for message functions, max.	6; Depending on the configured connections for PG/OP and S7 basic communication	8; Depending on the configured connections for PG/OP and S7 basic communication	8; Depending on the configured connections for PG/OP and S7 basic communication	8; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes	Yes	Yes
Simultaneously active Alarm-S blocks, max.	300	300	300	300
Test commissioning functions				
Status/control				
• Status/control variable	Yes	Yes	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30	30	30
• of which status variables, max.	30	30	30	30
• of which control variables, max.	14	14	14	14
Forcing				
• Forcing	Yes	Yes	Yes	Yes
• Force, variables	Inputs, outputs	Inputs, outputs	Inputs, outputs	Inputs, outputs
• Number of variables, max.	10	10	10	10
Status block	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously
Single step	Yes	Yes	Yes	Yes
Number of breakpoints	4	4	4	4
Diagnostic buffer				
• Present	Yes	Yes	Yes	Yes
• Number of entries, max.	500	500	500	500
- Adjustable	No	No	No	No
- of which powerfail-proof	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained
• Number of entries readable in RUN, max.	499	499	499	499
- Adjustable	Yes; From 10 to 499	Yes; From 10 to 499	Yes; From 10 to 499	Yes; From 10 to 499
- Preset	10	10	10	10
Integrated Functions				
Number of counters	2; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual
Counter frequency (counter) max.	10 kHz	30 kHz	30 kHz	30 kHz
Frequency measurement	Yes	Yes	Yes	Yes
Number of frequency meters	2; up to 10 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)
Controlled positioning	No	No	No	No

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Integrated function blocks (closed-loop control)	No	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)
PID controller	No	Yes	Yes	Yes
Number of pulse outputs	2; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz	2.5 kHz	2.5 kHz	2.5 kHz
Galvanic isolation				
Galvanic isolation digital inputs				
• Galvanic isolation digital inputs	Yes	Yes	Yes	Yes
• between the channels	No	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes	Yes
Galvanic isolation digital outputs				
• Galvanic isolation digital outputs	Yes	Yes	Yes	Yes
• between the channels	No	Yes	Yes	Yes
• between the channels, in groups of		8	8	8
• between the channels and the backplane bus	Yes	Yes	Yes	Yes
Galvanic isolation analog inputs				
• Galvanic isolation analog inputs		Yes; common for analog I/O		
• between the channels		No		
• between the channels and the backplane bus		Yes		
Galvanic isolation analog outputs				
• Galvanic isolation analog outputs		Yes; common for analog I/O		
• between the channels		No		
• between the channels and the backplane bus		Yes		
Permissible potential difference				
between different circuits	75 V DC / 60 V AC	75 V DC / 60 V AC	75 V DC / 60 V AC	75 V DC / 60 V AC
between inputs and M_{ANA} (UCM)		8.0 V DC		
between M_{ANA} and M internally (UISO)		75 V DC / 60 V AC		
Isolation				
Isolation checked with	600 V DC	600 V DC	600 V DC	600 V DC
Ambient conditions				
Operating temperature				
• Min.	0 °C	0 °C	0 °C	0 °C
• Max.	60 °C	60 °C	60 °C	60 °C
Configuration				
Configuration software				
• STEP 7 Lite	No	No	No	No

Technical specifications (continued)

	6ES7 312-5BF04-0AB0	6ES7 313-5BG04-0AB0	6ES7 313-6BG04-0AB0	6ES7 313-6CG04-0AB0
Programming				
• Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC		Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
- HiGraph	Yes	Yes	Yes	Yes
• Command set	See instruction list	See instruction list	See instruction list	See instruction list
• Nesting levels	8	8	8	8
Know-how protection				
• User program protection/ password protection	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions				
Width	80 mm	120 mm	80 mm	80 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm
Weight				
Weight, approx.	410 g	660 g	500 g	500 g

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
General information		
Hardware product version	01	01
Firmware version	V3.3	V3.3
Engineering with		
• Programming package	STEP7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage		
24 V DC	Yes	Yes
Input current		
Current consumption (rated value)	660 mA	880 mA
Current consumption (in no-load operation), typ.	150 mA	150 mA
Inrush current, typ.	5 A	5 A
I^2t	0.7 $A^2 \cdot s$	0.7 $A^2 \cdot s$
Power losses		
Power loss, typ.	13 W	13 W
Memory		
Work memory		
• Integrated	192 kbyte	192 kbyte
• Expandable	No	No
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte
Load memory		
• Pluggable (MMC)	Yes	Yes
• Pluggable (MMC), max.	8 Mbyte	8 Mbyte
• Data management on MMC (after last programming), min.	10 a	10 a

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Backup		
• Present	Yes; Guaranteed by MMC (maintenance-free)	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data	Yes; Program and data
CPU processing times		
for bit operations, min.	0.06 µs	0.06 µs
for word operations, min.	0.12 µs	0.12 µs
for fixed point arithmetic, min.	0.16 µs	0.16 µs
for floating point arithmetic, min.	0.59 µs	0.59 µs
CPU-blocks		
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB		
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte	64 kbyte
FB		
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte
FC		
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
OB		
• Size, max.	64 kbyte	64 kbyte
Nesting depth		
• per priority class	16	16
• Additional within an error OB	4	4
Counters, timers and their retentivity		
S7 counter		
• Number	256	256
• Retentivity		
- Adjustable	Yes	Yes
- Lower limit	0	0
- Upper limit	255	255
- Preset	Z 0 to Z 7	Z 0 to Z 7
• Counting range		
- Adjustable		
- Lower limit	0	0
- Upper limit	999	999
IEC counter		
• Present	Yes	Yes
• Type	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
S7 times		
• Number	256	256
• Retentivity		
- Adjustable	Yes	Yes
- Lower limit	0	0
- Upper limit	255	255
- Preset	No retentivity	No retentivity
• Time range		
- Lower limit	10 ms	10 ms
- Upper limit	9 990 s	9 990 s
IEC timer		
• Present	Yes	Yes
• Type	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
Data areas and their retentivity		
Retentive data area, total	All, max. 64 KB	All, max. 64 KB
Flag		
• Number, max.	256 byte	256 byte
• Retentivity available	Yes; MB 0 to MB 255	Yes; MB 0 to MB 255
• Retentivity preset	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte	8; 1 memory byte
Data blocks		
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	Yes	Yes
Local data		
• per priority class, max.	32 kbyte; Max. 2048 bytes per block	32 kbyte; Max. 2048 bytes per block

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Address area		
I/O address area		
• Inputs	1 024 byte	2 048 byte
• Outputs	1 024 byte	2 048 byte
• of which, distributed		
- Inputs	None	2 003 byte
- Outputs	None	2 010 byte
Process image		
• Inputs, adjustable	1 024 byte	2 048 byte
• Outputs, adjustable	1 024 byte	2 048 byte
• Inputs, default	128 byte	128 byte
• Outputs, default	128 byte	128 byte
• Default addresses of the integrated channels		
- Digital inputs	124.0 to 126.7	124.0 to 126.7
- Digital outputs	124.0 to 125.7	124.0 to 125.7
- Analog inputs	752 to 761	752 to 761
- Analog outputs	752 to 755	752 to 755
Digital channels		
• Inputs	1 016	16 048
• Outputs	1 008	16 096
• Inputs, of which central	1 016	1 016
• Outputs, of which central	1 008	1 008
Analog channels		
• Inputs	253	1 006
• Outputs	250	1 007
• Inputs, of which central	253	253
• Outputs, of which central	250	250
Hardware configuration		
Racks, max.	4	4
Modules per rack, max.	8; In rack 3 max. 7	8; In rack 3 max. 7
Expansion devices, max.	3	3
Number of DP masters		
• Integrated	None	1
• via CP	4	4
Number of operable FMs and CPs (recommended)		
• FM	8	8
• CP, point-to-point	8	8
• CP, LAN	10	10
Time of day		
Clock		
• Hardware clock (real-time clock)	Yes	Yes
• Battery-backed and synchronizable	Yes	Yes
• Deviation per day, max.	10 s; Typ.: 2 s	10 s; Typ.: 2 s
• Backup time	6 wk; At 40 °C ambient temperature	6 wk; At 40 °C ambient temperature
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Operating hours counter		
• Number	1	1
• Number/Number range	0	0
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour	1 hour
• Retentive	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart
Clock synchronization		
• Supported	Yes	Yes
• to MPI, master	Yes	Yes
• to MPI, slave	Yes	Yes
• to DP, master		Yes; With DP slave only slave clock
• to DP, slave		Yes
• in AS, master	Yes	Yes
• in AS, slave	No	No
• on Ethernet via NTP		
Digital inputs		
Number of inputs	24	24
• of which, inputs usable for technological functions	16	16
Integrated channels (DI)	24	24
Input characteristic curve acc. to IEC 61131, Type 1	Yes	Yes
Number of simultaneously controllable inputs		
• Horizontal installation		
- up to 40 °C, max.	24	24
- up to 60 °C, max.	12	12
• Vertical installation		
- up to 40 °C, max.	12	12
• Technological functions		
- Shielded, max.	50 m; at maximum count frequency	50 m; at maximum count frequency
- Unshielded, max.	not allowed	not allowed
• Standard DI		
- Shielded, max.	1 000 m	1 000 m
- Unshielded, max.	600 m	600 m
Input voltage		
• Rated value, DC	24 V	24 V
• for signal "0"	-3 to +5 V	-3 to +5 V
• for signal "1"	15 to 30 V	15 to 30 V
Input current		
• for signal "1", typ.	8 mA	8 mA

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Input delay (for rated value of input voltage)		
• for standard inputs		
- Parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)
- Rated value	3 ms	3 ms
• for counter/technological functions		
- at "0" to "1", max.	8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency	8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency
Cable length		
• Cable length, shielded, max.	1 000 m; 50 m for technological functions	1 000 m; 50 m for technological functions
• Cable length unshielded, max.	600 m; For technological functions: No	600 m; For technological functions: No
Digital outputs		
Number/binary outputs	16	16
• of which high-speed outputs	4; Notice: You cannot connect the fast outputs of your CPU in parallel	4; Notice: You cannot connect the fast outputs of your CPU in parallel
Integrated channels (DO)	16	16
Functionality/short-circuit strength	Yes; Clocked electronically	Yes; Clocked electronically
• Response threshold, typ.	1 A	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)	L+ (-48 V)
Lamp load, max.	5 W	5 W
Controlling a digital input	Yes	Yes
Load resistance range		
• Lower limit	48 Ω	48 Ω
• Upper limit	4 kΩ	4 kΩ

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Output voltage		
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)
Output current		
• for signal "1" rated value	500 mA	500 mA
• for signal "1" permissible range, min.	5 mA	5 mA
• for signal "1" permissible range, max.	0.6 A	0.6 A
• for signal "1" minimum load current	5 mA	5 mA
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Parallel switching of 2 outputs		
• for increased power	No	No
• for redundant control of a load	Yes	Yes
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz
• on lamp load, max.	100 Hz	100 Hz
• of the pulse outputs, with resistive load, max.	2.5 kHz	2.5 kHz
Aggregate current of outputs (per group)		
• Horizontal installation		
- up to 40 °C, max.	3 A	3 A
- up to 60 °C, max.	2 A	2 A
• Vertical installation		
- up to 40 °C, max.	2 A	2 A
Cable length		
• Cable length, shielded, max.	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m
Analog inputs		
Integrated channels (AI)	5; 4 x current/ voltage, 1 x resistance	5; 4 x current/ voltage, 1 x resistance
Number of analog inputs for voltage/current measurement	4	4
Number of analog inputs for resistance/resistance thermometer measurement	1	1
Permissible input frequency for current input (destruction limit), max.	5 V; Permanent	5 V; Permanent
Permissible input voltage for voltage input (destruction limit), max.	30 V; Permanent	30 V; Permanent
Permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent	0.5 mA; Permanent
Permissible input current for current input (destruction limit), max.	50 mA; Permanent	50 mA; Permanent
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / Degrees Fahrenheit / Kelvin	Yes; Degrees Celsius / Degrees Fahrenheit / Kelvin

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Input ranges		
• Voltage	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ
• Current	Yes; ±20 mA / 100 Ω; 0 mA to 20 mA / 100 Ω; 4 mA to 20 mA / 100 Ω	Yes; ±20 mA / 100 Ω; 0 mA to 20 mA / 100 Ω; 4 mA to 20 mA / 100 Ω
• Resistance thermometer	Yes; Pt 100 / 10 MΩ	Yes; Pt 100 / 10 MΩ
• Resistance	Yes; 0 Ω to 600 Ω / 10 MΩ	Yes; 0 Ω to 600 Ω / 10 MΩ
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
• Input resistance (0 to 10 V)	100 kΩ	100 kΩ
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• Input resistance (0 to 20 mA)	100 Ω	100 Ω
• -20 to +20 mA	Yes	Yes
• Input resistance (-20 to +20 mA)	100 Ω	100 Ω
• 4 to 20 mA	Yes	Yes
• Input resistance (4 to 20 mA)	100 Ω	100 Ω
Input ranges (rated values), resistance thermometers		
• Pt 100	Yes	Yes
• Input resistance (Pt 100)	10 MΩ	10 MΩ
Input ranges (rated values), resistors		
• No-Load voltage, typ.	3.3 V	3.3 V
• Measured current, typ.	1.25 mA	1.25 mA
• 0 to 600 ohms	Yes	Yes
• Input resistance (0 to 600 ohms)	10 MΩ	10 MΩ
Thermocouple (TC)		
• Temperature compensation		
- Parameterizable	No	No
Resistance thermometer (RTD)		
• Characteristic linearization		
- for resistance thermometer	Pt 100	Pt 100
Characteristic linearization		
• Parameterizable	Yes; by software	Yes; by software
Cable length		
• Cable length, shielded, max.	100 m	100 m
Analog outputs		
Integrated channels (AO)	2	2
Number of analog outputs	2	2
Voltage output, short-circuit protection	Yes	Yes
Voltage output, short-circuit current, max.	55 mA	55 mA

5

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Current output, no-load voltage, max.	14 V	14 V
Output ranges, voltage		
• 0 to 10 V	Yes	Yes
• -10 to +10 V	Yes	Yes
Output ranges, current		
• 0 to 20 mA	Yes	Yes
• -20 to +20 mA	Yes	Yes
• 4 to 20 mA	Yes	Yes
Connection of actuators		
• for voltage output 2-conductor connection	Yes; Without compensation of the line resistances	Yes; Without compensation of the line resistances
• for voltage output 4-conductor connection	No	No
• for current output 2-conductor connection	Yes	Yes
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 kΩ	1 kΩ
• with voltage outputs, capacitive load, max.	0.1 µF	0.1 µF
• with current outputs, max.	300 Ω	300 Ω
• with current outputs, inductive load, max.	0.1 mH	0.1 mH
Destruction limits against externally applied voltages and currents		
• Voltages at the outputs towards M_{ANA}	16 V; Permanent	16 V; Permanent
• Current, max.	50 mA; Permanent	50 mA; Permanent
Cable length		
• Cable length, shielded, max.	200 m	200 m
Analog value creation		
Measurement principle	Actual value encryption (successive approximation)	Actual value encryption (successive approximation)
Integrations and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	12 bit	12 bit
• Integration time, parameterizable	Yes; 16.6 / 20 ms	Yes; 16.6 / 20 ms
• Permissible input frequency, max.	400 Hz	400 Hz
• Interference voltage suppression for interference frequency f1 in Hz	60 / 50 Hz	60 / 50 Hz
• Conversion time (per channel)	1 ms	1 ms
• Time constant of the input filter	0.38 ms	0.38 ms
• Basic execution time of the module (all channels released)	1 ms	1 ms

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Settling time		
• for resistive load	0.6 ms	0.6 ms
• for capacitive load	1 ms	1 ms
• for inductive load	0.5 ms	0.5 ms
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 2-wire transducer	Yes; with external supply	Yes; with external supply
• for current measurement as 4-wire transducer	Yes	Yes
• for resistance measurement with 2-conductor connection	Yes; Without compensation of the line resistances	Yes; Without compensation of the line resistances
• for resistance measurement with 3-conductor connection	No	No
• for resistance measurement with 4-conductor connection	No	No
Connectable encoders		
• 2-wire sensor	Yes	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Errors/accuracies		
Temperature error (relative to input area)	+/- 0.006 %/K	+/- 0.006 %/K
Crosstalk between the inputs, min.	60 dB	60 dB
Repeat accuracy in settled status at 25 °C (relative to input area)	+/- 0.06 %	+/- 0.06 %
Output ripple (based on output area, bandwidth 0 to 50 kHz)	+/- 0.1 %	+/- 0.1 %
Linearity error (relative to output area)	+/- 0.15 %	+/- 0.15 %
Temperature error (relative to output area)	+/- 0.01 %/K	+/- 0.01 %/K
Crosstalk between the outputs, min.	60 dB	60 dB
Repeat accuracy in settled status at 25 °C (relative to output area)	+/- 0.06 %	+/- 0.06 %
Operational limit in overall temperature range		
• Voltage, relative to input area	+/- 1 %	+/- 1 %
• Current, relative to input area	+/- 1 %	+/- 1 %
• Impedance, relative to input area	+/- 1 %	+/- 1 %
• Voltage, relative to output area	+/- 1 %	+/- 1 %
• Current, relative to output area	+/- 1 %	+/- 1 %

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area	+/- 0,8 %; Linearity error +/- 0.06 %	+/- 0.8 %; Linearity error +/- 0.06 %
• Current, relative to input area	+/- 0.8 %; Linearity error +/- 0.06 %	+/- 0.8 %; Linearity error +/- 0.06 %
• Impedance, relative to input area	+/- 0.8 %; Linearity error +/- 0.2%	+/- 0.8 %; Linearity error +/- 0.2%
• Resistance-type thermometer, relative to input area	+/- 0.8 %	+/- 0.8 %
• Voltage, relative to output area	+/- 0.8 %	+/- 0.8 %
• Current, relative to output area	+/- 0.8 %	+/- 0.8 %
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	30 dB	30 dB
• Common mode interference, min.	40 dB	40 dB
Interfaces		
Number of USB interfaces	0	0
1st interface		
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485
Isolated	No	No
Power supply to interface (15 to 30 V DC), max.	200 mA	200 mA
Functionality		
• MPI	Yes	Yes
• DP master	No	No
• DP slave	No	No
• Point-to-point connection	No	No
MPI		
• Services		
- PG/OP communication	Yes	Yes
- Routing	No	Yes
- Global data communication	Yes	Yes
- S7 basic communication	Yes	Yes
- S7 communication	Yes; Only server, configured on one side	Yes; Only server, configured on one side
- S7 communication, as client	No; (but via CP and loadable FBs)	No; but via CP and loadable FB
- S7 communication, as server	Yes	Yes
• Transmission rate, max.	187.5 kbit/s	187.5 kbit/s
2nd interface		
Type of interface	Integrated RS 422/ 485 interface	Integrated RS 485 interface
Physics	RS 422/RS 485 (X.27)	RS 485
Isolated	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	No	200 mA
Functionality		
• MPI	No	No
• DP master	No	Yes
• DP slave	No	Yes
• PROFINET IO Controller	No	No
• PROFINET IO Device	No	No
• PROFINET CBA	No	No
• Local Operating Network	Yes	No
DP master		
• Services		
- PG/OP communication		Yes
- Global data communication		No
- S7 basic communication		Yes; I blocks only
- S7 communication		Yes; Only server, configured on one side
- S7 communication, as client		No
- S7 communication, as server		Yes
- Equidistance mode support		Yes
- Isochronous mode		No
- SYNC/FREEZE		Yes
- Activation/deactivation of DP slaves		Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.		8
- Direct data exchange (slave-to-slave communication)		Yes; As subscriber
- DPV1		Yes
• Transmission rate, max.		12 Mbit/s
• Number of DP slaves, max.		124
• Address area		
- Inputs, max.		2 kbyte
- Outputs, max.		2 kbyte
• User data per DP slave		
- Inputs, max.		244 byte
- Outputs, max.		244 byte
DP slave		
• Services		
- PG/OP communication		Yes
- Global data communication		No
- S7 basic communication		No
- S7 communication		Yes; Only server, configured on one side
- S7 communication, as client		No
- S7 communication, as server		Yes
- Direct data exchange (slave-to-slave communication)		Yes
- DPV1		No
• GSD file		The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)

5

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
DP slave		
• Transmission rate, max.		12 Mbit/s
• Automatic baud rate search		Yes; only with passive interface
• Transfer memory		
- Inputs		244 byte
- Outputs		244 byte
• Address area, max.		32
• User data per address area, max.		32 byte
Point-to-point connection		
• Transmission rate, max.	19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex	
• Cable length, max.	1 200 m	
• interface from the user program controllable	Yes	
• Interface can trigger alarm/interrupt in the user program	Yes; Message on break - identification	
• Protocol driver	3964 (R); ASCII and RK 512	
Communication functions		
PG/OP communication	Yes	Yes
Data record routing	No	Yes
Global data communication		
• Supported	Yes	Yes
• Number of GD loops, max.	8	8
• Number of GD packets, max.	8	8
• Number of GD packets, transmitter, max.	8	8
• Number of GD packets, receiver, max.	8	8
• Size of GD packets, max.	22 byte	22 byte
• Size of GD packet (of which consistent), max.	22 byte	22 byte
S7 basic communication		
• Supported	Yes	Yes
• User data per job, max.	76 byte	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication		
• Supported	Yes	Yes
• as server	Yes	Yes
• as client	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB
• User data per job, max.	180 kbyte; With PUT/GET	180 kbyte; With PUT/GET
• User data per job (of which consistent), max.	240 byte; as server	240 byte; as server
S5-compatible communication		
• Supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Number of connections		
• Overall	12	12
• Usable for routing		4; max.
S7 message functions		
Number of login stations for message functions, max.	12; Depending on the configured connections for PG/OP and S7 basic communication	12; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes
Simultaneously active Alarm-S blocks, max.	300	300
Test commissioning functions		
Status/control		
• Status/control variable	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30
• of which status variables, max.	30	30
• of which control variables, max.	14	14
Forcing		
• Forcing	Yes	Yes
• Force, variables	Inputs, outputs	Inputs, outputs
• Number of variables, max.	10	10
Status block	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously
Single step	Yes	Yes
Number of breakpoints	4	4
Diagnostic buffer		
• Present	Yes	Yes
• Number of entries, max.	500	500
- Adjustable	No	No
- of which powerfail-proof	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained
• Number of entries readable in RUN, max.	499	499
- Adjustable	Yes; From 10 to 499	Yes; From 10 to 499
- Preset	10	10
Integrated Functions		
Number of counters	4; See "Technological Functions" manual	4; See "Technological Functions" manual
Counter frequency (counter) max.	60 kHz	60 kHz
Frequency measurement	Yes	Yes
Number of frequency meters	4; up to 60 kHz (see "Technological Functions" manual)	4; up to 60 kHz (see "Technological Functions" manual)
Controlled positioning	Yes	Yes
Integrated function blocks (closed-loop control)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)

Technical specifications (continued)

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
PID controller	Yes	Yes
Number of pulse outputs	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz	2.5 kHz
Galvanic isolation		
Galvanic isolation digital inputs		
• Galvanic isolation digital inputs	Yes	Yes
• between the channels	No	No
• between the channels and the backplane bus	Yes	Yes
Galvanic isolation digital outputs		
• Galvanic isolation digital outputs	Yes	Yes
• between the channels	Yes	Yes
• between the channels, in groups of	8	8
• between the channels and the backplane bus	Yes	Yes
Galvanic isolation analog inputs		
• Galvanic isolation analog inputs	Yes; common for analog I/O	Yes; common for analog I/O
• between the channels	No	No
• between the channels and the backplane bus	Yes	Yes
Galvanic isolation analog outputs		
• Galvanic isolation analog outputs	Yes; common for analog I/O	Yes; common for analog I/O
• between the channels	No	No
• between the channels and the backplane bus	Yes	Yes

	6ES7 314-6BH04-0AB0	6ES7 314-6CH04-0AB0
Permissible potential difference		
between different circuits	75 V DC / 60 V AC	75 V DC / 60 V AC
between inputs and M_{ANA} (UCM)	8.0 V DC	8.0 V DC
between M_{ANA} and M internally (UISO)	75 V DC / 60 V AC	75 V DC / 60 V AC
Isolation		
Isolation checked with	600 V DC	600 V DC
Ambient conditions		
Operating temperature		
• Min.	0 °C	0 °C
• Max.	60 °C	60 °C
Configuration		
Configuration software		
• STEP 7 Lite	No	No
Programming		
• Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	Yes	Yes
- GRAPH	Yes	Yes
- HiGraph	Yes	Yes
• Command set	See instruction list	See instruction list
• Nesting levels	8	8
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions		
Width	120 mm	120 mm
Height	125 mm	125 mm
Depth	130 mm	130 mm
Weight		
Weight, approx.	680 g	680 g

Compact CPUs

Ordering data	Order No.
CPU 312C Compact CPU, 64 KB work memory, 24 V DC power supply, 10 DI/6 DO integrated, integrated functions, MPI; including slot number labels; MMC required	**6ES7 312-5BF04-0AB0**
CPU 313C Compact CPU, 128 KB work memory, 24 V DC power supply, 24 DI/16 DO, 4 AI/2 AO integrated, integrated functions, MPI; MMC required	**6ES7 313-5BG04-0AB0**
CPU 313C-2 PtP Compact CPU, 128 KB, 24 V DC power supply, 16 DI/16 DO integrated, integrated functions, MPI, RS 422/485 interface; MMC required	**6ES7 313-6BG04-0AB0**
CPU 313C-2 DP Compact CPU, 128 KB work memory, 24 V DC power supply, 16 DI/16 DO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	**6ES7 313-6CG04-0AB0**
CPU 314C-2 PtP Compact CPU, 192 KB work memory, 24 V DC power supply, 24DI/16DO/4AI/2AO integrated, integrated functions, MPI, RS 422/485 interface; MMC required	**6ES7 314-6BH04-0AB0**
CPU 314C-2 DP Compact CPU, 192 KB work memory, 24 V DC power supply, 24DI/16DO/4AI/2AO integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	**6ES7 314-6CH04-0AB0**
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL20-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7 901-0BF00-0AA0**
Point-to-point link cable for connection to CPU 31xC-2 PtP	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**

	Order No.
Front connector (1 unit) For compact CPUs	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect	
• 1 unit	**6ES7 392-1CM00-0AA0**
SIMATIC TOP connect	See catalog ST 70; for information about which components can be used for the respective module, see Industry Mall or Catalog KT 10.2, page 2/6
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**
Power supply connector 10 units, spare part	**6ES7 391-1AA00-0AA0**
Labeling strips 10 units, spare part	**6ES7 392-2XX00-0AA0**
Label cover 10 units, spare part	**6ES7 392-2XY00-0AA0**
S7 SmartLabel V3.0 Software for automatic labeling of modules direct from the STEP 7 project	
Single license	**2XV9 450-1SL03-0YX0**
Upgrade single license	**2XV9 450-1SL03-0YX4**

Ordering data	Order No.
Labeling sheets for machine inscription	
For 16-channel signal modules, DIN A4, for printing with laser printer;	
10 units	
petrol	**6ES7 392-2AX00-0AA0**
light-beige	**6ES7 392-2BX00-0AA0**
yellow	**6ES7 392-2CX00-0AA0**
red	**6ES7 392-2DX00-0AA0**
For 32-channel signal modules, DIN A4, for printing with laser printer;	
10 units	
petrol	**6ES7 392-2AX10-0AA0**
light-beige	**6ES7 392-2BX10-0AA0**
yellow	**6ES7 392-2CX10-0AA0**
red	**6ES7 392-2DX10-0AA0**
PC adapter USB	**6ES7 972-0CB20-0XA0**
For connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)	

	Order No.
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7 972-0BA12-0XA0**
- with PG interface	**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS FastConnect bus cable	**6XV1 830-0EH10**
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	
RS 485 repeater for PROFIBUS	**6ES7 972-0AA02-0XA0**
Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	
PROFINET bus components	
For establishing MPI/PROFIBUS communication	See IK PI, CA 01 catalogs

5

Fail-safe CPUs

Overview CPU 317F-2 DP

- The fail-safe CPU with a large program memory and quantity framework for demanding applications
- For constructing a fail-safe automation system for plants with increased safety requirements
- Satisfies safety requirements up to SIL 3 acc. to IEC 61508 and up to Cat. 4 acc. to EN 954-1
- Fail-safe I/O modules can be connected in a distributed configuration to both integral PROFIBUS DP interfaces (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant applications

SIMATIC Micro Memory Card required for operation of CPU.

5

Technical specifications

	6ES7 317-6FF04-0AB0
General information	
Hardware product version	01
Firmware version	V3.3
Engineering with	
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP7 V5.2 + SP1 or higher with HSP 202 + Distributed Safety
Supply voltage	
24 V DC	Yes
Input current	
Current consumption (rated value)	870 mA
Current consumption (in no-load operation), typ.	120 mA
Inrush current, typ.	4 A
I^2t	1 $A^2 \cdot s$
Power losses	
Power loss, typ.	4.5 W
Memory	
Work memory	
• Integrated	1 536 kbyte
• Expandable	No
• Size of retentive memory for retentive data blocks	256 kbyte
Load memory	
• Pluggable (MMC)	Yes
• Pluggable (MMC), max.	8 Mbyte
• Data management on MMC (after last programming), min.	10 a
Backup	
• Present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
CPU processing times	
for bit operations, min.	0.025 µs
for word operations, min.	0.03 µs
for fixed point arithmetic, min.	0.04 µs
for floating point arithmetic, min.	0.16 µs
CPU-blocks	
Number of blocks (total)	2 048; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.

	6ES7 317-6FF04-0AB0
DB	
• Number, max.	2 048; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
• Number, max.	2 048; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	2 048; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• Size, max.	64 kbyte
Nesting depth	
• per priority class	16
• Additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
• Number	512
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	511
- Preset	Z 0 to Z 7
• Counting range	
- Lower limit	0
- Upper limit	999
IEC counter	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	
• Number	512
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	511
- Preset	No retentivity
• Time range	
- Lower limit	10 ms
- Upper limit	9 990 s

Technical specifications (continued)

	6ES7 317-6FF04-0AB0
IEC timer	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area, total	All, max. 256 KB
Flag	
• Number, max.	4 096 byte
• Retentivity available	Yes; MB 0 to MB 4095
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Data blocks	
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes
Local data	
• per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
• Inputs	8 192 byte
• Outputs	8 192 byte
• of which, distributed	
- Inputs	8 192 byte
- Outputs	8 192 byte
Process image	
• Inputs, adjustable	8 192 byte
• Outputs, adjustable	8 192 byte
• Inputs, default	1 024 byte
• Outputs, default	1 024 byte
Subprocess images	
• Number of subprocess images, max.	1
Digital channels	
• Inputs	65 536
• Outputs	65 536
• Inputs, of which central	1 024
• Outputs, of which central	1 024
Analog channels	
• Inputs	4 096
• Outputs	4 096
• Inputs, of which central	256
• Outputs, of which central	256
Hardware configuration	
Racks, max.	4
Modules per rack, max.	8
Expansion devices, max.	3
Number of DP masters	
• Integrated	2
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, point-to-point	8
• CP, LAN	10

	6ES7 317-6FF04-0AB0
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• battery-backed and synchronizable	Yes
• Deviation per day, max.	10 s; Typ.: 2 s
• Backup time	6 wk; At 40 °C ambient temperature
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
• Number	4
• Number/Number range	0 to 3
• Range of values	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour
• Retentive	Yes; Must be restarted at each restart
Clock synchronization	
• Supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
• on Ethernet via NTP	No
1st interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	Yes
• DP master	Yes
• DP slave	Yes
• Point-to-point connection	No
MPI	
• Services	
- PG/OP communication	Yes
- Routing	Yes
- Global data communication	Yes
- S7 basic communication	Yes
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
• Transmission rate, max.	12 Mbit/s

Technical specifications (continued)

	6ES7 317-6FF04-0AB0
DP master	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
- Equidistance mode support	Yes
- Isochronous mode	No
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Number of DP slaves that can be simultaneously activated/ deactivated, max.	8
- Direct data exchange (slave-to-slave communication)	Yes; As subscriber
- DPV1	Yes
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124
• Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
DP slave	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes; Connection configured on one side only
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	No
• Transmission rate, max.	12 Mbit/s
• Automatic baud rate search	Yes; only with passive interface
• Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
• Address area, max.	32
• User data per address area, max.	32 byte
2nd interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	No
• DP master	Yes
• DP slave	Yes
• Local Operating Network	No

	6ES7 317-6FF04-0AB0
DP master	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
- Equidistance mode support	Yes
- Isochronous mode	Yes; OB 61
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Number of DP slaves that can be simultaneously activated/ deactivated, max.	8
- Direct data exchange (slave-to-slave communication)	Yes; As subscriber
- DPV1	Yes
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124
• Address area	
- Inputs, max.	8 192 byte
- Outputs, max.	8 192 byte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte
DP slave	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes; Only server, configured on one side
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	No
• GSD file	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
• Transmission rate, max.	12 Mbit/s
• Automatic baud rate search	Yes; only with passive interface
• Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
• Address area, max.	32
• User data per address area, max.	32 byte
Communication functions	
PG/OP communication	Yes
Data record routing	Yes

Technical specifications (continued)

	6ES7 317-6FF04-0AB0
Global data communication	
• Supported	Yes
• Number of GD loops, max.	8
• Number of GD packets, max.	8
• Number of GD packets, transmitter, max.	8
• Number of GD packets, receiver, max.	8
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
• Supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
• Supported	Yes
• as server	Yes
• as client	Yes; Via CP and loadable FB
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5-compatible communication	
• Supported	Yes; via CP and loadable FC
Number of connections	
• Overall	32
• Usable for routing	X1 as a MPI, max. 10; X1 as DP Master max. 24; X1 as DP Slave (active) max. 14; X2 as DP Master max. 24; X2 as DP Slave (active) max. 14
S7 message functions	
Number of login stations for message functions, max.	32; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
Simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status/control	
• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
• of which status variables, max.	30
• of which control variables, max.	14

	6ES7 317-6FF04-0AB0
Forcing	
• Forcing	Yes
• Force, variables	Inputs, outputs
• Number of variables, max.	10
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Diagnostic buffer	
• Present	Yes
• Number of entries, max.	500
- Adjustable	No
- of which powerfail-proof	100; Only the last 100 entries are retained
• Number of entries readable in RUN, max.	499
- Adjustable	Yes; From 10 to 499
- Preset	10
Ambient conditions	
Operating temperature	
• Min.	0 °C
• max.	60 °C
Configuration	
Configuration software	
• STEP 7 Lite	No
Programming	
• Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
- HiGraph	Yes
• Command set	See instruction list
• Nesting levels	8
Know-how protection	
• User program protection/ password protection	Yes
• Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weight	
Weight, approx.	360 g

Fail-safe CPUs

Ordering data	Order No.
CPU 317F-2 DP Work memory 1.5 MB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	**6ES7 317-6FF04-0AB0**
Distributed Safety V5.4 programming tool Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Distributed Safety Upgrade From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG20-0AA0**
512 KB	**6ES7 953-8LJ30-0AA0**
2 MB	**6ES7 953-8LL20-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7 901-0BF00-0AA0**
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**

	Order No.
Power supply connector 10 units, spare part	**6ES7 391-1AA00-0AA0**
Manual "Communication for SIMATIC S7-300/-400"	
German	**6ES7 398-8EA00-8AA0**
English	**6ES7 398-8EA00-8BA0**
PC adapter USB for connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)	**6ES7 972-0CB20-0XA0**
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7 972-0BA12-0XA0**
- with PG interface	**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6ES7 972-0AA02-0XA0**
PROFIBUS bus components for establishing MPI/PROFIBUS communication	See IK PI, CA 01 catalogs

Overview

- Digital outputs for the fail-safe SIMATIC S7 systems
- For connection of solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
  - Centrally: With S7-31xF-2 DP
  - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS SM 326 F digital output module			
Order No.	**6AG1 326-2BF10-2AB0**	**6AG1 326-2BF41-2AB0**	**6AG1 326-2BF41-2AY0**
Order No. based on	**6ES7 326-2BF10-0AB0**	**6ES7 326-2BF41-0AB0**	**6ES7 326-2BF41-0AB0**
Ambient temperature range	-25 ... +60 °C		
Conformal coating	Coating of the printed circuit boards and the electronic components		
Technical data	The technical data of the standard product applies except for the environmental conditions		
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No	Yes
Environmental conditions			
Relative humidity	5 ... 100%, condensation allowed		

The technical documentation on SIPLUS can be found here:
http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS SM 326 F digital output module	
(extended temperature range and medial exposure)	
10 outputs, 24 V DC (according to EN 50155)	**6AG1 326-2BF10-2AB0**
8 outputs, 24 V DC, 2 A	**6AG1 326-2BF41-2AB0**
8 outputs, 24 V DC, 2 A (according to EN 50155)	**6AG1 326-2BF41-2AY0**

	Order No.
Accessories	See SIMATIC SM 326 F digital output module

CP 342-5

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	

- PROFIBUS DP master or slave with electrical interface for connecting the SIMATIC S7-300 to PROFIBUS at up to 12 Mbit/s (including 45.45 Kbit/s)
- Communication services:
  - PROFIBUS DP
  - PG/OP communication (OP multiplexing)
  - S7 communication (client, server)
  - Open communication (SEND/RECEIVE)
- Easy configuration and programming over PROFIBUS
- Cross-network programming device communication through S7 routing
- Modules can be replaced without the need for a PG

Technical specifications

Order No.	6GK7 342-5DA03-0XE0
Product type designation	CP 342-5
Transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 Kbit/s … 12 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with PROFIBUS	1
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with PROFIBUS	9-pin D-sub socket (RS485)
• for power supply	4-pin terminal strip
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	5 V
• External	24 V
Relative positive tolerance at 24 V DC	20 %
Relative negative tolerance at 24 V DC	15 %
Current consumed	
• from backplane bus at 5 V DC, typical	0.15 A
• from external power supply with 24 V DC	
- Typical	0.25 A
- Maximum	-
Effective power loss	6,75 W
Permitted ambient conditions	
Ambient temperature	
• During operation	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
• Note	-
Relative humidity at 25 °C without condensation during operation, maximum	95 %
IP degree of protection	IP20
Design, dimensions and weights	
Module format	S7-300 compact module, single-width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Product properties, functions, components General	
Number of modules	
• Per CPU, maximum	4
• Note	-
Performance data	
Performance data Open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks, maximum	16
Data volume as user data per connection for open communication by means of SEND/RECEIVE blocks, maximum	240 byte
Performance data PROFIBUS DP	
Service as DP master DPV0	Yes
Number of DP slaves operable on DP master	124
Data volume	
• of address area of inputs as DP master, total	2 160 byte
• of address area of outputs as DP master, total	2 160 byte
• of address area of inputs per DP slave	244 byte
• of address area of outputs per DP slave	244 byte
• of address area of diagnostics data per DP slave	240 byte
Service as DP slave	
• DPV0	Yes
• DPV1	-

Technical specifications (continued)

Order No.	6GK7 342-5DA03-0XE0
Product type designation	CP 342-5
Data volume	
• of address area of inputs as DP slave, total	240 byte
• of address area of outputs as DP slave, total	240 byte
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	16
• For PG connections, maximum	-
• For PG/OP connections, maximum	-
• Note	-

Order No.	6GK7 342-5DA03-0XE0
Product type designation	CP 342-5
Performance data Multiprotocol operation	
Number of active connections in multiprotocol mode	
• Maximum without DP	32
• Maximum with DP	28
Product functions Management, configuration, programming	
Configuration software required	STEP 7 V5.1 SP2 or higher

Ordering data

	Order No.
CP 342-5 communications processor	**6GK7 342-5DA03-0XE0**
Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbit/s, with electronic manual on CD-ROM	
STEP 7 Version 5.5	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Prof., Windows 7 Professional/Ultimate Type of delivery: German, English, French, Spanish, Italian; including license key on USB stick, with electronic documentation	
• Floating license on DVD	**6ES7 810-4CC10-0YA5**
• Rental license for 50 hours	**6ES7 810-4CC10-0YA6**
• Software Update Service on DVD (requires current software version)	**6ES7 810-4BC01-0YX2**
• Floating license upgrade 3.x/4.x/5.x to V5.4; on DVD	**6ES7 810-4CC10-0YE5**
• Trial license STEP 7 V5.4; on DVD, operational for 14 days	**6ES7 810-4CC10-0YA7**
STEP 7 Professional Engineering Software V11	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Professional SP3 (32 bit), Windows 7 Professional (32 bit), Windows 7 Enterprise (32 bit), Windows 7 Ultimate (32 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32 bit) Type of delivery: German, English, Chinese, Italian; French, Spanish	
• STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
• STEP 7 Prof. V11, trial license	**6ES7 822-1AA01-0YA7**

	Order No.
STEP 7 Professional Engineering Software V11 (continued)	
• Upgrade STEP 7 Prof. 2006/2010 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0XE5**
• PowerPack & Upgrade STEP 7 V5.4/V5.5 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0XC5**
• Powerpack STEP 7 Basic V11 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0YC5**
• STEP 7 Professional V11, Software Update Service, 1 year; current software version required	**6ES7 822-1AA00-0YL5**
• STEP 7 Professional V11, Software Update Service Compact, 1 year; current software version required	**6ES7 822-1AA00-0YM5**
• STEP 7 Professional Software Update Service; 1 year; for STEP 7 Professional and STEP 7 Professional in the TIA Portal, requires current software version	**6ES7 810-5CC04-0YE2**
• STEP 7 Professional Software Update Service Compact; 1 year; for STEP 7 Professional and STEP 7 Professional in the TIA Portal, requires current software version	**6ES7 810-5CC00-0YM2**
PROFIBUS FastConnect bus connector RS485	
With 90° cable outlet; insulation displacement technology, max. transfer rate 12 Mbit/s (1 unit)	
• without PG interface	**6ES7 972-0BA52-0XA0**
• with PG interface	**6ES7 972-0BB52-0XA0**
PROFIBUS bus connector IP20	
With connection to PPI, MPI, PROFIBUS	
• without PG interface	**6ES7 972-0BA12-0XA0**
• with PG interface	**6ES7 972-0BB12-0XA0**
PROFIBUS bus terminal 12M	**6GK1 500-0AA10**
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	
SIMATIC S7-300 DM 370	**6ES7 370-0AA01-0AA0**
Dummy module; used for module replacement	

UMTS router SCALANCE M87x

Overview

- UMTS, EGPRS (Edge GPRS) and GPRS router for wireless IP communication of Industrial Ethernet-based PLCs over UMTS/GSM mobile wireless networks
- High data transfer rate thanks to UMTS
- Integrated security functions with firewall
- *SCALANCE M875:*
  Use both as VPN server and as client (IPsec)

Technical specifications

Order No.	6GK5 873-0AA10-1AA2	6GK5 875-0AA10-1AA2
Product type designation	**SCALANCE M873**	**SCALANCE M875**
Transfer rate		
Transfer rate		
• 1 with Industrial Ethernet	10 Mbit/s	10 Mbit/s
• 2 with Industrial Ethernet	100 Mbit/s	100 Mbit/s
• For GSM transmission	9 600 bit/s	9 600 bit/s
• For GPRS transmission		
- For downlink maximum	85.6 Kbit/s	85.6 Kbit/s
- For uplink maximum	85.6 Kbit/s	42.8 Kbit/s
• For eGPRS transmission		
- For downlink maximum	236.8 Kbit/s	236.8 Kbit/s
- For uplink maximum	236.8 Kbit/s	118 Kbit/s
• For UMTS transmission		
- For downlink maximum	3.6 Mbit/s	14.4 Mbit/s
- For uplink maximum	0.384 Mbit/s	5.76 Mbit/s
Interfaces		
Number of electrical connections		
• for network components or terminal equipment	1	2
• for external antenna(s)	1	2
• for power supply	1	1
Design of electrical connection		
• for network components or terminal equipment	RJ45 port (10/100 Mbit/s, TP, Auto-Crossover)	RJ45 port (10/100 Mbit/s, TP, Auto-Crossover)
• for external antenna(s)	SMA antenna socket (50 Ohm)	SMA antenna socket (50 Ohm)
• for power supply	Terminal block	Terminal block
Inputs/outputs		
Number of electrical connections		
• for digital input signals	1	1
• for digital output signals	1	1
Design of electrical connection		
• for digital input signals	Terminal block	Terminal block
• for digital output signals	Terminal block	Terminal block
WAN connection		
Type of mobile wireless network supported, GSM	Yes	Yes
Type of mobile wireless service supported		
• GPRS	Yes	Yes
• eGPRS	Yes	Yes
Type of mobile wireless network supported, UMTS	Yes	Yes
Type of mobile wireless service supported		
• HSDPA	Yes	Yes
• HSUPA	No	Yes
Operating frequency		
• 1 with GPRS transmission	850 MHz	850 MHz
• 2 with GPRS transmission	900 MHz	900 MHz
• 3 with GPRS transmission	1 800 MHz	1 800 MHz
• 4 with GPRS transmission	1 900 MHz	1 900 MHz
• 1 with UMTS transmission	850 MHz	850 MHz
• 2 with UMTS transmission	1 700 MHz	1 900 MHz
• 3 with UMTS transmission	1 900 MHz	2 100 MHz
Operating frequency 4 with UMTS transmission	2 100 MHz	-
Type of GPRS time slot method: Multislot Class 10	-	-
Supply voltage, current consumption, power loss		
Type of supply voltage	DC	DC
Power supply	24 V	24 V
• Minimum	12 V	12 V
• Maximum	30 V	30 V
Current consumption, maximum	450 mA	450 mA
Effective power loss, typical	4 W	4 W
Permitted ambient conditions		
Ambient temperature		
• During operation	-20 … +60 °C	-40 … +75 °C
• During storage	-40 … +70 °C	-40 … +85 °C
Relative humidity at 25 °C during operation, maximum	95 %	95 %
IP degree of protection	IP20	IP20
Design, dimensions and weights		
Construction type	Compact	Compact
Depth	114 mm	114 mm
Height	99 mm	99 mm
Width	45 mm	45 mm
Net weight	280 g	280 g
Type of mounting: 35 mm DIN rail mounting	Yes	Yes

Overview (continued)

Order No.	6GK5 873-0AA10-1AA2	6GK5 875-0AA10-1AA2
Product type designation	**SCALANCE M873**	**SCALANCE M875**
Product properties, functions, components General		
Product function DynDNS client	Yes	Yes
Product functions Management, configuration, programming		
Product function		
• CLI	No	No
• Web-based management	Yes	Yes
• MIB support	No	No
• TRAPs via e-mail	No	No
Protocol is supported		
• Telnet	No	No
• HTTP	No	No
• HTTPS	Yes	Yes
Type of configuring	Web Interface	Web Interface
Product functions Diagnostics		
Product function		
• Packet size statistics	No	No
• Packet type statistics	No	No
• Error statistics	No	No
• SysLog	Yes	Yes
• Packet Filter Log	Yes	Yes
Product functions DHCP		
Product function		
• DHCP client	Yes	Yes
• DHCP server - internal network	Yes	Yes
Product functions Routing		
Router function		
• NAT (IP masquerading)	Yes	Yes
• Port forwarding	Yes	Yes
• NAT traversal	Yes	Yes
• 1:1 NAT	Yes	Yes
• DNS cache	Yes	Yes
Product functions Security		
Configuration of firewall	Stateful inspection	Stateful inspection
Product function		
• Password protection	Yes	Yes
• Packet Filter	Yes	Yes
• Broadcast/Multicast/ Unicast Limiter	-	-
• Broadcast blocking	-	-
Suitability for use of virtual private network	No	Yes
Product function with VPN connection	F	T
Number of possible connections with VPN connection	-	10
Maximum number of network stations for internal network with VPN connection	-	-
Type of authentication with Virtual Private Network PSK	No	Yes
Protocol supported: IPsec Tunnel and Transport Mode	No	Yes
Key length		
• with IPsec DES with Virtual Private Network	-	56 bit
• 1 with IPsec AES with Virtual Private Network	-	128 bit
• 2 with IPsec AES with Virtual Private Network	-	192 bit
• 3 with IPsec AES with Virtual Private Network	-	256 bit
Type of Internet Key Exchange with Virtual Private Network Main Mode	No	Yes
Key length with IPsec 3DES with Virtual Private Network	-	168 bit
Type of Internet Key Exchange with Virtual Private Network Quick Mode	No	Yes
Type of packet authentication with Virtual Private Network	-	MD5, SHA-1
IETF profile with Virtual Private Network X.509v3 certificate	No	Yes
Product functions Time		
Router function NTP	Yes	Yes
Standards, specifications, approvals		
Standard		
• For EMC	-	-
• For EMC of FM	-	
• For hazardous zone	-	
• For CSA and UL safety	-	
• For hazardous zone of CSA and UL	-	
• For emitted interference	EN55022 Class A	EN55022 Class A
• For noise immunity	EN 61000-6-2	EN 61000-6-2
Certificate of suitability	EN 61000-6-2	EN 61000-6-2
• CE mark	Yes	Yes
• C-Tick	-	-
• E1 approval	Yes	Yes
• e1 approval	-	-
• Railway application according to EN 50155	Yes	No

UMTS router SCALANCE M87x

Ordering data	Order No.
UMTS router SCALANCE M 87x	
UMTS router for wireless IP communication by industrial Ethernet-based programmable controllers via UMTS/GSM mobile radio networks; EGPRS Multislot Class 12	
• **SCALANCE M873**[1] with integral firewall; 1 x RJ45 port, 1 x antenna connection	**6GK5 873-0AA10-1AA2**
• **SCALANCE M875**[1)2)] with integral firewall and VPN with IPsec; 2 x RJ45 ports, 2 x antenna connections	**6GK5 875-0AA10-1AA2**
Accessories	
IE FC RJ45 Plug 180	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB10-2AE0**
ANT794-4MR antenna	**6NH9 860-1AA00**
Quad band antenna for MD720-3 and MD741-1, omnidirectional with 5 m cable	
SCALANCE S industrial security modules	
For protection of programmable controllers and automation networks, and for safeguarding of industrial communication; configuring tool and electronic manual on CD-ROM; German, English, French, Italian; Spanish	
• **SCALANCE S612** Uses the Stateful Inspection Firewall to protect network segments against unauthorized access; protects up to 32 devices up to 64 VPN tunnels simultaneously	**6GK5 612-0BA10-2AA3**
• **SCALANCE S623**[2)] Uses the stateful inspection firewall to protect network segments against unauthorized access; protects up to 64 devices, up to 128 VPN tunnels simultaneously; enhanced temperature range (-20 to +70 °C)	**6GK5 623-0BA10-2AA3**

	Order No.
CP 343-1 Advanced	
For connecting the SIMATIC S7-300 CPU to Industrial Ethernet; 1 x 10/100/1000 Mbit/s; 2 x 10/100 Mbit/s (IE switch); RJ45 ports; TCP; UDP; ISO; PROFINET IO-Controller and Device, S7 communication (client + server); open communication (SEND/RECEIVE); S7 routing; IP configuration via DHCP/block; extended Web diagnostics; time synchronization; IP Access Control List; IP routing; FTP; e-mail; PROFINET CBA; C-Plug	
• without security function	**6GK7 343-1GX30-0XE0**
• with Security (Firewall + VPN) and PROFIenergy (Controller + Device)[2)]	**6GK7 343-1GX31-0XE0**
CP 443-1 Advanced	
For connecting the SIMATIC S7-400 CPU to Industrial Ethernet: 1 x 10/100/1000 Mbit/s; 4 x 10/100 Mbit/s (IE SWITCH); RJ45 ports; ISO; TCP; UDP; PROFINET IO controller, S7 communication; open communication (SEND/RECEIVE); S7 routing; IP configuration via DHCP/block; IP Access Control List; time synchronization; expanded web diagnostics; Fast Startup; PROFIenergy support; IP routing; FTP; web server; e-mail; PROFINET CBA	
• without security function	**6GK7 443-1GX20-0XE0**
• with security (firewall/VPN)[2)]	**6GK7 443-1GX30-0XE0**
IE TP Cord RJ45/RJ45	
TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
• 1 m	**6XV1 870-3QH10**
• 2 m	**6XV1 870-3QH20**
• 6 m	**6XV1 870-3QH60**
• 10 m	**6XV1 870-3QN10**

[1)] Please note national approvals under http://www.siemens.com/wireless-approvals

[2)] Available soon

Overview

The fully modular connection is the standard connection for the SIMATIC S7-300/400. The fully modular connection allows the peripherals to be conveniently and quickly connected to the SIMATIC S7-300/400 without errors.

Technical specifications

Technical data of front connector module	
Rated operating voltage	24 V DC
Max. permissible operating voltage	60 V DC
Max. permissible continuous current • per connector pin	1 A
Max. permissible summation current	4 A/byte
Permissible ambient temperature	0 to + 60°C
Test voltage	0.5 kV, 50 Hz, 60 sec.
Air gaps and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2

Connection rules for front connector modules

	Front connector module SIMATIC TOP connect, connection for potential infeed	
	Spring connection	Screw connection
	Modules up to 4 connections	
Connectable cable cross-sections		
• Solid cables	No	
• Flexible cables with/without wire end ferrule	0.25 to 1.5 mm^2	
Number of wires per connection	1 or a combination of 2 conductors up to 1.5 mm^2 (total) in a common wire end ferrule	
Max. diameter of the cable insulation	3.1 mm	
Stripping length of the cables		
• without insulating collar	6 mm	
• with insulating collar	-	
Wire-end ferrules in acc. with DIN 46228		
• without insulating collar	Form A; 5 to 7 mm long	
• with insulating collar 0.25 to 1.0 mm^2	-	
• with insulating collar 1.5 mm^2	-	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

	Front connector module SIMATIC TOP connect, connection for potential infeed	
	Spring connection	Screw connection
	Modules up to 8 connections	
Connectable cable cross-sections		
• Solid cables	No	
• Flexible cables with/without wire end ferrule	0.25 to 0.75 mm^2	
Number of cables per connection	1 or a combination of 2 wires up to 0.75 mm^2 (total) in a common wire end ferrule	
Max. diameter of the cable insulation	2.0 mm	
Stripping length of the cables		
• without insulating collar	6 mm	
• with insulating collar	-	
Wire-end ferrules in acc. with DIN 46228		
• without insulating collar	Form A; 5 to 7 mm long	
• with insulating collar 0.25 to 1.0 mm^2	-	
• with insulating collar 1.5 mm^2	-	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Ordering data	Order No.
Front connector module (Compact CPU 312C)	
Power supply via	
• Screw terminals	**6ES7921-3AK20-0AA0**
Front connector module (Compact CPU 313C/ 314C-2PtP/314C-2DP), slot X1	
Power supply via	
• Screw terminals	**6ES7921-3AM20-0AA0**
Front connector module (digital 2 x 8 I/O)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AA00-0AA0**
• Screw terminals	**6ES7921-3AB00-0AA0**
Front connector module (digital 4 x 8 I/O)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AA20-0AA0**
• Screw terminals	**6ES7921-3AB20-0AA0**
Front connector module (1 x 8 outputs) for 2 ampere digital outputs	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AC00-0AA0**
• Screw terminals	**6ES7921-3AD00-0AA0**
Front connector module 20-pin (analog)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AF00-0AA0**
• Screw terminals	**6ES7921-3AG00-0AA0**
Front connector module 40-pin (analog)	
Power supply via	
• Spring-loaded terminals	**6ES7921-3AF20-0AA0**
• Screw terminals	**6ES7921-3AG20-0AA0**

SIMATIC S7-400

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Overview

- The low-cost introduction to the mid performance range
- Can be used in small and medium-sized plants with requirements in the mid performance range

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS CPU 412
Order No.	**6AG1 412-2EK06-2AB0**
Order No. based on	**6ES7 412-2EK06-0AB0**
Range of ambient temperature	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the environmental conditions
Environmental conditions	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including sand, dust [2)]
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

[1)] ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 14.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NO_x < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS CPU 412-2 PN	**6AG1 412-2EK06-2AB0**
(extended temperature range and medial exposure)	
Work memory 1 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, slot for memory card, incl. slot number labels	
Memory Card RAM	
2 MB	**6AG1 952-1AL00-4AA0**
4 MB	**6AG1 952-1AM00-7AA0**
8 MB	**6AG1 952-1AP00-7AA0**
16 MB	**6AG1 952-1AS00-7AA0**
64 MB	**6AG1 952-1AY00-7AA0**
Bus connector RS 485 with 90° cable outlet	
max. transfer rate 12 Mbit/s	
without PG interface	**6AG1 972-0BA12-2XA0**
with PG interface	**6AG1 972-0BB12-2XA0**
Memory Card RAM	
max. transfer rate 12 Mbit/s	
without PG interface	**6AG1 972-0BA42-7XA0**
with PG interface	**6AG1 972-0BB42-7XA0**
RS 485 bus connector with axial cable outlet	
for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1 500-0EA02-2AA0**
Further accessories	See SIMATIC CPU 412

Overview

- CPUs for high demands in the mid-level performance range
- Applicable for plants with additional demands on programming scope and processing speed
- Integrated PROFINET functions in CPU 414-3 PN/DP

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS CPU 414
Order No.	**6AG1 414-3EM06-7AB0**
Order No. based on	**6ES7 414-3EM06-0AB0**
Range of ambient temperature	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the environmental conditions
Environmental conditions	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including sand, dust [2)]
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

[1)] ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 14.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NO_x < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Ordering data

Ordering data	Order No.
SIPLUS 414-3 PN/DP (extended temperature range and medial exposure) Work memory 4 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, slot for memory card, module slot for 1 IF module, incl. slot number labels	**6AG1 414-3EM06-7AB0**
Memory Card RAM	
2 MB	**6AG1 952-1AL00-4AA0**
4 MB	**6AG1 952-1AM00-7AA0**
8 MB	**6AG1 952-1AP00-7AA0**
16 MB	**6AG1 952-1AS00-7AA0**
64 MB	**6AG1 952-1AY00-7AA0**
IF 964-DP interface module for connecting an additional DP line; for SIPLUS CPU 414-3 PN/DP, CPU 416-3, CPU 416-3 PN/DP, CPU 417-4	**6AG1964-2AA04-7AB0**
Bus connector RS 485 with 90° cable outlet max. transfer rate 12 Mbit/s	
without PG interface	**6AG1 972-0BA12-2XA0**
with PG interface	**6AG1 972-0BB12-2XA0**
Memory Card RAM max. transfer rate 12 Mbit/s	
without PG interface	**6AG1 972-0BA42-7XA0**
with PG interface	**6AG1 972-0BB42-7XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1 500-0EA02-2AA0**
RS 485 repeater for PROFIBUS Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6AG1 972-0AA02-7XA0**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6AG1 204-2BB10-4AA3**
IE FC RJ45 Plug 180 180° cable outlet; 1 unit	**6AG1 901-1BB10-7AA0**
Further accessories	See SIMATIC CPU 414

Overview

High-performance CPUs in the high-end performance range

- Applicable for plants with high requirements in the high-end performance range
- Integrated PROFINET functions in CPU 416-3 PN/DP

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS CPU 416-3	
Order number	**6AG1 416-3XR05-4AB0**	**6AG1 416-3ES06-7AB0**
Order No. based on	**6ES7 416-3XR05-0AB0**	**6ES7 416-3ES06-0AB0**
Range of ambient temperature	0 ... +60 °C	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the environmental conditions	
Environmental conditions		
Relative humidity	5 ... 100 % Condensation permissible	
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)	
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX [1)2)]	
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including sand, dust [2)]	
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

1) ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 14.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NOX < 10.4 ppm

2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Selection and ordering data

Selection and ordering data	Order No.
SIPLUS CPU 416-3 (medial exposure) Power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFIBUS DP master interface, module slot for 1 IF module, slot for memory card, including mounting position labels 11.2 MB work memory	**6AG1 416-3XR05-4AB0**
SIPLUS CPU 416-3 PN/DP (medial exposure) Power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, module slot for 1 IF module, slot for memory card, including mounting position labels 11.2 MB work memory	**6AG1 416-3ES06-7AB0**
Memory Card RAM	
2 MB	**6AG1 952-1AL00-4AA0**
4 MB	**6AG1 952-1AM00-7AA0**
8 MB	**6AG1 952-1AP00-7AA0**
16 MB	**6AG1 952-1AS00-7AA0**
64 MB	**6AG1 952-1AY00-7AA0**
IF 964-DP interface module for connecting an additional DP line; for SIPLUS CPU 414-3 PN/DP, CPU 416-3, CPU 416-3 PN/DP, CPU 417-4	**6AG1964-2AA04-7AB0**
Bus connector RS 485 with 90° cable outlet max. transfer rate 12 Mbit/s	
without PG interface	**6AG1 972-0BA12-2XA0**
with PG interface	**6AG1 972-0BB12-2XA0**
Memory Card RAM max. transfer rate 12 Mbit/s	
without PG interface	**6AG1 972-0BA42-7XA0**
with PG interface	**6AG1 972-0BB42-7XA0**
RS 485 bus connector with axial cable outlet for SIPLUS OP, for connection to PPI, MPI, PROFIBUS	**6AG1 500-0EA02-2AA0**
RS 485 repeater for PROFIBUS Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	**6AG1 972-0AA02-7XA0**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6AG1 204-2BB10-4AA3**
IE FC RJ45 Plug 180 180° cable outlet; 1 unit	**6AG1 901-1BB10-7AA0**
Further accessories	See SIMATIC CPU 416

Overview CPU 412H

- CPU for SIMATIC S7-400H and S7-400F/FH
- Can be used in S7-400H fault-tolerant systems
- Can be used with F runtime license as F-enabled CPU in S7-400F/FH safety-related systems
- With integrated PROFIBUS DP master and combined MPI/PROFIBUS DP master interface
- With integrated PROFINET interface (2-port switch)
- Features 2 slots for sync modules

Overview CPU 414H

- CPU for SIMATIC S7-400H and S7-400F/FH
- Can be used in S7-400H fault-tolerant systems
- Usable with F runtime license as F-capable CPU in S7-400F/FH safety-related systems
- With integrated PROFIBUS DP master and combined MPI/PROFIBUS DP master interface
- With integrated PROFINET interface (2-port switch)
- Features 2 slots for sync modules

Overview CPU 416H

- CPU for SIMATIC S7-400H and S7-400F/FH
- Can be used in S7-400H fault-tolerant systems
- Can be used with F runtime license as F-enabled CPU in S7-400F/FH safety-related systems
- With integrated PROFIBUS DP master and combined MPI/PROFIBUS DP master interface
- With integrated PROFINET interface (2-port switch)
- Features 2 slots for sync modules

Fault-tolerant CPUs
CPU 412H, CPU 414H, CPU 416H, CPU 417H

Overview CPU 417H

- CPU for SIMATIC S7-400H and S7-400F/FH
- Can be used in S7-400H fault-tolerant systems
- Usable with F runtime license as F-capable CPU in S7-400F/FH safety-related systems
- With integrated PROFIBUS DP master interface and combined MPI/PROFIBUS DP master interface
- With integrated PROFINET interface (2-port switch)
- Features 2 slots for sync modules

Technical specifications

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
General information				
Hardware product version	1	1	1	1
Firmware version	V6.0	V6.0	V6.0	V6.0
Engineering package for programming	STEP 7 V5.5 SP2 with HF1 or higher	STEP 7 V5.5 SP2 with HF1 or higher	STEP 7 V5.5 SP2 with HF1 or higher	STEP 7 V5.5 SP2 with HF1 or higher
CiR - Configuration in RUN				
CiR synchronization time, basic load	100 ms	100 ms	100 ms	60 ms
CiR synchronization time, time per I/O slave	0 µs	0 µs	0 µs	0 µs
Supply voltage				
24 V DC	No; power supply via system power supply	No; power supply via system power supply	No; power supply via system power supply	No; power supply via system power supply
Input current				
from backplane bus 5 V DC, max.	1.9 A	1.9 A	1.9 A	1.9 A
from interface 5 V DC, max.	90 mA; at each DP interface	90 mA; at each DP interface	90 mA; at each DP interface	90 mA; at each DP interface
Power losses				
Power loss, typ.	7.5 W	7.5 W	7.5 W	7.5 W
Memory				
Work memory				
• integrated	1 Mbyte	4 Mbyte	16 Mbyte	32 Mbyte
• integrated (for program)	512 kbyte	2 Mbyte	6 Mbyte	16 Mbyte
• integrated (for data)	512 kbyte	2 Mbyte	10 Mbyte	16 Mbyte
• expandable	No	No	No	No
Load memory				
• expandable FEPROM	Yes; with Memory Card (FLASH)	Yes; with Memory Card (FLASH)	Yes; with Memory Card (FLASH)	Yes; with Memory Card (FLASH)
• expandable FEPROM, max.	64 Mbyte	64 Mbyte	64 Mbyte	64 Mbyte
• integrated RAM, max.	512 kbyte	512 kbyte	1 Mbyte	1 Mbyte
• expandable RAM	Yes	Yes	Yes	Yes
• expandable RAM, max.	64 Mbyte	64 Mbyte	64 Mbyte	64 Mbyte
Backup				
• present	Yes	Yes	Yes	Yes
• with battery	Yes; all data	Yes; all data	Yes; all data	Yes; all data
• without battery	No	No	No	No

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
CPU processing times				
for bit operations, min.	31.25 ns	18.75 ns	12.5 ns	7.5 ns
for word operations, min.	31.25 ns	18.75 ns	12.5 ns	7.5 ns
for fixed point arithmetic, min.	31.25 ns	18.75 ns	12.5 ns	7.5 ns
for floating point arithmetic, min.	62.5 ns	37.5 ns	25 ns	15 ns
CPU-blocks				
DB				
• Number, max.	6 000 Number range: 1 to 16 000	6 000 Number range: 1 to 16 000	16 000 Number range: 1 to 16 000	16 000 Number range: 1 to 16 000
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
FB				
• Number, max.	3 000; Number range: 0 to 7999	3 000; Number range: 0 to 7999	8 000; Number range: 0 to 7999	8 000; Number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
FC				
• Number, max.	3 000; Number range: 0 to 7999	3 000; Number range: 0 to 7999	8 000; Number range: 0 to 7999	8 000; Number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
OB				
• Size, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
Nesting depth				
• per priority class	24	24	24	24
• additional within an error OB	1	1	2	2
Counters, timers and their retentivity				
S7 counter				
• Number	2 048	2 048	2 048	2 048
• Retentivity				
- adjustable	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0
- upper limit	2 047	2 047	2 047	2 047
- preset	Z 0 to Z 7	Z 0 to Z 7	Z 0 to Z 7	Z 0 to Z 7
• Counting range				
- lower limit	0	0	0	0
- upper limit	999	999	999	999
IEC counter				
• Present	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
S7 times				
• Number	2 048	2 048	2 048	2 048
• Retentivity				
- adjustable	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0
- upper limit	2 047	2 047	2 047	2 047
- preset	No times retentive	No times retentive	No times retentive	No times retentive
• Time range				
- lower limit	10 ms	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s	9 990 s
IEC timer				
• Present	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
Data areas and their retentivity				
Retentive data area, total	Total working and load memory (with backup battery)	Total working and load memory (with backup battery)	Total working and load memory (with backup battery)	Total working and load memory (with backup battery)
Flag				
• Number, max.	8 192 byte	8 192 byte	16 384 byte	16 384 byte
• Retentivity available	Yes	Yes	Yes	Yes
• Retentivity preset	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories	8; (in 1 memory byte)	8; (in 1 memory byte)	8; (in 1 memory byte)	8; (in 1 memory byte)
Local data				
• adjustable, max.	16 kbyte	16 kbyte	64 kbyte	64 kbyte
• preset	8 kbyte	8 kbyte	32 kbyte	32 kbyte
Address area				
I/O address area				
• Inputs	8 kbyte	8 kbyte	16 kbyte	16 kbyte
• Outputs	8 kbyte	8 kbyte	16 kbyte	16 kbyte
• of which, distributed				
- MPI/DP interface, inputs	2 kbyte	2 kbyte	2 kbyte	2 kbyte
- MPI/DP interface, outputs	2 kbyte	2 kbyte	2 kbyte	2 kbyte
- DP interface, inputs	4 kbyte	6 kbyte	8 kbyte	8 kbyte
- DP interface, outputs	4 kbyte	6 kbyte	8 kbyte	8 kbyte
- PN interface, inputs	8 kbyte	8 kbyte	8 kbyte	8 kbyte
- PN interface, outputs	8 kbyte	8 kbyte	8 kbyte	8 kbyte
Process image				
• Inputs, adjustable	8 kbyte	8 kbyte	16 kbyte	16 kbyte
• Outputs, adjustable	8 kbyte	8 kbyte	16 kbyte	16 kbyte
• Inputs, default	256 byte	256 byte	1 024 byte	1 024 byte
• Outputs, default	256 byte	256 byte	1 024 byte	1 024 byte
• Consistent data, max.	244 byte	244 byte	244 byte	244 byte
• Access to consistent data in process image	Yes	Yes	Yes	Yes
Subprocess images				
• Number of subprocess images, max.	15	15	15	15
Digital channels				
• Inputs	65 536	65 536	131 072	131 072
• Outputs	65 536	65 536	131 072	131 072
• Inputs, of which central	65 536	65 536	131 072	131 072
• Outputs, of which central	65 536	65 536	131 072	131 072
Analog channels				
• Inputs	4 096	4 096	8 192	8 192
• Outputs	4 096	4 096	8 192	8 192
• Inputs, of which central	4 096	4 096	8 192	8 192
• Outputs, of which central	4 096	4 096	8 192	8 192
Hardware configuration				
Expansion devices, max.	21	21	21	21
Multicomputing	No	No	No	No
Interface modules				
• Number of connectable IMs (total), max.	6	6	6	6
• Number of connectable IM 460s, max.	6	6	6	6
• Number of connectable IM 463s, max.	4; Single mode only	4; Single mode only	4; Single mode only	4; Single mode only

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
Number of DP masters				
• Integrated	2	2	2	2
• via CP	10; CP 443-5 Extended	10; CP 443-5 Extended	10; CP 443-5 Extended	10; CP 443-5 Extended
• Mixed mode IM + CP permitted	No	No	No	No
• via interface module	0	0	0	0
Number of IO Controllers				
• Integrated	1	1	1	1
• via CP	0	0	0	0
Number of operable FMs and CPs (recommended)				
• FM	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
• CP, point-to-point	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections	See manual Automation System S7-400H fault-tolerant systems. Limited by number of slots and number of connections
• PROFIBUS and Ethernet CPs	14; of which max. 10 CP as DP master	14; of which max. 10 CP as DP master	14; of which max. 10 CP as DP master	14; of which max. 10 CP as DP master
Time of day				
Clock				
• Hardware clock (real-time clock)	Yes	Yes	Yes	Yes
• Battery-backed and synchronizable	Yes	Yes	Yes	Yes
• Resolution	1 ms	1 ms	1 ms	1 ms
• Deviation per day (buffered), max.	1.7 s; Power off	1.7 s; Power off	1.7 s; Power off	1.7 s; Power off
• Deviation per day (unbuffered) max.	8.6 s; Power on	8.6 s; Power on	8.6 s; Power on	8.6 s; Power on
Operating hours counter				
• Number	16	16	16	16
• Number/Number range	0 to 15	0 to 15	0 to 15	0 to 15
• Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
• Granularity	1 hour	1 hour	1 hour	1 hour
• Retentive	Yes	Yes	Yes	Yes
Clock synchronization				
• Supported	Yes	Yes	Yes	Yes
• to MPI, master	Yes	Yes	Yes	Yes
• to MPI, slave	Yes	Yes	Yes	Yes
• to DP, master	Yes	Yes	Yes	Yes
• to DP, slave	Yes	Yes	Yes	Yes
• in AS, master	Yes	Yes	Yes	Yes
• in AS, slave	Yes	Yes	Yes	Yes
• on Ethernet via NTP	Yes; as client	Yes; as client	Yes; as client	Yes; as client
Interfaces				
Number of USB interfaces	0	0	0	0
1st interface				
Type of interface	integrated	integrated	integrated	integrated
Physics	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI
Isolated	Yes	Yes	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA	150 mA	150 mA	150 mA

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
Number of connection resources	MPI: 32, DP: 16	MPI: 32, DP: 16	MPI: 44, DP: 32	MPI: 44, DP: 32
Functionality				
• MPI	Yes	Yes	Yes	Yes
• DP master	Yes	Yes	Yes	Yes
• DP slave	No	No	No	No
MPI				
• Number of connections	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1	44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1	44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
• Services				
- PG/OP communication	Yes	Yes	Yes	Yes
- Routing	Yes	Yes	Yes	Yes
- Global data communication	No	No	No	No
- S7 basic communication	No	No	No	No
- S7 communication	Yes	Yes	Yes	Yes
- S7 communication, as client	Yes	Yes	Yes	Yes
- S7 communication, as server	Yes	Yes	Yes	Yes
• Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
DP master				
• Number of connections, max.	16; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1	16; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
• Services				
- PG/OP communication	Yes	Yes	Yes	Yes
- Global data communication	No	No	No	No
- S7 basic communication	No	No	No	No
- S7 communication	Yes	Yes	Yes	Yes
- S7 communication, as client	Yes	Yes	Yes	Yes
- S7 communication, as server	Yes	Yes	Yes	Yes
- Equidistance mode support	No	No	No	No
- Isochronous mode	No	No	No	No
- SYNC/FREEZE	No	No	No	No
- Activation/deactivation of DP slaves	No	No	No	No
- Direct data exchange (slave-to-slave communication)	No	No	No	No
- DPV1	Yes	Yes	Yes	Yes
• Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.	32	32	32	32
• Address area				
- Inputs, max.	2 kbyte	2 kbyte	2 kbyte	2 kbyte
- Outputs, max.	2 kbyte	2 kbyte	2 kbyte	2 kbyte
• User data per DP slave				
- User data per DP slave, max.	244 byte	244 byte	244 byte	244 byte
- Inputs, max.	244 byte	244 byte	244 byte	244 byte
- Outputs, max.	244 byte	244 byte	244 byte	244 byte
- Slots, max.	244	244	244	244
- per slot, max.	128 byte	128 byte	128 byte	128 byte

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
DP slave				
• Number of connections	No configuration of CPU as DP slave	No configuration of CPU as DP slave	No configuration of CPU as DP slave	No configuration of CPU as DP slave
2nd interface				
Type of interface	PROFINET	PROFINET	PROFINET	PROFINET
Physics	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
Isolated	Yes	Yes	Yes	Yes
Integrated switch	Yes	Yes	Yes	Yes
Number of ports	2	2	2	2
Automatic detection of transmission speed	Yes; Autosensing	Yes; Autosensing	Yes; Autosensing	Yes; Autosensing
Autonegotiation	Yes	Yes	Yes	Yes
Autocrossing	Yes	Yes	Yes	Yes
Media redundancy				
• Supported	Yes	Yes	Yes	Yes
• Switchover time on line break, typically	200 ms	200 ms	200 ms	200 ms
• Number of stations in the ring, max.	50	50	50	50
Change of IP address at runtime, supported	No	No	No	No
Number of connection resources	48	64	96	120
Functionality				
• DP master	No	No	No	No
• DP slave	No	No	No	No
• PROFINET IO Controller	Yes	Yes	Yes	Yes
• PROFINET IO Device	No	No	No	No
• PROFINET CBA	No	No	No	No
• Local Operating Network	No	No	No	No
PROFINET IO Controller				
• Services				
- PG/OP communication	Yes	Yes	Yes	Yes
- S7 routing	Yes	Yes	Yes	Yes
- S7 communication	Yes	Yes	Yes	Yes
- Isochronous mode	No	No	No	No
- Open IE communication	Yes	Yes	Yes	Yes
• Transmission rate, max.	100 Mbit/s	100 Mbit/s	100 Mbit/s	100 Mbit/s
• Number of connectable IO devices, max.	256; redundancy function on both interfaces	256; redundancy function on both interfaces	256; redundancy function on both interfaces	256; redundancy function on both interfaces
• Max. number of connectable IO devices for RT	256	256	256	256
- of which in line, max.	256	256	256	256
• Shared device, supported	Yes; single mode only	Yes; single mode only	Yes; single mode only	Yes; single mode only
• Prioritized startup supported	No	No	No	No
• Activation/deactivation of IO Devices	No	No	No	No
• IO Devices changing during operation (partner ports), supported	No	No	No	No
• Device replacement without swap medium	Yes	Yes	Yes	Yes
• Address area				
- Inputs, max.	8 kbyte	8 kbyte	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte	8 kbyte	8 kbyte
• User data per address area, max.				
- User data consistency, max.	1 024 byte	1 024 byte	1 024 byte	1 024 byte

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
Open IE communication				
• Open IE communication, supported	Yes	Yes	Yes	Yes
• Number of connections, max.	46	62	94	118
• Keep-alive function, supported	Yes	Yes	Yes	Yes
3rd interface				
Physics	RS 485 / PROFIBUS	RS 485 / PROFIBUS	RS 485 / PROFIBUS	RS 485 / PROFIBUS
Power supply to interface (15 to 30 V DC), max.	150 mA	150 mA	150 mA	150 mA
Number of connection resources	16	16	32	32
Functionality				
• DP master	Yes	Yes	Yes	Yes
• DP slave	No	No	No	No
DP master				
• Number of connections, max.	16	16	32	32
• Services				
- PG/OP communication	Yes	Yes	Yes	Yes
- Global data communication	No	No	No	No
- S7 basic communication	No	No	No	No
- S7 communication	Yes	Yes	Yes	Yes
- S7 communication, as client	Yes	Yes	Yes	Yes
- S7 communication, as server	Yes	Yes	Yes	Yes
- Equidistance mode support	No	No	No	No
- Isochronous mode	No	No	No	No
- SYNC/FREEZE	No	No	No	No
- Activation/deactivation of DP slaves	No	No	No	No
- Direct data exchange (slave-to-slave communication)	No	No	No	No
- DPV1	Yes	Yes	Yes	Yes
• Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.	64	96	125	125
• Address area				
- Inputs, max.	4 kbyte	6 kbyte	8 kbyte	8 kbyte
- Outputs, max.	4 kbyte	6 kbyte	8 kbyte	8 kbyte

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
DP master (continued)				
• User data per DP slave				
- User data per DP slave, max.	244 byte	244 byte	244 byte	244 byte
- Inputs, max.	244 byte	244 byte	244 byte	244 byte
- Outputs, max.	244 byte	244 byte	244 byte	244 byte
- Slots, max.	244	244	244	244
- per slot, max.	128 byte	128 byte	128 byte	128 byte
4th interface				
Type of interface	Pluggable synchroni-zation submodule (FO)	Pluggable synchroni-zation submodule (FO)	Pluggable synchronization submodule (FO)	Pluggable synchronization submodule (FO)
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	No	No	No	No
Equidistance	No	No	No	No
Communication functions				
PG/OP communication	Yes	Yes	Yes	Yes
• Number of connectable OPs without message processing	47	63	95	119
• Number of connectable OPs with message processing	47; when using Alarm_S/SQ and Alarm_D/DQ	63; when using Alarm_S/SQ and Alarm_D/DQ	95; when using Alarm_S/SQ and Alarm_D/DQ	119; when using Alarm_S/SQ and Alarm_D/DQ
Data record routing	Yes	Yes	Yes	Yes
S7 routing	Yes	Yes	Yes	Yes
Global data communication				
• Supported	No	No	No	No
S7 basic communication				
• Supported	No	No	No	No
S7 communication				
• Supported	Yes	Yes	Yes	Yes
• as server	Yes	Yes	Yes	Yes
• as client	Yes	Yes	Yes	Yes
• User data per job, max.	64 kbyte	64 kbyte	64 kbyte	64 kbyte
• User data per job (of which consistent), max.	462 byte; 1 variable	462 byte; 1 variable	462 byte; 1 variable	462 byte; 1 variable
S5-compatible communication				
• Supported	Yes; (via CP max. 10 and FC AG_SEND and FC AG_RECV)	Yes; (via CP max. 10 and FC AG_SEND and FC AG_RECV)	Yes; (via CP max. 10 and FC AG_SEND and FC AG_RECV)	Yes; (via CP max. 10 and FC AG_SEND and FC AG_RECV)
• User data per job, max.	8 kbyte	8 kbyte	8 kbyte	8 kbyte
• User data per job (of which consistent), max.	240 byte	240 byte	240 byte	240 byte
• Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.	64/64	64/64	64/64	64/64

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
Standard communication (FMS)				
• supported	Yes; via CP and loadable FB	Yes; via CP and loadable FB	Yes; via CP and loadable FB	Yes; via CP and loadable FB
Open IE communication				
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	46	62	94	118
- Data length, max.	32 kbyte	32 kbyte	32 kbyte	32 kbyte
- Several passive connections per port, supported	Yes	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface or CP 443-1 and loadable FBs	Yes; via integrated PROFINET interface or CP 443-1 and loadable FBs	Yes; via integrated PROFINET interface or CP 443-1 and loadable FBs	Yes; via integrated PROFINET interface or CP 443-1 and loadable FBs
- Number of connections, max.	46	62	94	118
- Data length, max.	32 kbyte; 1452 bytes via CP 443-1 Adv.	32 kbyte; 1452 bytes via CP 443-1 Adv.	32 kbyte; 1452 bytes via CP 443-1 Adv.	32 kbyte; 1452 bytes via CP 443-1 Adv.
• UDP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	46	62	94	118
- Data length, max.	1 472 byte	1 472 byte	1 472 byte	1 472 byte
Web server				
• Supported	No	No	No	No
Number of connections				
• Overall	48	64	96	120
S7 message functions				
Number of login stations for message functions, max.	47; max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)	63; max. 63 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)	95; max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)	119; max. 119 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 16 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	No	No	No	No
SCAN procedure	No	No	No	No
Block related messages	Yes	Yes	Yes	Yes
Process diagnostic messages	Yes	Yes	Yes	Yes
Simultaneously active Alarm-S blocks, max.	250; Simultaneously active Alarm_S/SQ blocks or Alarm_D/DQ blocks	400; Simultaneously active Alarm_S/SQ blocks or Alarm_D/DQ blocks	1 000; Simultaneously Active alarm_S/SQ blocks or Alarm_D/DQ blocks	1 000; Simultaneously active Aalarm_S/SQ blocks or Alarm_D/DQ blocks
Alarm 8-blocks	Yes	Yes	Yes	Yes
• Number of instances for alarm 8 and S7 communication blocks, max.	600	2 500	10 000	10 000
• Preset, max.	300	900	1 200	1 200
Process control messages	Yes	Yes	Yes	Yes
Test commissioning functions				
Status/control				
• Status/control variable	Yes; up to 16 variable tables	Yes; up to 16 variable tables	Yes; up to 16 variable tables	Yes; up to 16 variable tables
• Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
• Number of variables, max.	70	70	70	70

Technical specifications (continued)

	6ES7 412-5HK06-0AB0	6ES7 414-5HM06-0AB0	6ES7 416-5HS06-0AB0	6ES7 417-5HT06-0AB0
	CPU 412-5H PN/DP	CPU 414-5H PN/DP	CPU 416-5H PN/DP	CPU 417-5H PN/DP
Forcing				
• Forcing	Yes	Yes	Yes	Yes
• Force, variables	Inputs/outputs, bit memories, distributed I/Os	Inputs/outputs, bit memories, distributed I/Os	Inputs/outputs, bit memories, distributed I/Os	Inputs/outputs, bit memories, distributed I/Os
• Number of variables, max.	256	256	512	512
Status block	Yes	Yes	Yes	Yes
Single step	Yes	Yes	Yes	Yes
Number of breakpoints	16	16	16	16
Diagnostic buffer				
• Present	Yes	Yes	Yes	Yes
• Number of entries, max.	3 200	3 200	3 200	3 200
- adjustable	Yes	Yes	Yes	Yes
- preset	120	120	120	120
Configuration				
Programming				
• Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
- HiGraph	Yes	Yes	Yes	Yes
• Command set	See instruction list	See instruction list	See instruction list	See instruction list
• Nesting levels	7	7	7	7
Know-how protection				
• User program protection/ password protection	Yes	Yes	Yes	Yes
• Block encryption	Yes; with S7 block Privacy	Yes; with S7 block Privacy	Yes; with S7 block Privacy	Yes; with S7 block Privacy
Dimensions				
Width	50 mm	50 mm	50 mm	50 mm
Height	290 mm	290 mm	290 mm	290 mm
Depth	219 mm	219 mm	219 mm	219 mm
Required slots	2	2	2	2
Weight				
Weight, approx.	995 g	995 g	995 g	995 g

Fault-tolerant CPUs
CPU 412H, CPU 414H, CPU 416H, CPU 417H

Ordering data	Order No.
CPU 412-5H for S7-400H and S7-400F/FH; 1 MB RAM, 1 combined MPI/PROFIBUS DP master interface, 1 PROFIBUS DP interface, 2 PROFINET interfaces (switches), 2 slots for sync modules, slot for memory card, incl. slot number labels	**6ES7 412-5HK06-0AB0**
CPU 412-5H system bundle Not assembled, consisting of: UR2-H rack, 2 x PS 405/407 power supply units, 2 x CPU 412-5H, 4 x Sync modules (for max. 10 m), 2 x fiber optic cable for sync modules (1 m), 4 x backup battery; additional two memory cards required (to be ordered separately)	
• 412-5H system bundle, 120/230 V AC, 10 A	**6ES7 400-0HR01-4AB0**
• 412-5H system bundle, 24/48/60 V DC, 10 A	**6ES7 400-0HR51-4AB0**
CPU 414-5H for S7-400H and S7-400F/FH; 4 MB RAM, 1 combined MPI/PROFIBUS DP master interface, 1 PROFIBUS DP interface, 2 PROFINET interfaces (switches), 2 slots for sync modules, slot for memory card, incl. slot number labels	**6ES7 414-5HM06-0AB0**
CPU 414-5H system bundle Not assembled, consisting of: UR2-H rack, 2 x PS 405/407 power supply units, 2 x CPU 414-5H, 4 x Sync modules (for max. 10 m), 2 x fiber optic cable for sync modules (1 m), 4 x backup battery; additional two memory cards required (to be ordered separately)	
• 414-5H system bundle, 120/230 V AC, 10 A	**6ES7 400-0HR02-4AB0**
• 414-5H system bundle, 24/48/60 V DC, 10 A	**6ES7 400-0HR52-4AB0**

	Order No.
CPU 416-5H for S7-400H and S7-400F/FH; 16 MB RAM, 1 combined MPI/PROFIBUS DP master interface, 1 PROFIBUS DP interface, 2 PROFINET interfaces (switches), 2 slots for sync modules, slot for memory card, incl. slot number labels	**6ES7 416-5HS06-0AB0**
CPU 416-5H system bundle Not assembled, consisting of: UR2-H rack, 2 x PS 405/407 power supply units, 2 x CPU 416-5H, 4 x Sync modules (for max. 10 m), 2 x fiber optic cable for sync modules (1 m), 4 x backup battery; additional two memory cards required (to be ordered separately)	
• 416-5H system bundle, 120/230 V AC, 10 A	**6ES7 400-0HR03-4AB0**
• 416-5H system bundle, 24/48/60 V DC, 10 A	**6ES7 400-0HR53-4AB0**
CPU 417-5H for S7-400H and S7-400F/FH; 32 MB RAM, 1 combined MPI/PROFIBUS DP master interface, 1 PROFIBUS DP interface, 2 PROFINET interfaces (switches), 2 slots for sync modules, slot for memory card, incl. slot number labels	**6ES7 417-5HT06-0AB0**
CPU 417-5H system bundle Not assembled, consisting of: UR2-H rack, 2 x PS 405/407 power supply units, 2 x CPU 417-5H, 4 x Sync modules (for max. 10 m), 2 x fiber optic cable for sync modules (1 m), 4 x backup battery; additional two memory cards required (to be ordered separately)	
• 417-5H system bundle, 120/230 V AC, 10 A	**6ES7 400-0HR04-4AB0**
• 417-5H system bundle, 24/48/60 V DC, 10 A	**6ES7 400-0HR54-4AB0**

Ordering data	Order No.
Memory card RAM	
1 MB	**6ES7 952-1AK00-0AA0**
2 MB	**6ES7 952-1AL00-0AA0**
4 MB	**6ES7 952-1AM00-0AA0**
8 MB	**6ES7 952-1AP00-0AA0**
16 MB	**6ES7 952-1AS00-0AA0**
64 MB	**6ES7 952-1AY00-0AA0**
FEPROM memory card	
1 MB	**6ES7 952-1KK00-0AA0**
2 MB	**6ES7 952-1KL00-0AA0**
4 MB	**6ES7 952-1KM00-0AA0**
8 MB	**6ES7 952-1KP00-0AA0**
16 MB	**6ES7 952-1KS00-0AA0**
32 MB	**6ES7 952-1KT00-0AA0**
64 MB	**6ES7 952-1KY00-0AA0**
MPI cable	**6ES7 901-0BF00-0AA0**
for connection of SIMATIC S7 and PG via MPI; 5 m in length	
Slot number plates	**6ES7 912-0AA00-0AA0**
1 set (spare part)	
S7 F systems RT license	**6ES7 833-1CC00-6YX0**
for processing safety-related user programs, for one S7 400H-based system each with CPU 412-5H, CPU 414-5H, CPU 416-5H or CPU 417-5H	
S7 F systems V6.1	**6ES7 833-1CC02-0YA5**
Programming and configuring environment for creating and operating safety-related STEP 7 programs for an S7 400H-based target system, floating license for 1 user, runs under Windows XP Prof SP2, Windows XP Prof SP2/SP3, Windows Server 2003 SP2 2 languages (English, German) Type of delivery: Certificate of License as well as software and electronic documentation on CD	
S7 F systems upgrade from V5.x/V6.0 to V6.1	**6ES7 833-1CC02-0YE5**
2 languages (English, German), floating license for 1 user Type of delivery: Certificate of License as well as software and electronic documentation on CD	
Manual "Communication for SIMATIC S7-300/-400"	
German	**6ES7 398-8EA00-8AA0**
English	**6ES7 398-8EA00-8BA0**

	Order No.
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
RS 485 bus connector with 90° cable outlet	
max. transmission rate 12 Mbit/s	
without PG interface	**6ES7 972-0BA12-0XA0**
with PG interface	**6ES7 972-0BB12-0XA0**
RS 485 bus connector with angled cable outlet	
max. transmission rate 12 Mbit/s	
without PG interface	**6ES7 972-0BA42-0XA0**
with PG interface	**6ES7 972-0BB42-0XA0**
max. transmission rate 1.5 Mbit/s	
without PG interface	**6ES7 972-0BA30-0XA0**
RS 485 bus connector with 90° cable outlet for FastConnect system	
max. transmission rate 12 Mbit/s	
without PG interface	
• 1 unit	**6ES7 972-0BA52-0XA0**
• 100 units	**6ES7 972-0BA52-0XB0**
with PG interface	
• 1 unit	**6ES7 972-0BB52-0XA0**
• 100 units	**6ES7 972-0BB52-0XB0**
RS 485 bus connector with axial cable outlet	
for SIMATIC OP, for connection to PPI, MPI, PROFIBUS	**6GK1 500-0EA02**
PROFIBUS FastConnect bus cable	
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	**6XV1 830-0EH10**

Sync-module for coupling the CPU 41xH

Overview

- For coupling the two CPU 41xH in the S7-400H subunits
- Can be plugged direct into the CPU

Technical specifications

	6ES7 960-1AA06-0XA0	6ES7 960-1AB06-0XA0
Input current		
from CPU, max.	220 mA	240 mA
Power losses		
Power loss, typ.	0.77 W	0.83 W
Dimensions		
Width	13 mm	13 mm
Height	14 mm	14 mm
Depth	58 mm	58 mm
Weight		
Weight, approx.	14 g	14 g

Ordering data

	Order No.
Sync module	
for coupling the CPU 41xH for S7-400H/F/FH; 2 modules required per CPU;	
for patch cable, can be used with fiber-optic cables up to 10 m	**6ES7 960-1AA06-0XA0**
for patch and installation cables, can be used with fiber-optic cables up to 10 km	**6ES7 960-1AB06-0XA0**

	Order No.
Fiber-optic connecting cable	
for Sync module 6ES7 960-1Ax04-0XA0	
• 1 m	**6ES7 960-1AA04-5AA0**
• 2 m	**6ES7 960-1AA04-5BA0**
• 10 m	**6ES7 960-1AA04-5KA0**
for Sync module 6ES7 960-1AB06-0XA0; fiber-optic monomode LC/LC duplex crossed 9/125 µ (max. 10 km)	On request

Overview

- To connect distributed I/O via PROFIBUS DP
- Max. transmission rate 12 Mbit/s
- Electrically isolated RS-485 interface
- Connection via 9-pin Sub-D socket
- Depending on the S7-400 CPU, one or two pluggable PROFIBUS modules:
  - CPU 414-3/416-3: 1 module
  - CPU 417-4: 2 modules

Notes:

Can only be used with the CPUs 6AG1 416-3XR05-4AB0, 6AG1 416-3ER05-4AB0 and 6AG1 417-4XT05-4AB0.

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS IF-964 DP PROFIBUS module
Order No.	**6AG1 964-2AA04-7AB0**
Order No. based on	**6ES7 964-2AA04-0AB0**
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the environmental conditions.
Environmental conditions	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust [2)]
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

[1)] ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 17,8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NOX < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Ordering data	**Order No.**
SIPLUS IF-964 DP interface module (extended temperature range and medial exposure) Interface module with integrated PROFIBUS DP master interface	**6AG1 964-2AA04-7AB0**

CP 443-5 Extended

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●			●	●	

- PROFIBUS DP master with electrical interface for connecting the SIMATIC S7-400 to PROFIBUS at up to 12 Mbit/s (including 45.45 Kbit/s)
- For setting up additional PROFIBUS DP lines
- Communication services:
  - PROFIBUS DP
  - PG/OP communication
  - S7 communication
  - Open communication (SEND/RECEIVE)
- Time synchronization
- Easy programming and configuration over PROFIBUS
- Cross-network programming device communication through S7 routing
- Can be easily integrated into the SIMATIC S7-400 system
- Module replacement without PG
- SIMATIC H system operation for redundant S7 communication or DP master communication
- Data record routing (PROFIBUS DP)
- Adding or modifying distributed I/O during operation

Technical specifications

Order No.	6GK7 443-5DX05-0XE0
Product type designation	**CP 443-5 Extended**
Transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 Kbit/s 12 Mbit/s
Interfaces	
Number of electrical connections at interface 1 in accordance with PROFIBUS	1
Design of electrical connection at interface 1 in accordance with PROFIBUS	9-pin D-sub socket (RS485)
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply 1 from backplane bus	5 V
Relative symmetrical tolerance at 5 V DC	5 %
Current input from backplane bus with 5 V DC, typical	0.6 A
Effective power loss	5.5 W
Permitted ambient conditions	
Ambient temperature	
• During operation	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
• Note	-
Relative humidity at 25 °C without condensation during operation, maximum	95 %
IP degree of protection	IP20
Design, dimensions and weights	
Module format	S7-400 compact module, single-width
Width	25 mm
Height	290 mm
Depth	210 mm
Net weight	0.65 kg
Product properties, functions, components General	
Number of modules	
• Per CPU, maximum	14
• Note	The number of CPs which can be used as DP masters depends of the number of CP 443-1 Advanced used in the S7-400 station as PROFINET IO Controllers. A total of 10 CPs can be used, as PROFINET IO Controller (CP 443-1 Advanced) -> maximum 4, as DP master (CP 443-5 Extended) -> maximum 10
Performance data	
Performance data Open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks, maximum	32
Data volume as user data per connection for open communication by means of SEND/RECEIVE blocks, maximum	240 byte
Performance dataPROFIBUS DP	
Service as DP master DPV1	Yes
Number of DP slaves operable on DP master	125
Data volume	
• of address area of inputs as DP master, total	4 096 byte
• of address area of outputs as DP master, total	4 096 byte
• of address area of inputs per DP slave	244 byte
• of address area of outputs per DP slave	244 byte

Technical specifications (continued)

Order No.	6GK7 443-5DX05-0XE0
Product type designation	**CP 443-5 Extended**
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	48
• For PG connections, maximum	-
• For PG/OP connections, maximum	-
• Note	-

Order No.	6GK7 443-5DX05-0XE0
Product type designation	**CP 443-5 Extended**
Performance data Multiprotocol operation	
Number of active connections in multiprotocol mode	
• Maximum without DP	59
• Maximum with DP	54
Product functions Management, configuration, programming	
Configuration software required	STEP 7 V5.4 SP4 and higher and NCM S7 for PROFIBUS

Ordering data

	Order No.
CP 443-5 Extended communications processor	
for connection of the SIMATIC S7-400 to PROFIBUS	
Extended version for PROFIBUS DP; with electronic manual on CD-ROM	**6GK7 443-5DX05-0XE0**
STEP 7 Version 5.5	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Prof., Windows 7 Professional/Ultimate Type of delivery: German, English, French, Spanish, Italian; including license key on USB flash drive, with electronic documentation	
• Floating license on DVD	**6ES7 810-4CC10-0YA5**
• Rental license for 50 hours	**6ES7 810-4CC10-0YA6**
• Software Update Service on DVD (requires current software version)	**6ES7 810-4BC01-0YX2**
• Floating license upgrade 3.x/4.x/5.x to V5.4; on DVD	**6ES7 810-4CC10-0YE5**
• Trial license STEP 7 V5.4; on DVD, operational for 14 days	**6ES7 810-4CC10-0YA7**
STEP 7 Professional Engineering Software V11	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Professional SP3 (32 bit), Windows 7 Professional (32 bit), Windows 7 Enterprise (32 bit), Windows 7 Ultimate (32 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32 bit) Type of delivery: German, English, Chinese, Italian; French, Spanish	
• STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
• STEP 7 Prof. V11, trial license	**6ES7 822-1AA01-0YA7**
• Upgrade STEP 7 Prof. 2006/ 2010 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0XE5**

	Order No.
STEP 7 Professional Engineering Software V11 (continued)	
• PowerPack & Upgrade STEP 7 V5.4/V5.5 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0XC5**
• Powerpack STEP 7 Basic V11 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0YC5**
• STEP 7 Professional V11, Software Update Service, 1 year; current software version required	**6ES7 822-1AA00-0YL5**
• STEP 7 Professional V11, Software Update Service Compact, 1 year; current software version required	**6ES7 822-1AA00-0YM5**
• STEP 7 Professional Software Update Service; 1 year; for STEP 7 Professional and STEP 7 Professional in the TIA Portal, requires current software version	**6ES7 810-5CC04-0YE2**
• STEP 7 Professional Software Update Service Compact; 1 year; for STEP 7 Professional and STEP 7 Professional in the TIA Portal, requires current software version	**6ES7 810-5CC00-0YM2**
PROFIBUS FastConnect bus connector RS485	
with 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s (1 unit)	
• without PG interface	**6ES7 972-0BA52-0XA0**
• with PG interface	**6ES7 972-0BB52-0XA0**
PROFIBUS bus connector IP20	
with connection to PPI, MPI, PROFIBUS	
• without PG interface	**6ES7 972-0BA12-0XA0**
• with PG interface	**6ES7 972-0BB12-0XA0**
PROFIBUS bus terminal 12M	**6GK1 500-0AA10**
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	

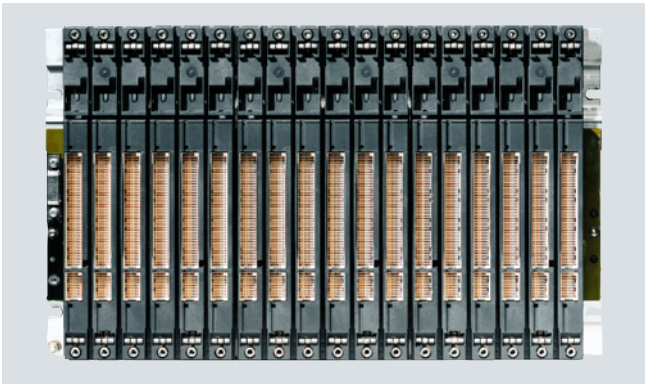
SCALANCE M87x UMTS router

Overview

- UMTS, EGPRS (Edge GPRS) and GPRS router for wireless IP communication of Industrial Ethernet-based PLCs over UMTS/GSM mobile wireless networks
- High data transfer rate thanks to UMTS
- Integrated security functions with firewall
- *SCALANCE M875:*
  Use both as VPN server and as client (IPsec)

For further information, see Chapter 5, page 5/40.

Overview



- The mechanical basic structure of SIPLUS S7-400/S7-400H
- For accommodating the modules, operating voltage supply, and connection of the modules via a backplane bus
- Several versions for setting up central controllers and expansion units
- SIPLUS rack material: Aluminum

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS S7-400 rack			
Order No.	**6AG1 400-1JA11-7AA0**	**6AG1 400-1TA11-7AA0**	**6AG1 400-2JA10-4AA0**
Order No. based on	**6ES7 400-1JA11-0AA0**	**6ES7 400-1TA11-0AA0**	**6ES7 400-2JA10-0AA0**
Ambient temperature range	-25 ... +70 °C		
Conformal coating	Coating of the printed circuit boards and the electronic components		
Technical data	The technical data of the standard product applies, except for the environmental conditions		
Environmental conditions			
Relative humidity	5 ... 100 % condensation permissible		
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)		
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX [1)2)]		
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including sand, dust [2)]		
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m), see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m), derating 10 K 658 ... 540 hPa (+3500 ... +5000 m), derating 20 K		

[1)] ISA-S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 14.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NO_x < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS S7-400 rack	
UR1 aluminum rack for central controllers and expansion units, 18 slots	**6AG1 400-1TA11-7AA0**
UR2 rack for central controllers and expansion units, 9 slots	**6AG1 400-2JA10-4AA0**

	Order No.
UR2 aluminum rack for central controllers and expansion units, 9 slots	**6AG1 400-1JA11-7AA0**
Accessories	See SIMATIC rack S7-400

SIPLUS S7-400 PS

Overview

- Power supplies for SIPLUS S7-400
- For conversion of AC or DC line voltages to the 5 V DC and 24 V DC operating voltages required
- 4 A, 10 A and 20 A output currents

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS S7-400 PS			
Order number	**6AG1 405-0KA02-7AA0**	**6AG1 407-0KA02-4AA0**	**6AG1 407-0KR02-4AA0**
Order number based on	**6ES7 405-0KA02-0AA0**	**6ES7 407-0KA02-0AA0**	**6ES7 407-0KR02-0AA0**
Ambient temperature range	-25 ... +70 °C	-0 ... +60 °C	-0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components		
Technical data	The technical data of the standard product applies, except for the ambient conditions		
Ambient conditions			
Relative humidity	5 ... 100 % condensation permissible		
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)		
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA –S71.04 severity level G1; G2; G3; GX [1)2)]		
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including sand, dust [2)]		
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m), see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m), derating 10 K 658 ... 540 hPa (+3500 ... +5000 m), derating 20 K		

[1)] ISA –S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 14.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NOX < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

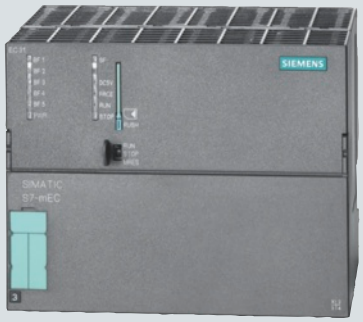
For technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS PS 405 power supply modules	
(extended temperature range and medial exposure)	
24 V DC; 5 V DC, 24 V DC	
10 A, wide range	**6AG1 405-0KA02-7AA0**

	Order No.
SIPLUS PS 407 power supply modules	
(extended temperature range and medial exposure)	
120/230 V AC; 5 V DC, 24 V DC	
10 A	**6AG1 407-0KA02-4AA0**
10 A, redundant	**6AG1 407-0KR02-4AA0**
Accessories	See SIMATIC PS 405/407 power supply

Embedded controller



Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Expansion modules

Overview

- Expansion modules for SIMATIC S7-modular Embedded Controller EC31
  - EM PCI-104 for additionally accommodating up to 3 PCI-104 cards
  - EM PC with additional PC interfaces and slots for memory media

Technical specifications

	6ES7 677-1DD60-1AA0	6ES7 677-1DD50-2AA0
	EM PCI-104	EM PC
General information		
Hardware product version	01	01
Input current		
from expansion bus	100 mA	580 mA
Power losses		
Power loss, typ.	2.4 W; without inserted PCI-104 cards	9 W
Power loss, max.		14 W
Interfaces		
Number of USB interfaces	0	2
Serial interface	0	1x V.24 (RS232)
Industrial Ethernet		
• Industrial Ethernet interface		Onboard, 10/100/1000 Mbit, RJ45
Ambient conditions		
Operating temperature		
• Min.	0 °C	0 °C
• Max.	50 °C	50 °C
Dimensions		
Width	120 mm; without bus connector Extension-Bus	80 mm; without bus connector Extension-Bus
Height	125 mm; without external voltage connecting terminal	125 mm
Depth	115 mm	115 mm

Ordering data

	Order No.
EM PCI-104 expansion module for fitting up to 3 additional PCI-104 cards	**6ES7 677-1DD60-1AA0**
EM PC expansion module Additional connection options: 1 DVI-I interface, 2 USB interfaces, 1 Gigabit Ethernet interface, 1 serial interface, 1 slot for CF card, 1 slot for SD card/Micro Memory Card	**6ES7 677-1DD50-2AA0**

SIMATIC IPC427C bundles

Overview

- Get off to a fast start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX or SIMATIC WinAC RTX F preinstalled on SIMATIC IPC427C and ready for use
  - PROFINET, PROFIBUS and Industrial Ethernet prepared for use in a SIMATIC environment
  - Optional WinCC flexible for visualization tasks in parallel with SIMATIC WinAC RTX.
  - Configuration and programming with SIMATIC STEP 7 via Industrial Ethernet, PROFINET, or PROFIBUS
- Safety requirements up to SIL 3 in accordance with IEC 61508/ 62061 or EN ISO 13849-1 up to PL e can be implemented with WinAC RTX F.
- Rugged operation
  - Operation without a hard disk, based on CompactFlash Card (CF Card) or Solid-State Drive and Windows Embedded Standard
  - Fan-free operation
  - 128 KB of retentive data for WinAC RTX, also without uninterruptible power supply (UPS)
- Flexibility of a PC-based automation environment
  - Free memory space on CF Card can be used for other PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX or SIMATIC WinAC RTX F (read-only for fail-safe program section)
  - Connection option for USB devices, flat panel monitor or screen
  - PCI 104 cards can be plugged in
- High-performance service concept
  - Replacement parts for preferred types available ex stock
- New hardware basis SIMATIC IPC427C
- Cost-effective versions with PROFINET, based on the standard Ethernet interface
- Current product versions of the pre-installed software:
  - SIMATIC WinAC RTX 2010 or SIMATIC WinAC RTX F 2010
  - SIMATIC WinCC flexible 2008 SP2
  - SIMATIC NET Edition 2008 or V8.1

Ordering data

	Order No.					
SIMATIC IPC427C bundles						
SIMATIC WinAC RTX (F) 2010 and WinCC flexible 2008 bundles with SIMATIC WinAC RTX (F) 2010 and WinCC flexible 2008/ WinCC RT Advanced						
SIMATIC IPC427C with preinstalled software	**6ES7 675-1D**	■	■	■	-	■ ■ ■ ■
Processor						
• Celeron M, 1.2 GHz, 2x PROFINET (IE) [1]		**A**				
• Celeron M, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS [1]		**B**				
• Core2 Solo, 1.2 GHz, 2x PROFINET (IE) [1]		**E**				
• Core2 Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS [1]		**F**				
• Core2 Solo, 1.2 GHz, 1x PROFINET (IE), PROFINET (RT/IRT) 3 ports		**G**				
• Core2 Duo, 1.2 GHz, 2x PROFINET (IE) [1]		**J**				
• Core2 Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS [1]		**K**				
• Core2 Duo, 1.2 GHz, 1x PROFINET (IE), PROFINET (RT/IRT) 3 ports		**L**				
Work memory						
• 1 GB RAM			**2**			
• 2 GB RAM [1]			**3**			
• 4 GB RAM			**4**			
Operating system						
• Windows Embedded Standard 2009 (WES2009) [1]				**0**		
• Windows Embedded Standard 7 (WES7) [2]				**1**		
Mass storage, internal						
• without (can only be ordered with externally accessible mass storage) [1]					**0**	
• 250 GB HDD SATA, only additionally with externally accessible CF					**1**	
• 50 GB Solid-State Drive (High Endurance), operating system and software pre-installed					**2**	
• 80 GB Solid-State Drive (Standard SATA), operating system and software pre-installed					**3**	
• 4 GB internal CompactFlash, operating system and software pre-installed [1]					**6**	
• 8 GB internal CompactFlash, operating system and software pre-installed [1]					**7**	
• 16 GB internal CompactFlash, operating system and software pre-installed [1]					**8**	

[1] Replacement hardware units available in exchange

[2] Only together from 2 GB work memory

7

SIMATIC IPC427C bundles

Ordering data	Order No.			
SIMATIC IPC427C with preinstalled software (continued)	**6ES7 675-1D** ■■■ -	■■■	■■■	
Externally accessible mass storage				
• without (can only be ordered with internal mass storage) [1]		**A**		
• 4 GB CompactFlash, operating system and software pre-installed [1]		**D**		
• 8 GB CompactFlash, operating system and software pre-installed [1]		**E**		
• 16 GB internal CompactFlash, operating system and software pre-installed [1]		**F**		
Software configurations [1]				
• WinAC RTX			**B**	
• HMI RT 128 PT			**C**	
• HMI RT 512 PT			**D**	
• HMI RT 2048 PT			**E**	
• HMI RT 4096 PT			**F**	
• WinAC RTX, HMI RT 128 PT			**K**	
• WinAC RTX, HMI RT 512 PT			**L**	
• WinAC RTX, HMI RT 2048 PT			**M**	
• WinAC RTX, HMI RT 4096 PT			**N**	
• WinAC RTX F			**P**	
• WinAC RTX F, HMI RT 128 PT			**R**	
• WinAC RTX F, HMI RT 512 PT			**S**	
• WinAC RTX F, HMI RT 2048 PT			**T**	
• WinAC RTX F, HMI RT 4096 PT			**U**	
• HMI RT: WinCC flexible 2008 SP2				**0**
• HMI RT: WinCC Advanced V11 SP2 (TIA Portal), only with WES7				**1**

[1] Replacement hardware units available in exchange

In-stock models	
Replacement hardware units available in exchange	
SIMATIC IPC427C bundle with WinAC RTX 2010	
Core2 Solo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash	**6ES7 675-1DF30-0DB0**
Core2 Solo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash	**6ES7 675-1DK30-0DB0**
Core2 Solo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 8 GB CompactFlash	**6ES7 675-1DK30-0EP0**
SIMATIC IPC427C bundle with WinAC RTX 2010 and WinCC flexible 2008 512 PT	
Core2 Solo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash	**6ES7 675-1DK30-0DL0**

Bundles with WinCC

("Built to order" with delivery time of max. 14 business days, for hardware only repairs are possible)

	Order No.
IPC427C with WinCC RT, V7.0 SP2, incl. Update 1	
Fan-free, 4 x USB 2.0 (500 mA), 1 x COM (RS 232), 24 V DC power supply with On/Off switch, 2 x PROFINET (IE), Windows Embedded Standard 2009 pre-installed, SIMATIC WinCC V7.0 SP2 incl. Update1 Runtime pre-installed	
Client configurations	**6ES7 675-1DA20-6AX0**
Processor Celeron M 1.2 GHz, 1 GB SDRAM-DDR3, 4 GB CF Card, runtime license 128 PT	
Client and single-user station configurations	
• Processor Core2 Solo 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT[1]	**6ES7 675-1DE30-7AX0**
• Processor Core2 Solo 1.2 GHz, PROFIBUS DP, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT[1]	**6ES7 675-1DF30-7AX0**
Single-user station configurations	
Core2 Duo processor 1.2 GHz, PROFIBUS DP, 4 GB SDRAM-DDR3	
• 8 GB CF card, runtime license 128 PT[1]	**6ES7 675-1DK40-7AX0**
• 50 GB SSD (High Endurance), runtime license 128 PT[1]	**6ES7 675-1DK40-2AX0**
• 8 GB CF card, runtime license 2048 PT[1]	**6ES7 675-1DK40-7AW0**
• 32 GB SSD (High Endurance), runtime license 2048 PT[1]	**6ES7 675-1DK40-2AW0**

[1] Number of variables (PT) can be extended with PowerPacks.

Ordering data

Bundles with WinCC RT Professional (TIA Portal)

("Built to order" with delivery time of max. 14 business days, for hardware only repairs are possible)

	Order No.
IPC427C with WinCC RT Professional, V11 SP2 Fan-free, 4 x USB 2.0 (500 mA), 1 x COM (RS 232), 24 V DC power supply with On/Off switch, 2 x PROFINET (IE), Windows Embedded Standard 7 SP1 preinstalled, SIMATIC WinCC Runtime Professional V11 SP2 pre-installed	
Client configurations Processor Celeron M 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT [1]	**6ES7 675-1DA31-7AY0**
Client and single-user station configurations	
• Processor Core2 Solo 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT [1]	**6ES7 675-1DE31-7AY0**
• Processor Core2 Solo 1.2 GHz, PROFIBUS DP, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT [1]	**6ES7 675-1DF31-7AY0**
Single-user station configurations Processor Core2 Duo 1.2 GHz, PROFIBUS DP, 4 GB SDRAM-DDR3	
• 8 GB CF Card, runtime license 128 PT [1]	**6ES7 675-1DK41-7AY0**
• 50 GB SSD (High Endurance), runtime license 128 PT [1]	**6ES7 675-1DK41-2AY0**
• 8 GB CF Card, runtime license 2048 PT [1]	**6ES7 675-1DK41-7AV0**
• 50 GB SSD (High Endurance), runtime license 2048 PT [1]	**6ES7 675-1DK41-2AV0**

[1] Number of variables (PT) can be extended with PowerPacks.

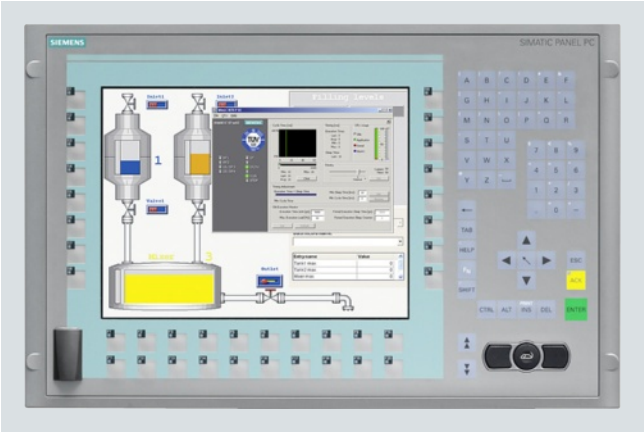
Accessories	Order No.
CP 5603 Microbox Package Package for using the PROFIBUS CP 5603 in Microbox PCs; comprising a CP 5603 module and a Microbox expansion rack	**6GK1 560-3AU00**
CP 1604 Microbox Package Package for using the PROFINET CP 1604 in Microbox PCs; comprising CP 1604, connection board, power supply and expansion rack for Microbox PC; implemented with Development Kit DK-16xx PN IO; NCM P	**6GK1 160-4AU00**
Expansion kit PC/104 Expansion rack incl. mounting hardware; 6 items	**6AG4 070-0BA00-0XA0**
CompactFlash Cards	
4 GB	**6ES7 648-2BF02-0XG0**
8 GB	**6ES7 648-2BF02-0XH0**
16 GB	**6ES7 648-2BF02-0XJ0**
SIMATIC IPC keyboard	
German/international, USB connection	**6ES7 648-0CB00-0YA0**
German/international, USB connection, with 4-way USB HUB	**6ES7 648-0CD00-0YA0**
SIMATIC IPC USB mouse Wheel mouse (BlueTrack) for SIMATIC PG and PC, optical, 3 buttons	
• anthracite	**6ES7 648-0BB00-0XA0**
• white	**6ES7 648-0BB00-0XA1**
SIMATIC IPC USB FlashDrive 8 Gbyte (SLC), USB 2.0, incl. SIMATIC IPC BIOS manager (pre-installed), bootable, metal enclosure	**6ES7 648-0DC50-0AA0**
SIMATIC IPC Service USB FlashDrive 8 GB (SLC), USB 2.0, incl. SIMATIC IPC Image & Partition Creator and SIMATIC IPC BIOS manager (pre-installed), bootable, metal enclosure	**6AV7 672-8JD01-0AA0**
Portrait assembly kit Interfaces to the front	**6ES7 648-1AA20-0YB0**

7

Embedded Panel PC bundles

SIMATIC HMI IPC477C bundles

Overview



Embedded PC platform with extremely high industrial compatibility for demanding tasks in the field of PC-based automation.

- Maintenance-free (no rotating components such as fan and hard disk)
- Rugged construction: The PC is resistant to even the harshest mechanical stress and is extremely reliable in operation
- Battery-backed retentive memory onboard
- Compact design (only 61-69 mm installation depth for 12"-19")
- High investment protection
- Fast integration capability

The following versions are available:

- Built-in versions
  - 12“ and 15“ TFT Touch
  - 12“ and 15“ TFT Key
  - 19” Touch
- Support arm versions
  - PRO 15“ and 19“ Touch
    Fully-enclosed device to IP65 degree of protection for mounting on a support arm/stand.

Technical specifications

	6AV7 884..	6AV7 883..PRO
General features		
Processors	Intel Celeron M 1.2 GHz, Intel Core2 Solo 1.2 GHz or Core2 Duo 1.2 GHz	Intel Celeron M 1.2 GHz, Intel Core2 Solo 1.2 GHz or Core2 Duo 1.2 GHz
Memory type	DDR3-RAM	DDR3-RAM
Work memory	1 GB, 2 GB or 4 GB	1 GB, 2 GB or 4 GB
Free slots	1 x CF card slot (externally accessible)	1 x CF card slot (externally accessible)
Operating system	Windows Embedded Standard 2009 (EN/DE) or Windows Embedded Standard 7	Windows Embedded Standard 2009 (EN/DE) or Windows Embedded Standard 7
Additional OS information	Language: EN/ DE	Language: EN/ DE
SIMATIC Software	Optionally with preinstalled software SIMATIC WinCC flexible and/or WinAC RTX, SIMATIC WinAC RTX F, SIMATIC WinCC as web client or single-user station	Optionally with preinstalled software SIMATIC WinCC flexible and/or WinAC RTX, SIMATIC WinAC RTX F, SIMATIC WinCC as web client or single-user station
Drives		
Disk drive	Optionally via external USB floppy disk drive	Optionally via external USB floppy disk drive
Optical drives	Possible as external drive via USB	Possible as external drive via USB
Hard drive/mass storage	CompactFlash drive with 2, 4 or 8 GB and/or SSD (Solid State Drive) with 50 GB	CompactFlash drive with 2, 4 or 8 GB and/or SSD (Solid State Drive) with 50 GB
Interfaces		
Graphics interface	DVI-I for additional display unit: Color depth 32 bits	DVI-I for additional display unit: Color depth 32 bits
Connection for keyboard/mouse	USB / USB	USB / USB
Serial interface	COM1: 1 x V.24 (RS232)	COM1: 1 x V.24 (RS232)
PROFIBUS/MPI	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP 5611-compatible, not upgradeable	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP 5611-compatible, not upgradeable
PROFINET (RT/IRT)	Optional: 3 x RJ45, CP 1616-compatible; not upgradeable	Optional: 3 x RJ45, CP 1616-compatible; not upgradeable
USB	1 x on front, 4 x on rear, USB 2.0 (500 mA)	1 x on front, 4 x on rear, USB 2.0 (500 mA)
PROFINET (IE), Ethernet	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET), no plug-in card required	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET), no plug-in card required
Multimedia	No	No
Supply voltage		
Supply voltage	24 V DC	24 V DC

Technical specifications (continued)

	6AV7 884..	6AV7 883..PRO
Monitoring functions		
Temperature	Yes	Yes
Watchdog	Yes	Yes
DiagBit (similar to S.M.A.R.T.)	Yes (for CF cards and SSD)	Yes (for CF cards and SSD)
Status LEDs	Yes (on rear)	Yes
Front side acc. to EN 60529	IP65 (on the front) according to EN 60529 and NEMA4	IP65 all around according to EN 60529 and NEMA4
Ambient conditions		
Vibration load during operation	Tested in accordance with IEC 60068-2-6: 10 - 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s² (1 g)	Tested in accordance with IEC 60068-2-6: 10 - 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s² (1 g)
Shock load during operation	Tested in accordance with IEC 60068-2-7: 50 m/s² (5 g), 30 ms, 100 shocks	Tested in accordance with IEC 60068-2-7: 50 m/s² (5 g), 30 ms, 100 shocks
Relative humidity	Tested in accordance with IEC 60068-78, IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)	Tested in accordance with IEC 60068-78, IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)
Max. permissible installation angle +/-	30° over vertical	30° over vertical
Ambient temperature during operation	0 °C ... +50 °C in maximum configuration; no fan	15": 0 °C ... +45 °C in maximum configuration; no fan 19": 0 °C ... +40 °C in maximum configuration; no fan
Certifications & standards		
Approvals	CE, cULus(508), Marine	CE, cULus(508)
EMC	CE, 55022A, EN 61000-6-4, EN 61000-6-2	CE, 55022A, EN 61000-6-4, EN 61000-6-2

	6AV7 884-0	6AV7 884-1	6AV7 884-2	6AV7 884-3	6AV7 884-5	6AV7 883-6 (PRO)	6AV7 883-7 (PRO)
Front panel	12" TFT Touch	12" TFT Key	15" TFT Touch	15" TFT Key	19" TFT Touch	15" TFT Touch	19" TFT Touch
Display							
Resolution (W x H in pixels)	800 x 600	800 x 600	1024 x 768	1024 x 768	1280 x 1024	1024 x 768	1280 x 1024
MTBF of backlighting (at 25 °C)	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent
Type of operation							
Function keys	No	36	No	36	No	No	No
Alphanumeric keyboard	No	Yes	No	Yes	No	No	No
Touch screen (analog/resistive)	Yes	No	Yes	No	Yes	Yes	Yes
Mouse on front	No	Yes	No	Yes	No	No	No
Design							
Centralized configuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distributed configuration	No	No	No	No	No	No	No
Dimensions							
Mounting dimensions in centralized configuration (W x H x D, without optical drive) in mm	368 x 290 x 61	450 x 290 x 61	450 x 290 x 64	450 x 321 x 59	450 x 380 x 71	400 x 310 x 98	483 x 400 x 115
Operator control unit (W x H) in mm	400 x 310 (7 HU)	483 x 310 (19", 7 HU)	483 x 310 (19", 7 HU)	483 x 355 (19", 8 HU)	483 x 400 (19", 9 HU)	483 x 400 (19", 9 HU)	483 x 400 (19", 9 HU)
Weight	6.1 kg	6.6 kg	7.0 kg	6.6 kg	7.2 kg	7.4 kg	10.9 kg
General features							
Accessories	Touch protective membranes	Insertable strips for keyboard	Touch protective membranes	Insertable strips for keyboard	Touch protective membranes	Touch protective membranes	Touch protective membranes
Power loss in maximum configuration	24 V DC: max. 45 W	24 V DC: max. 45 W	24 V DC: max. 55 W	24 V DC: max. 55 W	24 V DC: max. 60 W	24 V DC: max. 55 W	24 V DC: max. 55 W

Embedded Panel PC bundles

SIMATIC HMI IPC477C bundles

Ordering data — Order No.

Bundles with WinAC RTX 2010 and WinCC flexible 2008 SP2

(Built-to-order version, delivery time max. 15 business days and with identified repair, if not preferred type)

	Order No.
SIMATIC HMI IPC477C PRO Embedded and fan-free with fully enclosed IP65 enclosure 4 x USB (500 mA), 24 V DC power supply with On/Off switch	**6AV7 883- ■ A ■ ■ ■ - ■ ■ ■ 0**
SIMATIC HMI IPC477C without fan 5 x USB 2.0 (500 mA), one of which on the front 1 x COM (RS232) 24 V DC power supply with On/Off switch	**6AV7 884- ■ A ■ ■ ■ - ■ ■ ■ 0**
Frontpanels	
• 12“ TFT Touch [1]	**0**
• 12“ TFT Key	**1**
• 15“ TFT Touch [1]	**2**
• 15“ TFT Key	**3**
• 19“ TFT Touch [1]	**5**
• 15" TFT Touch (IP65 enclosure; PRO)	**6**
• 19" TFT Touch (IP65 enclosure; PRO)	**7**
Processors and fieldbus	
• Celeron M 1.2 GHz, 2 x PROFINET (IE) [1]	**A**
• Celeron M 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 [1]	**B**
• Core2 Solo 1.2 GHz, 2 x PROFINET (IE) [1]	**D**
• Core2 Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 [1]	**E**
• Core2 Solo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports) [1]	**F**
• Core2 Duo 1.2 GHz, 2 x PROFINET (IE) [1]	**G**
• Core2 Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 [1]	**H**
• Core2 Duo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports) [1]	**J**
Work memory (DDR3 RAM), 1 bank	
• 1 GB	**1**
• 2 GB [1]	**2**
• 4 GB	**3**
Second mass storage (installed and formatted)	
• without [1]	**0**
• CompactFlash 2 GB (only with Windows Embedded Standard 2009) [1]	**2**
• CompactFlash 4 GB [1]	**3**
• CompactFlash 8 GB [1]	**4**
• CompactFlash 16 GB [1]	**5**
• 50 GB Solid-State Drive (SLC)	**6**
• 80 GB Solid-State Drive (MLC) (not with 477C PRO)	**7**

	Order No.
SIMATIC HMI IPC477C PRO	**6AV7 883- ■ A ■ ■ ■ - ■ ■ ■ 0**
SIMATIC HMI IPC477C	**6AV7 884- ■ A ■ ■ ■ - ■ ■ ■ 0**
Mass storage (installed, operating system pre-installed and optionally with SIMATIC software)	
• CompactFlash 2 GB [1]	**2**
• CompactFlash 4 GB [1]	**3**
• CompactFlash 8 GB [1]	**4**
• CompactFlash 16 GB [1]	**5**
• 50 GB Solid-State Drive (SLC)	**6**
• 80 GB Solid-State Drive (MLC) (not with 477C PRO)	**7**
Operating system	
• Windows Embedded Standard 2009, pre-installed [1]	**B A**
• Windows Embedded Standard 7, pre-installed [2]	**E A**
Software packages, only with CF 4 GB or higher [1]	
• with operating system and RTX, WinAC RTX 2010 pre-installed and configured	**B**
• with operating system and HMI, WinCC flexible 2008 SP2 RT (incl. archives/recipes) pre-installed and configured	
- Number of tags 128 PT	**C**
- Number of tags 512 PT	**D**
- Number of tags 2048 PT	**E**
- Number of tags 4096 PT	**F**
• with operating system and HMI/RTX, WinCC flexible 2008 SP2 RT (incl. archives/recipes) and WinAC RTX 2010 pre-installed and configured	
- Number of tags 128 PT	**K**
- Number of tags 512 PT	**L**
- Number of tags 2048 PT	**M**
- Number of tags 4096 PT	**N**
• with operating system and RTX F, WinAC RTX 2010 pre-installed and configured	**P**
• with operating system and HMI/RTX F, WinCC flexible 2008 SP2 RT (incl. archives/recipes) and WinAC RTX F 2010 pre-installed and configured	
- Number of tags 128 PT	**R**
- Number of tags 512 PT	**S**
- Number of tags 2048 PT	**T**
- Number of tags 4096 PT	**U**

[1] Preferred versions with repaired replacement device from warehouse

[2] Only together with 2 GB work memory

Ordering data

Bundles with WinAC RTX and WinCC RT Advanced

("Built-to-order" version, delivery time max. 15 business days and with identified repair, if not preferred type)

	Order No.									
SIMATIC HMI IPC477C PRO	**6AV7 883-**	■	**A**	■	■	■	**-**	■	**E**	■ **1**
Embedded and without an, with fully enclosed IP65 enclosure 4 x USB (500 mA), 24 V DC power supply with On/Off switch										
SIMATIC HMI IPC477C	**6AV7 884-**	■	**A**	■	■	■	**-**	■	**E**	■ **1**
without fan 5 x USB 2.0 (500 mA), one of which on the front 1 x COM (RS232) 24 V DC power supply with On/Off switch										
Front panel										
• 12“ TFT Touch		**0**								
• 12“ TFT Key		**1**								
• 15“ TFT Touch		**2**								
• 15“ TFT Key		**3**								
• 19“ TFT Touch		**5**								
• 15" TFT Touch (IP65 enclosure; PRO)		**6**								
• 19" TFT Touch (IP65 enclosure; PRO)		**7**								
Processors and field bus										
• Celeron M 1.2 GHz, 2 x PROFINET (IE)			**A**							
• Celeron M 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12			**B**							
• Core2 Solo 1.2 GHz, 2 x PROFINET (IE)			**D**							
• Core2 Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12			**E**							
• Core2 Solo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports)			**F**							
• Core2 Duo 1.2 GHz, 2 x PROFINET (IE)			**G**							
• Core2 Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12			**H**							
• Core2 Duo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports)			**J**							
Work memory (DDR3 RAM), 1 bank										
• 2 GB				**2**						
• 4 GB				**3**						
Second mass storage (installed, CF exchangeable)										
• without					**0**					
• CompactFlash 4 GB					**3**					
• CompactFlash 8 GB					**4**					
• CompactFlash 16 GB					**5**					
• 50 GB Solid-State Drive (SLC)					**6**					
• 80 GB Solid-State Drive (MLC) (not with 477C PRO)					**7**					

	Order No.									
SIMATIC HMI IPC477C PRO	**6AV7 883-**	■	**A**	■	■	■	**-**	■	**E**	■ **1**
SIMATIC HMI IPC477C	**6AV7 884-**	■	**A**	■	■	■	**-**	■	**E**	■ **1**
Mass storage (installed, operating system pre-installed and optionally with SIMATIC software)										
• CompactFlash 4 GB							**3**			
• CompactFlash 8 GB							**4**			
• CompactFlash 16 GB							**5**			
• 50 GB Solid-State Drive (SLC)							**6**			
• 80 GB Solid-State Drive (MLC) (not with 477C PRO)							**7**			
Operating system										
• Windows Embedded Standard 7, pre-installed [2]									**A**	
Software packages, CF 4 GB or higher only										
• with operating system and RTX, WinAC RTX 2010 pre-installed and configured									**B**	
• with operating system and HMI, WinCC Advanced V11 SP2 (incl. Logging/Recipes) pre-installed and configured										
- Number of tags 128 PT									**C**	
- Number of tags 512 PT									**D**	
- Number of tags 2048 PT									**E**	
- Number of tags 4096 PT									**F**	
• with operating system and HMI/ RTX, WinCC flexible 2008 SP2 RT (incl. Archives/Recipes), WinCC Advanced V11 SP2 (incl. Logging/Recipes) and WinAC RTX 2010 pre-installed and configured										
- Number of tags 128 PT									**K**	
- Number of tags 512 PT									**L**	
- Number of tags 2048 PT									**M**	
- Number of tags 4096 PT									**N**	
• with operating system and RTX F, WinAC RTX F 2010 pre-installed and configured									**P**	
• with operating system and HMI/RTX F, WinCC Advanced V11 SP2 (incl. Logging/Recipes) and WinAC RTX F 2010 pre-installed and configured										
- Number of tags 128 PT									**R**	
- Number of tags 512 PT									**S**	
- Number of tags 2048 PT									**T**	
- Number of tags 4096 PT									**U**	

SIMATIC HMI IPC477C bundles

Ordering data

Bundles with WinAC RTX and WinCC RT Professional (TIA Portal)

("Built to order" with delivery time of max. 14 business days, for hardware only repairs are possible)

	Order No.
SIMATIC HMI IPC477C without fan, 4 x USB 2.0 on the back, 1 x USB 2.0 front, 1 x COM (RS232), 2 x 10/100/1000 MBit/s Ethernet (RJ45); preinstalled software on CF / SSD: Windows Embedded Standard 7, SIMATIC WinCC Professional V11 SP2	**6AV7 884- ■ A ■ ■ 0 - ■ E ■ 0**
SIMATIC HMI IPC477C PRO without fan, 4 x USB2.0 (500 mA), 1 x USB2.0 front side (not on PRO) , 1 x COM (RS 232), 24 V DC power supply with On/Off switch, 2 x PROFINET (IE), Windows Embedded Standard 7 preinstalled, SIMATIC WinCC Professional V11 SP2	**6AV7 883- ■ A ■ ■ 0 - ■ E ■ 0**
Front panel	
• 15“ TFT Touch	**6AV7 884- 2**
• 19“ TFT Touch	**6AV7 884- 5**
• 15“ TFT Touch PRO	**6AV7 883- 6**
• 19“ TFT Touch PRO	**6AV7 883- 7**
Client configurations	
Celeron M processor 1.2 GHz, 1 GB DDR3 RAM, 4 GB CF Card, runtime license 128 PT	**A 2 4 Y**
Client and single-user station configurations	
Core2 Solo processor 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT	**D 2 4 Y**
Core2 Solo processor 1.2 GHz, PROFIBUS DP, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT	**E 2 4 Y**
Single-user station configurations	
SIMATIC HMI IPC477C	**6AV7 884- ■ A H 3 0 - ■ E ■ 0**
SIMATIC HMI IPC477C PRO	**6AV7 883- ■ A H 3 0 - ■ E ■ 0**
Core2 Duo processor 1.2 GHz, PROFIBUS DP, 4 GB SDRAM-DDR3	
• 8 GB CF Card	**4**
• 50 GB SSD (High Endurance)	**6**
• Runtime license 128 PT	**Y**
• Runtime license 2048 PT	**V**

Bundles with WinCC V7.0 SP2, incl. Update 1

("Built to order" with delivery time of max. 14 business days, for hardware only repairs are possible)

	Order No.
SIMATIC HMI IPC477C without fan 4 x USB 2.0 on rear, 1 x USB 2.0 on front, 1 x COM (RS232), 2 x 10/100/1000 Mbit/s Ethernet (RJ45); software pre-installed on CF/SSD: Windows Embedded Standard, SIMATIC WinCC V7.0 SP1	**6AV7 884- ■ A ■ ■ 0 - ■ B ■ 0**
SIMATIC HMI IPC477C PRO without fan, 4 x USB 2.0 (500 mA), 1 x USB 2.0 on front (not on PRO), 1 x COM (RS 232), 24 V DC power supply with On/Off switch, 2 x PROFINET (IE), Windows Embedded 2009 pre-installed SIMATIC WinCC V7.0 SP2 incl. update 1 Runtime pre-installed	**6AV7 883- ■ A ■ ■ 0 - ■ E ■ 0**
Front panel	
• 15“ TFT Touch	**6AV7 884- 2**
• 19“ TFT Touch	**6AV7 884- 5**
• 15“ TFT Touch PRO	**6AV7 883- 6**
• 19“ TFT Touch PRO	**6AV7 883- 7**
Client configurations	
Processor Celeron M 1.2 GHz, 1 GB DDR3 RAM, 4 GB CF Card, runtime license 128 PT	**A 1 3 X**
Client and single-user station configurations	
Processor Core2 Solo 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT	**D 2 4 X**
Processor Core2 Solo 1.2 GHz, PROFIBUS DP, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT	**E 2 4 X**
Single-user station configurations	
SIMATIC HMI IPC477C	**6AV7 884- ■ A H 3 0 - ■ B ■ 0**
SIMATIC HMI IPC477C PRO	**6AV7 883- ■ A H 3 0 - ■ B ■ 0**
Core2 Duo processor 1.2 GHz, PROFIBUS DP, 4 GB SDRAM-DDR3	
• 8 GB CF Card	**4**
• 50 GB SSD	**6**
• Runtime license 128 PT	**X**
• Runtime license 2048 PT	**V**

Note:

Other ready-to-use SIMATIC HMI IPC477Cs can be found in the Panel PC chapter under HMI IPC477C.

Ordering data

	Order No.
Protective film for Panel PCs 477/577/677	
For protecting the touch screen against dirt/scratches	
• for 12" Touch	**6AV7 671-2BA00-0AA0**
• for 15" Touch (not for PRO)	**6AV7 671-4BA00-0AA0**
• for 19" Touch	**6AV7 672-1CE00-0AA0**
Labeling membranes for Panel PCs 477/577/677	**6AV7 672-0DA00-0AA0**
For labeling soft keys and function keys, blank, supplied in sets of 10	
Touch pen	**6AV7 672-1JB00-0AA0**
Captive pen for operation of the touch devices, mounting of the support on the control cabinet or direct on the PRO unit	
Expansion components	
SIMATIC IPC DiagMonitor V4.2	**6ES7 648-6CA04-3YX0**
Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)	
SIMATIC IPC Image & Partition Creator V3.1	**6ES7 648-6AA03-1YA0**
Software tool for preventive data backup and hard disk partitioning for SIMATIC PCs, incl. manual on CD-ROM (German, English)	
SIMATIC IPC USB FlashDrive	**6ES7 648-0DC50-0AA0**
8 GB, SLC, USB 2.0, metal enclosure, bootable	
SIMATIC IPC Service USB FlashDrive	**6AV7 672-8JD01-0AA0**
8 GB, SLC, USB 2.0, metal enclosure, bootable	
BIOS Manager and Image & Partition Creator preinstalled, incl. CD	
Industrial USB Hub 4	**6AV6 671-3AH00-0AX0**
4 x USB 2.0, IP65 for control cabinet door or DIN rail	
CompactFlash Card	
• 2 GB	**6ES7 648-2BF02-0XF0**
• 4 GB	**6ES7 648-2BF02-0XG0**
• 8 GB	**6ES7 648-2BF02-0XH0**
• 16 GB	**6ES7 648-2BF02-0XJ0**

Please be sure to note:

The HMI IPC477C is delivered as standard with an inserted CF card. The licenses are located on the supplied USB flash drive.

Notes

SIMATIC ET 200 distributed I/O

9

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Introduction

Overview

SIMATIC ET 200SP

The SIMATIC ET 200SP distributed I/O system is a scalable and extremely flexible distributed I/O system for interfacing the process signals to a central control system via PROFINET.

SIMATIC ET 200SP is mounted onto a rail and basically consists of:

- An interface module which communicates with all controllers that operate in conformance with the PROFINET standard IEC 61158
- Depending on the interface module, as many as 64 I/O modules that are inserted into passive BaseUnits in any combination
- A server module which completes the setup of the SIMATIC ET 200SP

The distributed I/O system is particularly easy to use and, with its compact design, ensures maximum economy in the control cabinet. SIMATIC ET 200SP communicates via PROFINET, whose high speed and data transfer rate ensure significantly greater performance than conventional systems.

- Scalable I/O system with IP20 degree of protection for PROFINET
- Compact dimensions
- High degree of user-friendliness due to:
  - Push-in terminals for quick, one-handed wiring without the use of tools
  - Excellent accessibility of terminals due to arrangement in columns
  - Latching measurement taps for simple multi-point measurement
  - Clearly understandable labeling and color concept for fail-safe working
- Can be a combination of digital and analog input or output modules, other modules in preparation
- Extensive system functions
  - Individual load group formation as system feature (power modules omitted)
  - Modules can be replaced during operation (hot swapping)
  - Start-up with gaps for partial commissioning
  - Permanent wiring with multi-conductor connection
  - System support of PROFIenergy for energy saving purposes
  - Electronic rating plate (I&M data 0...3)
  - All interface and I/O modules support firmware update
  - Configuration control via user software for option handling
- Simple retrofitting of modules without reconfiguration at the station end

Overview

- Interface module for linking the ET 200SP to PROFINET
- Handles all data exchange with the PROFINET IO Controller
- Bus Adapter (BA) for individual PROFINET connection
- Integrated 2-port switch for line configuration
- max. 32 I/O modules
- Operation with gaps (non-equipped BaseUnits) possible
- Replacement of an I/O module possible during operation (single hot-swap)
- Load group formation without power module

Technical specifications

	6ES7 155-6AA00-0BN0
	IM 155-6 PN ST with BA 2xRJ45 and server module
General information	
Vendor identifier (VendorID)	002AH
Device identifier (DeviceID)	0313h
Supply voltage	
Rated value (DC)	24 V; permissible range: 19.2 to 28.8 V
Reverse polarity protection	Yes
Mains buffering	
• Mains buffering, min.	5 ms
Input current	
from supply voltage 1L+, max.	450 mA; with input voltage 1L+ = 24 V and current output at backplane bus = 2000 mA
Power losses	
Power loss, typ.	1.9 W
Address area	
Addressing volume	
• Outputs	256 byte
• Inputs	256 byte
Interfaces	
PROFINET IO	
• Automatic detection of transmission speed	Yes
• Transmission rate, max.	100 Mbit/s
• Services	Ping; arp; LLDP; network diagnostics (SNMP) / MIB-2, reset SNMP parameters to factory settings; prioritized startup; media redundancy MRP; shared device
• RJ45	Yes; 2x RJ45

	6ES7 155-6AA00-0BN0
	IM 155-6 PN ST with BA 2xRJ45 and server module
1st interface	
Type of interface	PROFINET
Physical	RJ45
Isolated	Yes
Integrated switch	Yes
Number of ports	2
Autonegotiation	Yes
Autocrossing	Yes
Functionality	
• PROFINET IO Device	Yes
2nd interface	
Functionality	
• PROFINET IO Device	Yes
PROFINET IO Controller	
• User data per address area, max.	256 byte
PROFINET CBA	
• Acyclic transmission	Yes
• Cyclic transmission	Yes
Protocols	
PROFINET IO	Yes
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
Diagnostic messages	
• Diagnostic functions	Yes
Galvanic isolation	
between supply voltage and electronics	Yes
between Ethernet and electronics	Yes
Isolation	
Isolation checked with	707 V DC between supply voltage and electronics 1 500 V AC between Ethernet and electronics

Technical specifications (continued)

	6ES7 155-6AA00-0BN0
	IM 155-6 PN ST with BA 2xRJ45 and server module
EMC	
Interference immunity against discharge of static electricity	
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes
- Degree of sharpness	3
- Test voltage at air discharge	8 kV
- Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
• on the supply lines acc. to IEC 61000-4-4	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes
• Interference immunity on supply cables	
- Degree of sharpness	3
- Test voltage	2 kV
• Interference immunity on signal cables > 30m	
- Degree of sharpness	3
- Test voltage	2 kV
• Interference immunity on signal cables < 30m	
- Degree of sharpness	3
- Test voltage	1 kV
Surge immunity	
• on the supply lines acc. to IEC 61000-4-5	Yes
• Asymmetric interference	
- Degree of sharpness	3
- Test voltage on supply cables	2 kV
- Test voltage on signal cables > 30m	2 kV
Immunity against high-frequency electromagnetic fields	
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes
- Degree of sharpness	3
- Frequency range of the HF irradiation	80 to 1000 MHz and 1.4 to 2 GHz with 10 Vm; 2.0 GHz to 2.7 GHz with 1 Vm
- Electrical field strength at 80% amplitude modulation with 1kHz in the range of 80 MHz to 1000 MHz	10 V/m
Immunity against conducted interference induced by high-frequency fields	
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes
- Degree of sharpness	3

	6ES7 155-6AA00-0BN0
	IM 155-6 PN ST with BA 2xRJ45 and server module
Climatic and mechanical conditions for storage and transport	
Conditions of use in storage and transport	
• Compliance with requirements for storage and transport conditions according to IEC 61131-2	Yes
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	1 m
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
- Min.	-40 °C
- Max.	70 °C
• Air pressure acc. to IEC 60068-2-13	
- Min.	660 hPa
- Max.	1 080 hPa
- Min.	-1 000 m
- Max.	3 500 m
• Relative humidity	
- Relative humidity at 25 °C, max. (without condensation)	95 %
Mechanical conditions for storage and transport	
• Constant amplitude at 5 Hz to 9 Hz, max.	3.5 mm
• Constant acceleration at 9 Hz to 150 Hz, max.	9.8 m/s^2
• Shock (acc. to IEC 60068-2-29)	
- Acceleration at a duration of 6 ms per shock (tested with 1000 shocks)	250 m/s^2
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	0 °C
- Max.	60 °C
- Permissible temperature change	10 °C/h
• Air pressure acc. to IEC 60068-2-13	
- Min.	795 hPa
- Max.	1 080 hPa
- Min.	-1 000 m
- Max.	2 000 m
• Relative humidity	
- Relative humidity at 25 °C, max. (without condensation)	95 %
• Pollutant concentrations	
- Pollutant concentrations SO_2 at RH < 60% without condensation	$S0_2$: < 0.5 ppm; RH < 60% condensation-free
- H_2S at RH < 60% without condensation	H_2S: < 0.1 ppm; RH < 60% condensation-free

Technical specifications (continued)

	6ES7 155-6AA00-0BN0
	IM 155-6 PN ST with BA 2xRJ45 and server module
Dimensions	
Width	50 mm
Height	117 mm
Depth	74 mm

	6ES7 155-6AA00-0BN0
	IM 155-6 PN ST with BA 2xRJ45 and server module
Weight	
Weight, approx.	191 g; IM155PN ST with BA 2xRJ45 (mounted)

Ordering data

	Order No.
IM 155-6PN Standard interface module	
with server module and installed bus adapter BA 2xRJ45	**6ES7 155-6AA00-0BN0**
Accessories	
Bus adapter BA 2xRJ45	**6ES7 193-6AR00-0AA0**
Bus adapter BA 2xFC	Available soon
Reference identification label	**6ES7 193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling Strips	**6ES7 193-6LR10-0AA0**
1 roll of 500 strips	
IE FC RJ45 plugs	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 Plug 180	
180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
Standard mounting rail 35 mm	
Length: 483 mm for 19" cabinets	**6ES5 710-8MA11**
Length: 530 mm for 600 mm cabinets	**6ES5 710-8MA21**
Length: 830 mm for 900 mm cabinets	**6ES5 710-8MA31**
Length: 2 m	**6ES5 710-8MA41**

	Order No.
Manuals for ET 200SP distributed I/O system	
• ET 200SP System Manual • Manuals for interface modules, BaseUnits and I/O modules	
Manuals can be downloaded from the Internet as PDF files:	
http://www.siemens.com/simatic-docu	
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
Spare parts	
Server module	Available soon
Power supply connector for interface module	
for connecting the 24 V DC supply voltage	
with push-in terminals (10 units)	**6ES7 193-4JB00-0AA0**
with screw-type terminals (10 units)	**6ES7 193-4JB50-0AA0**

Overview

- 8- and 16-channel digital input modules for the ET 200SP
- Can be plugged into Type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DI: White
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete order number
- Optional labeling accessories
  - Labeling Strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC

Technical specifications

	6ES7 131-6BF00-0BA0	6ES7 131-6BH00-0BA0
	DI 8x24VDC ST	DI 16x24VDC ST
CiR - Configuration in RUN		
Reparameterization possible in RUN	Yes	Yes
Supply voltage		
24 V DC	Yes	Yes
Permissible range, lower limit (DC)	19.2 V	19.2 V
Permissible range, upper limit (DC)	28.8 V	28.8 V
External protection for supply cables (recommendation)	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic
Input current		
Current consumption, max.	50 mA	90 mA
Output voltage		
Power supply to the transmitters		
• Present	Yes	
• Rated value (DC)	24 V	
• Short-circuit proof	Yes	
• Supply current, max.	700 mA	
Power losses		
Power loss, typ.	1 W	1.7 W
Digital inputs		
Number of inputs	8	16
Input characteristic curve acc. to IEC 61131, Type 1	Yes	Yes
Input characteristic curve acc. to IEC 61131, Type 3	Yes	Yes
Number of simultaneously controllable inputs		
• Horizontal installation		
- up to 60 °C, max.	8	16
• Vertical installation		
- up to 50 °C, max.	8	16

	6ES7 131-6BF00-0BA0	6ES7 131-6BH00-0BA0
	DI 8x24VDC ST	DI 16x24VDC ST
Input voltage		
• Type of input voltage	DC	DC
• Rated value, DC	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V
• for signal "1"	11 to 30 V	11 to 30 V
Input current		
• for signal "0", max. (permissible quiescent current)	1.5 mA	1.5 mA
Input delay (for rated value of input voltage)		
• for standard inputs		
- parameterizable	Yes	Yes
Cable length		
• Cable length, shielded, max.	1 000 m	1 000 m
• Cable length unshielded, max.	200 m	200 m
Encoder		
Connectable encoders		
• 2-wire sensor	Yes	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Interrupts/diagnostics/ status information		
Diagnostic messages		
• Diagnostic functions	Yes; module-wise	Yes; module-wise
• Monitoring the supply voltage	Yes	Yes
• Wire break	Yes	Yes
• Short circuit	Yes	
• Group error	Yes	Yes
Diagnostics indication LED		
• for voltage monitoring	Yes	Yes
• Status indicator digital input (green)	Yes	Yes

Technical specifications (continued)

	6ES7 131-6BF00-0BA0	6ES7 131-6BH00-0BA0
	DI 8x24VDC ST	DI 16x24VDC ST
Galvanic isolation		
Galvanic isolation digital inputs		
• between the channels	No	No
• between the channels and the backplane bus	Yes	Yes
EMC		
Interference immunity against discharge of static electricity		
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes
- Degree of sharpness	3	3
- Test voltage at air discharge	8 kV	8 kV
- Test voltage at contact discharge	6 kV	6 kV
Interference immunity to cable-borne interference		
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes
• Interference immunity on supply cables		
- Degree of sharpness	3	3
- Test voltage	2 kV	2 kV
• Interference immunity on signal cables > 30m		
- Degree of sharpness	3	3
- Test voltage	2 kV	2 kV
• Interference immunity on signal cables < 30m		
- Degree of sharpness	3	3
- Test voltage	1 kV	1 kV
Surge immunity		
• on the supply lines acc. to IEC 61000-4-5	Yes; with upstream protective element	Yes; with upstream protective element
• Asymmetric interference		
- Degree of sharpness	3	3
- Test voltage on supply cables	2 kV	2 kV
- Test voltage on signal cables > 30m	2 kV	2 kV
Immunity against high-frequency electromagnetic fields		
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes	Yes
- Degree of sharpness	3	3
- Frequency range of the HF irradiation	80 to 1000 MHz and 1.4 to 2 GHz with 10 Vm; 2.0 GHz to 2.7 GHz with 1 Vm	80 to 1000 MHz and 1.4 to 2 GHz with 10 Vm; 2.0 GHz to 2.7 GHz with 1 Vm
- Electrical field strength at 80% amplitude modulation with 1kHz in the range of 80 MHz to 1000 MHz	10 V/m	10 V/m
Immunity against conducted interference induced by high-frequency fields		
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes	Yes
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes
- Degree of sharpness	3	3
- Field strength at 80% amplitude modulation with 1kHz in the range 9 kHz to 80 MHz	10 V	10 V
Emission of radio interference acc. to EN 55 011		
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes	Yes
• Limit class A, for use in industrial areas	Yes	Yes
Emission of radio interference acc. to EN 55 022		
• Interference emission acc. to EN 55022, class A	Yes	Yes
Emission of conducted and non-conducted interference		
• Interference emission from electromagnetic fields		
- Limit value in the frequency range 29 MHz to 230 MHz	40 dB (µV/m)	40 dB (µV/m)
- Limit value in the frequency range 230 MHz to 1000 MHz	47 dB (µV/m)	47 dB (µV/m)
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	Yes; included in cULus	Yes; included in cULus
C-TICK	Yes	Yes
FM approval	Yes	Yes
Marine approval	Yes	Yes
Climatic and mechanical conditions for storage and transport		
Conditions of use in storage and transport		
• Compliance with requirements for storage and transport conditions according to IEC 61131-2	Yes	Yes
Climatic conditions for storage and transport		
• Free fall		
- Drop height, max. (in packaging)	1 m	1 m
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	-40 °C to +70 °C
- Min.	-40 °C	-40 °C
- Max.	70 °C	70 °C

9

Technical specifications (continued)

	6ES7 131-6BF00-0BA0	6ES7 131-6BH00-0BA0
	DI 8x24VDC ST	DI 16x24VDC ST
Climatic conditions for storage and transport (continued)		
• Air pressure acc. to IEC 60068-2-13		
- Min.	660 hPa	660 hPa
- Max.	1 080 hPa	1 080 hPa
- Min.	-1 000 m	-1 000 m
- Max.	3 500 m	3 500 m
• Relative humidity		
- Relative humidity at 25 °C, max. (without condensation)	95 %	95 %
Mechanical conditions for storage and transport		
• Constant amplitude at 5 Hz to 9 Hz, max.	3.5 mm	3.5 mm
• Constant acceleration at 9 Hz to 150 Hz, max	9.8 m/s^2	9.8 m/s^2
• Shock (acc. to IEC 60068-2-29)		
- Acceleration at a duration of 6 ms per shock (tested with 1000 shocks)	250 m/s^2	250 m/s^2
Mechanical and climatic conditions during operation		
Climatic conditions in operation		
• Temperature		
- Min.	0 °C	0 °C
- Max.	60 °C	60 °C
- Permissible temperature change	10 °C/h	10 °C/h

	6ES7 131-6BF00-0BA0	6ES7 131-6BH00-0BA0
	DI 8x24VDC ST	DI 16x24VDC ST
Climatic conditions in operation (continued)		
• Air pressure acc. to IEC 60068-2-13		
- Min.	795 hPa	795 hPa
- Max.	1 080 hPa	1 080 hPa
- Min.	-1 000 m	-1 000 m
- Max.	2 000 m	2 000 m
• Relative humidity		
- Relative humidity at 25 °C, max. (without condensation)	95 %	95 %
• Pollutant concentrations		
- SO_2 at RH < 60% without condensation	$S0_2$: < 0.5 ppm; RH < 60% condensation-free	$S0_2$: < 0.5 ppm; RH < 60% condensation-free
- H_2S at RH < 60% without condensation	H_2S: < 0.1 ppm; RH < 60% condensation-free	H_2S: < 0.1 ppm; RH < 60% condensation-free
Mechanical conditions in operation		
• Vibration (acc. to IEC 60068-2-6)		
- Constant amplitude at 10 Hz to 58 Hz, max.	0.35 mm	0.35 mm
Dimensions		
Width	15 mm	15 mm
Weight		
Weight, approx.	28 g	28 g

Ordering data	Order No.
Digital input modules	
DI 8x24VDC Standard, BU type A0, color code CC01	**6ES7 131-6BF00-0BA0**
DI 16x24VDC Standard, BU type A0, color code CC00	**6ES7 131-6BH00-0BA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7 193-6BP00-0DA0**
BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7 193-6BP00-0BA0**
BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7 193-6BP20-0DA0**
BaseUnit (light) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7 193-6BP20-0BA0**
BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	

	Order No.
Accessories	
Reference identification label	**6ES7 193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	**6ES7 193-6LR10-0AA0**
1 roll of 500 strips	
BU cover, 15 mm	**6ES7 133-6CV15-1AM0**
for covering empty slots (gaps); 5 units	
Shield connection	**6ES7 193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coding plates	
Color-coding plate CC01	**6ES7 193-6CP01-2MA0**
for 16 process terminals (push-in); 10 units	
Color-coding plate CC71	**6ES7 193-6CP71-2AA0**
for 10 AUX terminals; 10 units, yellow/green	
Color-coding plate CC72	**6ES7 193-6CP72-2AA0**
for 10 AUX terminals; 10 units, red	
Color-coding plate CC73	**6ES7 193-6CP73-2AA0**
for 10 AUX terminals; 10 units, blue	

Overview

- 4-, 8- and 16-channel digital output modules for the ET 200SP
- Can be plugged into Type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DQ: black
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete order number
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC

Technical specifications

	6ES7 132-6BD20-0BA0	6ES7 132-6BF00-0BA0	6ES7 132-6BH00-0BA0
	DQ 4x24VDC/2A ST	DQ 8x24VDC/0,5A ST	DQ 16x24VDC/0,5A ST
CiR - Configuration in RUN			
Reparameterization possible in RUN	Yes	Yes	Yes
Supply voltage			
24 V DC	Yes	Yes	Yes
Permissible range, lower limit (DC)	19.2 V	19.2 V	19.2 V
Permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V
Reverse polarity protection	Yes	Yes	Yes
External protection for supply cables (recommendation)	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic
Input current			
Current consumption, max.	60 mA; without load	35 mA; without load	60 mA; without load
Power losses			
Power loss, typ.	1 W	1 W	1 W
Digital outputs			
Number of outputs	4	8	16
Current-sourcing	Yes	Yes	Yes
Short-circuit strength	Yes	Yes	Yes
• Response threshold, typ.	2.8 to 5.2 A	0.7 to 1.3 A	0.7 to 1.3 A
Limitation of inductive shutdown voltage to	typ. L+ (-50 V)	typ. L+ (-50 V)	typ. L+ (-50 V)
Switching capacity of the outputs			
• with resistive load, max.	2 A	0.5 A	0.5 A
• on lamp load, max.	10 W	5 W	5 W
Controlling a digital input	Yes	Yes	Yes
Load resistance range			
• Lower limit	12 Ω	48 Ω	48 Ω
• Upper limit	3 400 Ω	12 kΩ	12 kΩ
Output voltage			
• Rated value (DC)	24 V	24 V	24 V
• for signal "1", min.	L+ (-1 V)	L+ (-1 V)	L+ (-1 V)
• for signal "1", max.	24 V	24 V	24 V

Technical specifications (continued)

	6ES7 132-6BD20-0BA0	6ES7 132-6BF00-0BA0	6ES7 132-6BH00-0BA0
	DQ 4x24VDC/2A ST	DQ 8x24VDC/0,5A ST	DQ 16x24VDC/0,5A ST
Output current			
• for signal "1" rated value	2 A	0.5 A	0.5 A
Output delay with resistive load			
• 0 to 1	50 µs	50 µs	50 µs
• 1 to 0	100 µs	100 µs	100 µs
Parallel switching of 2 outputs			
• for increased power	No	No	No
• for redundant control of a load	Yes	Yes	Yes
Switching frequency			
• with resistive load, max.	100 Hz	100 Hz	100 Hz
• with inductive load, max.	2 Hz	2 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz
Aggregate current of outputs (per group)			
• Horizontal installation			
- up to 40 °C, max.	8 A		8 A
- up to 50 °C, max.	6 A		6 A
- up to 60 °C, max.	4 A	4 A	4 A
Cable length			
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	200 m	200 m	200 m
Interrupts/diagnostics/status information			
Diagnostic messages			
• Diagnostic functions	Yes; module-wise	Yes; module-wise	Yes; module-wise
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire break	Yes	Yes	Yes
• Short circuit	Yes	Yes	Yes
• Group error	Yes	Yes	Yes
Diagnostics indication LED			
• for status of the outputs	Yes	Yes	Yes
• for voltage monitoring	Yes	Yes	Yes
• for short-circuit	Yes; group error (red)	Yes; group error (red)	Yes; group error (red)
• Status indicator digital output (green)	Yes; per channel	Yes; per channel	Yes; per channel
Galvanic isolation			
Galvanic isolation digital outputs			
• between the channels	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes
• between the channels and the power supply of the electronics	No	No	No
EMC			
Interference immunity against discharge of static electricity			
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes	Yes
- Degree of sharpness	3	3	3
- Test voltage at air discharge	8 kV	8 kV	8 kV
- Test voltage at contact discharge	6 kV	6 kV	6 kV

Technical specifications (continued)

	6ES7 132-6BD20-0BA0	6ES7 132-6BF00-0BA0	6ES7 132-6BH00-0BA0
	DQ 4x24VDC/2A ST	DQ 8x24VDC/0,5A ST	DQ 16x24VDC/0,5A ST
Interference immunity to cable-borne interference			
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on supply cables			
- Degree of sharpness	3	3	3
- Test voltage	2 kV	2 kV	2 kV
• Interference immunity on signal cables > 30m			
- Degree of sharpness	3	3	3
- Test voltage	2 kV	2 kV	2 kV
• Interference immunity on signal cables < 30m			
- Degree of sharpness	3	3	3
- Test voltage	1 kV	1 kV	1 kV
Surge immunity			
• on the supply lines acc. to IEC 61000-4-5	Yes; with upstream protective element	Yes; with upstream protective element	Yes; with upstream protective element
• Asymmetric interference			
- Degree of sharpness	3	3	3
- Test voltage on supply cables	2 kV	2 kV	2 kV
- Test voltage on signal cables > 30m	2 kV	2 kV	2 kV
Immunity against high-frequency electromagnetic fields			
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes	Yes	Yes
- Frequency range of the HF irradiation	80 to 1000 MHz and 1.4 to 2 GHz with 10 Vm; 2.0 GHz to 2.7 GHz with 1 Vm	80 to 1000 MHz and 1.4 to 2 GHz with 10 Vm; 2.0 GHz to 2.7 GHz with 1 Vm	80 to 1000 MHz and 1.4 to 2 GHz with 10 Vm; 2.0 GHz to 2.7 GHz with 1 Vm
- Electrical field strength at 80% amplitude modulation with 1kHz in the range of 80 MHz to 1000 MHz	10 V/m	10 V/m	10 V/m
Immunity against conducted interference induced by high-frequency fields			
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes	Yes	Yes
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes	Yes
- Degree of sharpness	3	3	3
- Field strength at 80% amplitude modulation with 1kHz in the range 9 kHz to 80 MHz	10 V	10 V	10 V
Emission of radio interference acc. to EN 55 011			
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes	Yes	Yes
• Limit class A, for use in industrial areas	Yes	Yes	Yes
Emission of radio interference acc. to EN 55 022			
• Interference emission acc. to EN 55022, class A	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 132-6BD20-0BA0	6ES7 132-6BF00-0BA0	6ES7 132-6BH00-0BA0
	DQ 4x24VDC/2A ST	DQ 8x24VDC/0,5A ST	DQ 16x24VDC/0,5A ST
Emission of conducted and non-conducted interference			
• Interference emission from electromagnetic fields			
- Limit value in the frequency range 29 MHz to 230 MHz	40 dB (µV/m)	40 dB (µV/m)	40 dB (µV/m)
- Limit value in the frequency range 230 MHz to 1000 MHz	47 dB (µV/m)	47 dB (µV/m)	47 dB (µV/m)
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
CSA approval	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus
C-TICK	Yes	Yes	Yes
FM approval	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes
Climatic and mechanical conditions for storage and transport			
Conditions of use in storage and transport			
• Compliance with requirements for storage and transport conditions according to IEC 61131-2	Yes	Yes	Yes
Climatic conditions for storage and transport			
• Free fall			
- Drop height, max. (in packaging)	1 m	1 m	1 m
• Temperature			
- Permissible temperature range	-40 °C to +70 °C	-40 °C to +70 °C	-40 °C to +70 °C
- Min.	-40 °C	-40 °C	-40 °C
- Max.	70 °C	70 °C	70 °C
• Air pressure acc. to IEC 60068-2-13			
- Min.	660 hPa	660 hPa	660 hPa
- Max.	1 080 hPa	1 080 hPa	1 080 hPa
- Min.	-1 000 m	-1 000 m	-1 000 m
- Max.	3 500 m	3 500 m	3 500 m
• Relative humidity			
- Relative humidity at 25 °C, max. (without condensation)	95 %	95 %	95 %
Mechanical conditions for storage and transport			
• Constant amplitude at 5 Hz to 9 Hz, max.	3.5 mm	3.5 mm	3.5 mm
• Constant acceleration at 9 Hz to 150 Hz, max.	9.8 m/s^2	9.8 m/s^2	9.8 m/s^2
• Shock (acc. to IEC 60068-2-29)			
- Acceleration at a duration of 6 ms per shock (tested with 1000 shocks)	250 m/s^2	250 m/s^2	250 m/s^2
Mechanical and climatic conditions during operation			
Climatic conditions in operation			
• Temperature			
- Min.	0 °C	0 °C	0 °C
- Max.	60 °C	60 °C	60 °C
- Permissible temperature change	10 °C/h	10 °C/h	10 °C/h
• Air pressure acc. to IEC 60068-2-13			
- Min.	795 hPa	795 hPa	795 hPa
- Max.	1 080 hPa	1 080 hPa	1 080 hPa
- Min.	-1 000 m	-1 000 m	-1 000 m
- Max.	2 000 m	2 000 m	2 000 m

Technical specifications (continued)

	6ES7 132-6BD20-0BA0	6ES7 132-6BF00-0BA0	6ES7 132-6BH00-0BA0
	DQ 4x24VDC/2A ST	DQ 8x24VDC/0,5A ST	DQ 16x24VDC/0,5A ST
Climatic conditions in operation (continued)			
• Relative humidity			
- Relative humidity at 25 °C, max. (without condensation)	95 %	95 %	95 %
• Pollutant concentrations			
- Pollutant concentrations SO_2 at RH < 60% without condensation	$S0_2$: < 0.5 ppm; RH < 60% condensation-free	$S0_2$: < 0.5 ppm; RH < 60% condensation-free	$S0_2$: < 0.5 ppm; RH < 60% condensation-free
- H_2S at RH < 60% without condensation	H_2S: < 0.1 ppm; RH < 60% condensation-free	H_2S: < 0.1 ppm; RH < 60% condensation-free	H_2S: < 0.1 ppm; RH < 60% condensation-free
Mechanical conditions in operation			
• Vibration (acc. to IEC 60068-2-6)			
- Constant amplitude at 10 Hz to 58 Hz, max.	0.35 mm	0.35 mm	0.35 mm
Dimensions			
Width	15 mm	15 mm	15 mm
Weight			
Weight, approx.	30 g	28 g	28 g

Ordering data

	Order No.
Digital output modules	
DQ 4x24VDC/2A Standard, BU type A0, color code CC02	**6ES7 132-6BD20-0BA0**
DQ 8x24VDC/0,5A Standard, BU type A0, color code CC02	**6ES7 132-6BF00-0BA0**
DQ 16x24 V DC/0,5 A Standard, BU type A0, color code CC00	**6ES7 132-6BH00-0BA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7 193-6BP00-0DA0**
BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7 193-6BP00-0BA0**
BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7 193-6BP20-0DA0**
BaseUnit (light) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7 193-6BP20-0BA0**
BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	

	Order No.
Accessories	
Reference identification label	**6ES7 193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling Strips	**6ES7 193-6LR10-0AA0**
1 roll of 500 strips	
BU cover, 15 mm	**6ES7 133-6CV15-1AM0**
for covering empty slots (gaps); 5 units	
Shield connection	**6ES7 193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coding plates	
Color-coding plate CC02	**6ES7 193-6CP02-2MA0**
for 16 process terminals (push-in); 10 units	
Color-coding plate CC71	**6ES7 193-6CP71-2AA0**
for 10 AUX terminals; 10 units, yellow/green	
Color-coding plate CC72	**6ES7 193-6CP72-2AA0**
for 10 AUX terminals; 10 units, red	
Color-coding plate CC73	**6ES7 193-6CP73-2AA0**
for 10 AUX terminals; 10 units, blue	

Overview

- 4-channel analog input modules for the ET 200SP
- Can be plugged into type A0 or A1 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type AI: Light blue
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete order number
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC

Technical specifications

	6ES7 134-6HD00-0BA1	6ES7 134-6GD00-0BA1	6ES7 134-6JD00-0CA1
	AI 4xU/I 2-wire ST	AI 4xI 2-/4-wire ST	AI 4xRTD/TC 2-/3-/4-wire HF
CiR - Configuration in RUN			
Reparameterization possible in RUN	Yes	Yes	Yes
Supply voltage			
24 V DC	Yes	Yes	Yes
Permissible range, lower limit (DC)	19.2 V	19.2 V	19.2 V
Permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V
Reverse polarity protection	Yes	Yes	Yes
External protection for supply cables (recommendation)	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic	24 V DC/10 A miniature circuit breaker with type B or C tripping characteristic
Input current			
Current consumption, max.	37 mA; without encoder supply voltage	37 mA; without encoder supply voltage	35 mA
Output voltage			
Power supply to the transmitters			
• Present	Yes	Yes	Yes
• Rated value (DC)	24 V	24 V	24 V
• Short-circuit proof	Yes	Yes	Yes
Power losses			
Power loss, typ.	0.85 W; without encoder supply voltage	0.85 W; without encoder supply voltage	0.75 W; without encoder supply voltage
Analog inputs			
Number of analog inputs	4	4	4
Permissible input frequency for current input (destruction limit), max.	30 V	30 V	30 V
Permissible input voltage for voltage input (destruction limit), max.	30 V		30 V
Permissible input current for current input (destruction limit), max.	50 mA	50 mA	
Technical unit for temperature measurement adjustable			Yes

Technical specifications (continued)

	6ES7 134-6HD00-0BA1	6ES7 134-6GD00-0BA1	6ES7 134-6JD00-0CA1
	AI 4xU/I 2-wire ST	AI 4xI 2-/4-wire ST	AI 4xRTD/TC 2-/3-/4-wire HF
Input ranges			
• Voltage	Yes		Yes
• Current	Yes	Yes	
• Thermocouple			Yes
• Resistance thermometer			Yes
• Resistance			Yes
Input ranges (rated values), thermoelements			
• Type TXK/TXK(L) to GOST			Yes
• Input resistance (Type TXK/TXK(L) to GOST)			1 MΩ
Connection of signal encoders			
• for voltage measurement	Yes		Yes
• for current measurement as 2-wire transducer	Yes	Yes	
• Load of the 2-wire transducer, max.	650 Ω	650 Ω	
• for current measurement as 4-wire transducer		Yes	
Thermocouple (TC)			
• Characteristic linearization			
- Parameterizable			Yes
• Temperature compensation			
- Parameterizable			Yes
- Internal temperature compensation			Yes
- External temperature compensation with compensations socket			Yes
- Compensation for 0 °C reference point temperature			Yes
Resistance thermometer (RTD)			
• Characteristic linearization			
- Parameterizable			Yes
Analog value creation			
Integrations and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	16.67 Hz, 50 Hz, 60 Hz	16.67 Hz, 50 Hz, 60 Hz	16.67 Hz, 50 Hz, 60 Hz
Smoothing of measured values			
• Parameterizable	Yes	Yes	Yes
• Step: None	Yes	Yes	Yes
• Step: Low	Yes	Yes	Yes
• Step: Medium	Yes	Yes	Yes
• Step: High	Yes	Yes	Yes
Errors/accuracies			
Linearity error (relative to the output range)	+/- 0.01 %	+/- 0.01 %	+/- 0.01 %
Temperature error (relative to the output range)	+/- 0.005 %	+/- 0.005 %	+/- 0.0009 %
Crosstalk between the inputs, min.	50 dB	50 dB; applies to up to + /-5 V overvoltage in other channels	50 dB
Repeatability in the settled state at 25°C (rel. to output range)	+/- 0.05 %	+/- 0.05 %	+/- 0.05 %

Technical specifications (continued)

	6ES7 134-6HD00-0BA1	6ES7 134-6GD00-0BA1	6ES7 134-6JD00-0CA1
	AI 4xU/I 2-wire ST	AI 4xI 2-/4-wire ST	AI 4xRTD/TC 2-/3-/4-wire HF
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency			
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	70 dB	70 dB
• Common mode voltage, max.	10 V	10 V	10 V
• Common mode interference, min.	90 dB	90 dB	90 dB
Interrupts/diagnostics/ status information			
Alarms			
• Alarms			Yes
Diagnostic messages			
• Diagnostic functions	Yes; module-wise	Yes; module-wise	Yes; channel by channel, parameterizable
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire break	Yes	Yes	Yes
• Short circuit	Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	
• Group error	Yes	Yes	Yes
Diagnostics indication LED			
• for status of the inputs	Yes	Yes	Yes
• for voltage monitoring	Yes	Yes	Yes
• for short-circuit	Yes; group error (red)	Yes; group error (red)	Yes; group error (red)
Galvanic isolation			
Galvanic isolation analog inputs			
• between the channels	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes
• between the channels and the power supply of the electronics	Yes; not for 2-wire transmitters	Yes; not for 2-wire transmitters	Yes
EMC			
Interference immunity against discharge of static electricity			
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes	Yes	Yes
- Degree of sharpness	3	3	3
- Test voltage at air discharge	8 kV	8 kV	8 kV
- Test voltage at contact discharge	6 kV	6 kV	6 kV
Interference immunity to cable-borne interference			
• on the supply lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes	Yes	Yes
• Interference immunity on supply cables			
- Degree of sharpness	3	3	3
- Test voltage	2 kV	2 kV	2 kV
• Interference immunity on signal cables > 30m			
- Degree of sharpness	3	3	3
- Test voltage	2 kV	2 kV	2 kV
• Interference immunity on signal cables < 30m			
- Degree of sharpness	3	3	3
- Test voltage	1 kV	1 kV	1 kV

Technical specifications (continued)

	6ES7 134-6HD00-0BA1	6ES7 134-6GD00-0BA1	6ES7 134-6JD00-0CA1
	AI 4xU/I 2-wire ST	AI 4xI 2-/4-wire ST	AI 4xRTD/TC 2-/3-/4-wire HF
Surge immunity			
• on the supply lines acc. to IEC 61000-4-5	Yes; with upstream protective element	Yes; with upstream protective element	Yes; with upstream protective element
• Asymmetric interference			
- Degree of sharpness	3	3	3
- Test voltage on supply cables	2 kV	2 kV	2 kV
- Test voltage on signal cables > 30m	2 kV	2 kV	2 kV
Immunity against high-frequency electromagnetic fields			
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes	Yes	Yes
- Degree of sharpness	3	3	3
- Field strength at 80% amplitude modulation with 1 kHz in the range 80 kHz to 1 000 MHz	10 V/m	10 V/m	10 V/m
Immunity against conducted interference induced by high-frequency fields			
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes	Yes	Yes
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes	Yes	Yes
- Degree of sharpness	3	3	3
- Field strength at 80% amplitude modulation with 1 kHz in the range 9 kHz to 80 MHz	10 V	10 V	10 V
Emission of radio interference acc. to EN 55 011			
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes	Yes	Yes
• Limit class A, for use in industrial areas	Yes	Yes	Yes
Emission of radio interference acc. to EN 55 022			
• Interference emission acc. to EN 55022, class A	Yes	Yes	Yes

Technical specifications (continued)

	6ES7 134-6HD00-0BA1	6ES7 134-6GD00-0BA1	6ES7 134-6JD00-0CA1
	AI 4xU/I 2-wire ST	AI 4xI 2-/4-wire ST	AI 4xRTD/TC 2-/3-/4-wire HF
Degree and class of protection			
IP20	Yes	Yes	Yes
Standards, approvals, certificates			
CE mark	Yes	Yes	Yes
CSA approval	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus
C-TICK	Yes	Yes	Yes
FM approval	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes
Climatic and mechanical conditions for storage and transport			
Conditions of use in storage and transport			
• Compliance with requirements for storage and transport conditions according to IEC 61131-2	Yes	Yes	Yes
Climatic conditions for storage and transport			
• Free fall			
- Drop height, max. (in packaging)	1 m	1 m	1 m
• Temperature			
- Min.	-40 °C	-40 °C	-40 °C
- Max.	70 °C	70 °C	70 °C
• Air pressure acc. to IEC 60068-2-13			
- Min.	660 hPa	660 hPa	660 hPa
- Max.	1 080 hPa	1 080 hPa	1 080 hPa
- Min.	-1 000 m	-1 000 m	-1 000 m
- Max.	3 500 m	3 500 m	3 500 m
Mechanical conditions for storage and transport			
• Constant amplitude at 5 Hz to 9 Hz, max.	3.5 mm	3.5 mm	3.5 mm

Technical specifications (continued)

	6ES7 134-6HD00-0BA1	6ES7 134-6GD00-0BA1	6ES7 134-6JD00-0CA1
	AI 4xU/I 2-wire ST	AI 4xI 2-/4-wire ST	AI 4xRTD/TC 2-/3-/4-wire HF
Mechanical and climatic conditions during operation			
Climatic conditions in operation			
• Temperature			
- Min.	0 °C	0 °C	0 °C
- Max.	60 °C	60 °C	60 °C
- Permissible temperature change	10 °C/h	10 °C/h	10 °C/h
• Air pressure acc. to IEC 60068-2-13			
- Min.	795 hPa	795 hPa	795 hPa
- Max.	1 080 hPa	1 080 hPa	1 080 hPa
- Min.	-1 000 m	-1 000 m	-1 000 m
- Max.	2 000 m	2 000 m	2 000 m
• Relative humidity			
- Relative humidity at 25 °C, max. (without condensation)	95 %	95 %	95 %
Mechanical conditions in operation			
• Vibration (acc. to IEC 60068-2-6)			
- Constant amplitude at 10 Hz to 58 Hz, max.	0.35 mm	0.35 mm	0.35 mm
Dimensions			
Width	15 mm	15 mm	15 mm
Weight			
Weight, approx.	31 g	31 g	30 g

Ordering data	Order No.
Analog input modules	
AI 4XU/I 2-wire Standard, BU type A0 or A1, color code CC03	**6ES7 134-6HD00-0BA1**
AI 4xI 2-,4-wire Standard, BU type A0 or A1, color code CC03	**6ES7 134-6GD00-0BA1**
AI 4xRTD/TC 2-,3-,4-wire High Feature BU type A0 or A1, color code CC00	**6ES7 134-6JD00-0CA1**
Usable type A0 BaseUnits	
BU15-P16+A0+2D BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7 193-6BP00-0DA0**
BU15-P16+A0+2B BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7 193-6BP00-0BA0**
BU15-P16+A10+2D BaseUnit (light) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7 193-6BP20-0DA0**
BU15-P16+A10+2B BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7 193-6BP20-0BA0**
Usable type A1 BaseUnits (temperature detection)	
BU15-P16+A0+2D/T BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7 193-6BP00-0DA1**
BU15-P16+A0+2B/T BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7 193-6BP00-0BA1**
BU15-P16+A0+12D/T BaseUnit (light) with 16 process terminals (1 ... 16) on the module and additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	**6ES7 193-6BP40-0DA1**
BU15-P16+A0+12B/T BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	**6ES7 193-6BP40-0BA1**
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7 193-6LF30-0AW0**
Labeling strips 1 roll of 500 strips	**6ES7 193-6LR10-0AA0**
BU cover, 15 mm for covering empty slots (gaps); 5 units	**6ES7 133-6CV15-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7 193-6SC00-1AM0**
Color-coding plates	
Color-coding plate CC03 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP03-2MA0**
Color-coding plate CC71 for 10 AUX terminals; 10 units, yellow/green	**6ES7 193-6CP71-2AA0**
Color-coding plate CC72 for 10 AUX terminals; 10 units, red	**6ES7 193-6CP72-2AA0**
Color-coding plate CC73 for 10 AUX terminals; 10 units, blue	**6ES7 193-6CP73-2AA0**
Color-coding plate CC74 for 2x5 add-on terminals; 10 units, blue/red	**6ES7 193-6CP74-2AA0**

Overview

- 4-channel analog input modules for the ET 200SP
- Can be plugged into Type A0 or A1 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type AQ: dark blue
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete order number
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC

Technical specifications

	6ES7 135-6HD00-0BA1
	AQ 4xU/I ST
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Supply voltage	
24 V DC	Yes
Permissible range, lower limit (DC)	19.2 V
Permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption, max.	150 mA; 4 channels current output 20 mA
Power losses	
Power loss, typ.	1.5 W
Address area	
Address space per module	
• Address space per module, max.	32 byte
Analog outputs	
Number of analog outputs	4
Cycle time (all channels) max.	5 ms
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 to 5 V	Yes
• -10 to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 to +20 mA	Yes
• 4 to 20 mA	Yes
Connection of actuators	
• for voltage output 2-conductor connection	Yes
• for voltage output 4-conductor connection	Yes
• for current output 2-conductor connection	Yes

	6ES7 135-6HD00-0BA1
	AQ 4xU/I ST
Load impedance (in rated range of output)	
• with voltage outputs, min.	2 kΩ
• with voltage outputs, capacitive load, max.	1 µF
• with current outputs, max.	500 Ω
• with current outputs, inductive load, max.	1 mH
Destruction limits against externally applied voltages and currents	
• Voltages at the outputs towards MANA	30 V
Analog value creation	
Integrations and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
Errors/accuracies	
Crosstalk between the outputs, min.	-50 dB
Interrupts/diagnostics/status information	
Diagnostic messages	
• Diagnostic functions	Yes; module-wise
• Monitoring the supply voltage	Yes
• Wire break	Yes
• Short circuit	Yes
• Group error	Yes

Technical specifications (continued)

	6ES7 135-6HD00-0BA1
	AQ 4xU/I ST
Diagnostics indication LED	
• for status of the outputs	Yes
• for voltage monitoring	Yes
• for short-circuit	Yes; group error (red)
Galvanic isolation	
Galvanic isolation analog outputs	
• between the channels	No
• between the channels and the backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
EMC	
Interference immunity against discharge of static electricity	
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes
- Degree of sharpness	3
- Test voltage at air discharge	8 kV
- Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
• on the supply lines acc. to IEC 61000-4-4	Yes
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes
• Interference immunity on supply cables	
- Degree of sharpness	3
- Test voltage	2 kV
• Interference immunity on signal cables > 30m	
- Degree of sharpness	3
- Test voltage	2 kV
• Interference immunity on signal cables < 30m	
- Degree of sharpness	3
- Test voltage	1 kV
Surge immunity	
• on the supply lines acc. to IEC 61000-4-5	Yes; with upstream protective element
• Asymmetric interference	
- Degree of sharpness	3
- Test voltage on supply cables	2 kV
- Test voltage on signal cables > 30m	2 kV
Immunity against high-frequency electromagnetic fields	
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes
- Degree of sharpness	3
- Electrical field strength at 80% amplitude modulation with 1 kHz in the range of 80 MHz to 1000 MHz	10 V/m

	6ES7 135-6HD00-0BA1
	AQ 4xU/I ST
Immunity against conducted interference induced by high-frequency fields	
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6	Yes
- Degree of sharpness	3
- Field strength at 80% amplitude modulation with 1 kHz in the range 9 kHz to 80 MHz	10 V
Emission of radio interference acc. to EN 55 011	
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes
• Limit class A, for use in industrial areas	Yes
Emission of radio interference acc. to EN 55 022	
• Interference emission acc. to EN 55022, class A	Yes
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes; included in cULus
C-TICK	Yes
FM approval	Yes
Marine approval	Yes
Climatic and mechanical conditions for storage and transport	
Conditions of use in storage and transport	
• Compliance with requirements for storage and transport conditions according to IEC 61131-2	Yes
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	1 m
• Temperature	
- Min.	-40 °C
- Max.	70 °C
• Air pressure acc. to IEC 60068-2-13	
- Min.	660 hPa
- Max.	1 080 hPa
- Min.	-1 000 m
- Max.	3 500 m

Technical specifications (continued)

	6ES7 135-6HD00-0BA1
	AQ 4xU/I ST
Mechanical conditions for storage and transport	
• Constant amplitude at 5 Hz to 9 Hz, max.	3.5 mm
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	0 °C
- Max.	60 °C
- Permissible temperature change	10 °C/h
• Air pressure acc. to IEC 60068-2-13	
- Min.	795 hPa
- Max.	1 080 hPa
- Min.	-1 000 m
- Max.	2 000 m
• Relative humidity	
- Relative humidity at 25 °C, max. (without condensation)	95 %

	6ES7 135-6HD00-0BA1
	AQ 4xU/I ST
Mechanical conditions in operation	
• Vibration (acc. to IEC 60068-2-6)	
- Constant amplitude at 10 Hz to 58 Hz, max.	0.35 mm
Dimensions	
Width	15 mm
Weight	
Weight, approx.	31 g

Ordering data	Order No.
Analog output modules	
AQ 4XU/I Standard, BU type A0 or A1, color code CC03	**6ES7 135-6HD00-0BA1**
Usable type A0 BaseUnits	
BU15-P16+A0+2D BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7 193-6BP00-0DA0**
BU15-P16+A0+2B BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7 193-6BP00-0BA0**
BU15-P16+A10+2D BaseUnit (light) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7 193-6BP20-0DA0**
BU15-P16+A10+2B BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7 193-6BP20-0BA0**
Usable Type A1 BaseUnits (temperature detection)	
BU15-P16+A0+2D/T BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7 193-6BP00-0DA1**
BU15-P16+A0+2B/T BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7 193-6BP00-0BA1**
BU15-P16+A0+12D/T BaseUnit (light) with 16 process terminals (1 ... 16) on the module and additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	**6ES7 193-6BP40-0DA1**
BU15-P16+A0+12B/T BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	**6ES7 193-6BP40-0BA1**
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7 193-6LF30-0AW0**
Labeling strips 1 roll of 500 strips	**6ES7 193-6LR10-0AA0**
BU cover, 15 mm for covering empty slots (gaps); 5 units	**6ES7 133-6CV15-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7 193-6SC00-1AM0**
Color-coding plates	
Color-coding plate CC71 for 10 AUX terminals; 10 units, yellow/green	**6ES7 193-6CP71-2AA0**
Color-coding plate CC72 for 10 AUX terminals; 10 units, red	**6ES7 193-6CP72-2AA0**
Color-coding plate CC73 for 10 AUX terminals; 10 units, blue	**6ES7 193-6CP73-2AA0**
Color-coding plate CC74 for 2x5 add-on terminals; 10 units, blue/red	**6ES7 193-6CP74-2AA0**

BaseUnits

Overview

With the BaseUnits, the ET 200SP offers a rugged and service-friendly design with permanent wiring:

- No tools needed for one-handed wiring using push-in terminals
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel
- Replacement of I/O modules during operation without affecting the wiring
- Operation with module gaps (missing I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High immunity to electromagnetic interference due to
  - build-as-you-go shielded backplane bus,
  - multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module,
  - system-integrated, space-saving shield connection for quick installation.
- Self-assembling potential groups without external wiring or jumpers
- Replaceable terminal box
- Side-by-side latching of the BUs for high mechanical load capacity
- Optional module-specific color identification of the terminals according to the color code CC
- Actuation of the spring NC contacts with a standard screwdriver with blade width of up to 3.5 mm

Ordering data

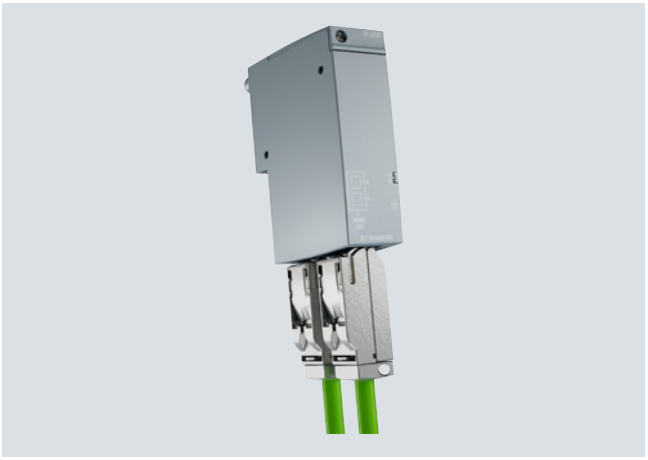
Ordering data	Order No.
Type A0 BaseUnits	
BU15-P16+A0+2D BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7 193-6BP00-0DA0**
BU15-P16+A0+2B BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7 193-6BP00-0BA0**
BU15-P16+A10+2D BaseUnit (light) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7 193-6BP20-0DA0**
BU15-P16+A10+2B BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7 193-6BP20-0BA0**

	Order No.
Type A1 BaseUnits (with temperature detection)	
BU15-P16+A0+2D/T BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7 193-6BP00-0DA1**
BU15-P16+A0+2B/T BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7 193-6BP00-0BA1**
BU15-P16+A0+12D/T BaseUnit (light) with 16 process terminals (1 ... 16) on the module and additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	**6ES7 193-6BP40-0DA1**
BU15-P16+A0+12B/T BaseUnit (dark) with 16 process terminals (1 ... 16) on the module and additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	**6ES7 193-6BP40-0BA1**

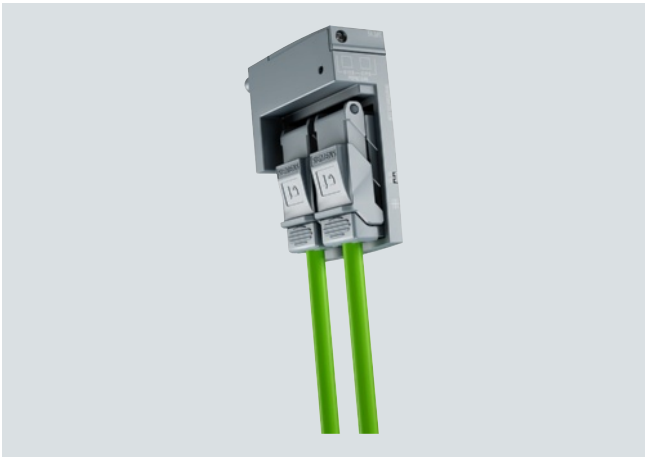
Ordering data	Order No.
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7 193-6LF30-0AW0**
BU cover, 15 mm for covering empty slots (gaps); 5 units	**6ES7 133-6CV15-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7 193-6SC00-1AM0**
Color-coding plates	
Color-coding plate CC01 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP01-2MA0**
Color-coding plate CC02 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP02-2MA0**
Color-coding plate CC03 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP03-2MA0**
Color-coding plate CC04 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP04-2MA0**
Color-coding plate CC71 for 10 AUX terminals; 10 units, yellow/green	**6ES7 193-6CP71-2AA0**
Color-coding plate CC72 for 10 AUX terminals; 10 units, red	**6ES7 193-6CP72-2AA0**
Color-coding plate CC73 for 10 AUX terminals; 10 units, blue	**6ES7 193-6CP73-2AA0**

Bus adapters

Overview



Bus adapter BA 2xRJ45



Bus adapter BA 2xFC

The interface modules of the SIMATIC ET 200SP have a universal PROFINET interface for bus adapters. With the appropriate bus adapter, the type of connection can be adapted to the requirements of the respective application:

- For standard applications with a moderate mechanical and EMC load, the BA 2xRJ45 bus adapter is used. It offers two sockets for standard RJ45 plugs.
- For machines and systems in which higher mechanical and/or EMC loads act on the devices, the BA 2xFC bus adapted is recommended. In this case, the bus cables are connected directly by means of FastConnect terminals – similar to the PROFIBUS connector, proven in millions of applications. The technology is extremely quick to assemble and achieves 5 times better vibration resistance and also 5 times greater resistance to electromagnetic interference, when compared to RJ45 plug-in connectors.

Another advantage of the bus adapters: In order to repair defective RJ45 jacks or for the later conversion to the rugged FastConnect technology, only the adapter needs to be replaced.

Ordering data

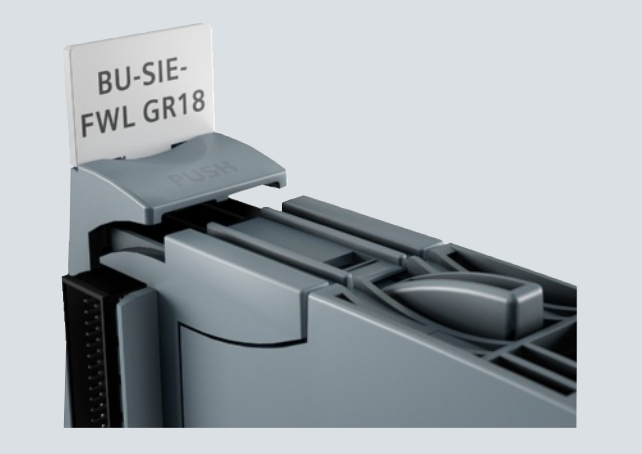
Ordering data	Order No.
Bus adapter BA 2xRJ45	**6ES7 193-6AR00-0AA0**
Bus adapter BA 2xFC	Available soon
Reference identification label	**6ES7 193-6LF30-0AW0**
10 sheets of 16 labels	
IE FC RJ45 plugs	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 Plug 180	
180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**

Overview

Labeling strips

- Labeling strips for ET 200SP
- Can be used for the interface module, bus adapter, I/O module and BU cover

Reference identification labels



- For the labeling of ET 200SP components with a reference code (equipment identifier)
- Can be used for the interface module, I/O module, bus adapter and BU cover

BU covers

- Protective cover for empty slots of an ET 200SP
- For protecting the plug-in connectors of a BaseUnit without I/O module

Color-coding plates

- For the identification of the potentials at the terminals of the BaseUnit
- For the prevention of wiring faults

Shield connections

- Simple, quick-mounting shield connection
- For space-saving and optimized connection of cable shields from EMC viewpoint

Ordering data

Ordering data	Order No.
Labeling strips 1 roll of 500 strips	**6ES7 193-6LR10-0AA0**
Reference identification label 10 sheets of 16 labels	**6ES7 193-6LF30-0AW0**
BU cover, 15 mm for covering empty slots (gaps); 5 units	**6ES7 133-6CV15-1AM0**
Color-coding plates	
Color-coding plate CC01 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP01-2MA0**
Color-coding plate CC02 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP02-2MA0**
Color-coding plate CC03 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP03-2MA0**
Color-coding plate CC04 for 16 process terminals (push-in); 10 units	**6ES7 193-6CP04-2MA0**
Color-coding plate CC71 for 10 AUX terminals; 10 units, yellow/green	**6ES7 193-6CP71-2AA0**
Color-coding plate CC72 for 10 AUX terminals; 10 units, red	**6ES7 193-6CP72-2AA0**
Color-coding plate CC73 for 10 AUX terminals; 10 units, blue	**6ES7 193-6CP73-2AA0**
Color-coding plate CC74 for 2x5 add-on terminals; 10 units, blue/red	**6ES7 193-6CP74-2AA0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7 193-6SC00-1AM0**

Interface modules with CPU
IM 151-7 CPU

Overview

- Interface module for SIMATIC ET 200S with integrated S7-CPU 314
- For high-performance control solutions in ET 200S
- Increases the availability of plants and machinery
- Programming via PROFIBUS DP
- Compact SIMATIC Micro Memory Card (MMC)
- Integrated 12 Mbit/s PROFIBUS DP slave/MPI interface in copper design
- Integrated CPU based on CPU S7-314
- IM 151-7 CPU FO available
- Fail-safe IM 151-7 F-CPU PROFIsafe available
- Also available as IM 151-8(F) PN/DP CPU with PROFINET interface

Note:
Micro Memory Card required for operation of CPU.

Technical specifications

	6ES7 151-7AA21-0AB0
General information	
Hardware product version	01
Firmware version	V3.3
Engineering with	
• Programming package	V5.5 + SP1 or higher or V5.2 + SP1 or higher + HSP219
Supply voltage	
24 V DC	Yes
Input current	
Inrush current, max.	1.8 A; typ.
I^2t	0.09 $A^2 \cdot s$
from supply voltage 1L+, max.	320 mA; 410 mA with DP master module
Output current	
Current output to backplane bus (5 V DC), max.	700 mA
Power losses	
Power loss, typ.	4.2 W
Memory	
Work memory	
• Integrated	128 kbyte
• Expandable	No
• Size of retentive memory for retentive data blocks	64 kbyte
Load memory	
• Pluggable (MMC)	Yes
• Pluggable (MMC), max.	8 Mbyte
• Data management on MMC (after last programming), min.	10 a
Backup	
• Present	Yes; ensured by SIMATIC Micro Memory Card (maintenance-free)
CPU processing times	
for bit operations, min.	0.06 µs
for word operations, min.	0.12 µs
for fixed point arithmetic, min.	0.16 µs
for floating point arithmetic, min.	0.59 µs

	6ES7 151-7AA21-0AB0
CPU-blocks	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
• Number, max.	1 024; number range: 1 to 16000
• Size, max.	64 kbyte
FB	
• Number, max.	1 024; number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	1 024; number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• Size, max.	64 kbyte
Nesting depth	
• per priority class	16
• additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
• Number	256
• Retentivity	
- adjustable	Yes
- lower limit	0
- upper limit	255
- preset	Z 0 to Z 7
• Counting range	
- adjustable	
- lower limit	0
- upper limit	999
IEC counter	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)

Technical specifications (continued)

	6ES7 151-7AA21-0AB0
S7 times	
• Number	256
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	255
- Preset	No retentivity
• Time range	
- Lower limit	10 ms
- Upper limit	9 990 s
IEC timer	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Flag	
• Number, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Data blocks	
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes
Local data	
• per priority class, max.	32 kbyte; max. 2 048 bytes per block
Address area	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
• of which, distributed	
- Inputs	2 048 byte
- Outputs	2 048 byte
Process image	
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
• Inputs, default	128 byte
• Outputs, default	128 byte
Digital channels	
• Inputs	16 336
• Outputs	16 336
• Inputs, of which central	496
• Outputs, of which central	496
Analog channels	
• Inputs	1 021
• Outputs	1 021
• Inputs, of which central	124
• Outputs, of which central	124
Hardware configuration	
Number of modules per system, max.	63; centralized

	6ES7 151-7AA21-0AB0
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• Battery-backed and synchronizable	Yes
• Deviation per day, max.	10 s; typ.: 2 s
• Backup time	6 wk; at 40 °C ambient temperature, typically
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
• Number	1
• Number/Number range	0
• Range of values	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour
• Retentive	Yes; must be restarted at each restart
Clock synchronization	
• Supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; with DP slave only slave clock
• to DP, slave	Yes
• in AS, master	No
• in AS, slave	No
Interfaces	
Interfaces	1 x MPI/PROFIBUS DP
Number of USB interfaces	
1st interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	80 mA
Functionality	
• MPI	Yes
• DP master	No
• DP slave	Yes; active / passive
• Point-to-point connection	No
MPI	
• Services	
- PG/OP communication	Yes
- Routing	Yes; with master module
- Global data communication	Yes
- S7 basic communication	Yes
- S7 communication	Yes; only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
• Transmission rate, max.	12 Mbit/s

Technical specifications (continued)

	6ES7 151-7AA21-0AB0
DP slave	
• Number of connections	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes; only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	No
• GSD file	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
• Transmission rate, max.	12 Mbit/s
• Automatic baud rate search	Yes; only with passive interface
• Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
• Address area, max.	32
• User data per address area, max.	32 byte; up to max. size of the transfer memory
2nd interface	
Type of interface	External interface via master module 6ES7138-4HA00-0AB0
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	No
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 communication	Yes; only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
- Equidistance mode support	Yes
- Isochronous mode	No
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.	8
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	Yes
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	32; per station
• Address area	
- Inputs, max.	2 kbyte
- Outputs, max.	2 kbyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte

	6ES7 151-7AA21-0AB0
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Communication functions	
PG/OP communication	Yes
Data record routing	Yes; with DP master module
Global data communication	
• Supported	Yes
• Number of GD loops, max.	8
• Number of GD packets, max.	8
• Number of GD packets, transmitter, max.	8
• Number of GD packets, receiver, max.	8
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
• Supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
• Supported	Yes
• as server	Yes
• as client	No
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
• User data per job (of which consistent), max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5-compatible communication	
• Supported	
Standard communication (FMS)	
• Supported	
Number of connections	
• Usable for PG communication	11
- Adjustable for PG communication, min.	1
• Usable for routing	4; as slave only with active interface, with IM 151-7 CPU as DP master

Technical specifications (continued)

	6ES7 151-7AA21-0AB0
S7 message functions	
Number of login stations for message functions, max.	12; depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes; ALARM_S, ALARM_SC, ALARM_SQ, ALARM_D, ALARM_DQ
Simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status/control	
• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
• of which status variables, max.	30
• of which control variables, max.	14
Forcing	
• Forcing	Yes
• Force, variables	Inputs, outputs
• Number of variables, max.	10
Status block	Yes; up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Diagnostic buffer	
• Present	Yes
• Number of entries, max.	500
- Adjustable	No
- of which powerfail-proof	100; only the last 100 entries are retained
• Number of entries readable in RUN, max.	499
- Adjustable	Yes; from 10 to 499
- Preset	10

	6ES7 151-7AA21-0AB0
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• Monitoring 24 V voltage supply ON (green)	Yes
Permissible potential difference	
between different circuits	75 V DC / 60 V AC
Isolation	
Isolation checked with	500 V DC
Configuration	
Configuration software	
• STEP 7 Lite	No
Programming	
• Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes; optional
- CFC	Yes; optional
- GRAPH	Yes; optional
- HiGraph	Yes; optional
• Command set	See instruction list
• Nesting levels	8
Know-how protection	
• User program protection/ password protection	Yes
• Block encryption	Yes; with S7 block Privacy
Dimensions	
Width	60 mm; DP master module: 35 mm
Height	119.5 mm
Depth	75 mm
Weight	
Weight, approx.	200 g; DP master module: approx. 100 g

Interface modules with CPU
IM 151-7 CPU

Ordering data	Order No.
IM 151-7 CPU (128 K) V3.3 interface module Including termination module	**6ES7 151-7AA21-0AB0**
Accessories	
MMC 64 KB [1] for program backup	**6ES7 953-8LF20-0AA0**
MMC 128 KB [1] for program backup	**6ES7 953-8LG20-0AA0**
MMC 512 KB [1] for program backup	**6ES7 953-8LJ30-0AA0**
MMC 2 MB [1] for program backup and/or firmware update	**6ES7 953-8LL20-0AA0**
MMC 4 MB [1] for program backup	**6ES7 953-8LM20-0AA0**
MMC 8 MB [1] for program backup	**6ES7 953-8LP20-0AA0**
External prommer e.g. for MMC with USB interface	**6ES7 792-0AA00-0XA0**
PG with integrated MMC interface	On request
Label sheets DIN A4 (10 pieces) Each sheet contains 60 labeling strips for peripheral modules and 20 labeling strips for interface modules	
• petrol	**6ES7 193-4BH00-0AA0**
• red	**6ES7 193-4BD00-0AA0**
• yellow	**6ES7 193-4BB00-0AA0**
• light beige	**6ES7 193-4BA00-0AA0**
ET 200S distributed I/O system manuals are available on the Internet as PDF files: http://www.siemens.com/simatic-docu	

	Order No.
Termination module as spare part for ET 200S	**6ES7 193-4JA00-0AA0**
Power supply connector Spare part; for connecting the 24 V DC supply voltage	
• with push-in terminals	**6ES7 193-4JB00-0AA0**
SIMATIC S5, 35 mm DIN rail	
• Length: 483 mm for 19" cabinets	**6ES5 710-8MA11**
• Length: 530 mm for 600 mm cabinets	**6ES5 710-8MA21**
• Length: 830 mm for 900 mm cabinets	**6ES5 710-8MA31**
• Length: 2 m	**6ES5 710-8MA41**
PROFIBUS DP bus connector RS 485 with 90° cable outlet, max. transfer rate 12 Mbit/s	
• without PG interface	**6ES7 972-0BA12-0XA0**
• with PG interface	**6ES7 972-0BB12-0XA0**
with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
• without PG interface, 1 unit	**6ES7 972-0BA52-0XA0**
• without PG interface, 100 units	**6ES7 972-0BA52-0XB0**
• with PG interface, 1 unit	**6ES7 972-0BB52-0XA0**
• with PG interface, 100 units	**6ES7 972-0BB52-0XB0**
PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	**6XV1 830-0EH10**
PROFIBUS bus components for establishing MPI/PROFIBUS communication	See IK PI, CA 01 catalogs

[1] An MMC is essential for operating the CPU

Overview

- Interface module for SIMATIC ET 200S with integrated CPU S7-314
- For high-performance control solutions in ET 200S
- Increase in the availability of systems and machines
- PROFINET IO Controller for up to 128 IO Devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O-Controller
- PROFINET interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With many communication options: PG/OP communication, PROFINET IO, PROFINET CBA, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Fast, simple and uniform programming of a system with modular programs via STEP 7
- Compact SIMATIC micro memory card (MMC)
- Optional PROFIBUS master for 32 PROFIBUS DP slaves (with master interface 6ES7 138-4HA00-0AB0)
- Fail-safe IM 151-8F PN/DP CPU PROFIsafe available

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS IM 151-8 PN/DP CPU	
Order number	**6AG1 151-8AB01-7AB0**
Order number based on	**6ES7 151-8AB00-0AB0**
Ambient temperature range	-40 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
Environmental conditions:	
• Relative humidity	5 ... 100%, condensation allowed
• Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold, fungus, and sponge spores (except fauna)
• Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA –S71.04 severity level G1; G2; G3; GX[1)2)]
• Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust [2)]
• Air pressure (depending on the highest positive temperature range specified)	1080...795 hPa (-1000 … +2000 m) See ambient temperature range 795…658 hPa (+2000 … +3500 m) Derating 10 K 658...540 hPa (+3500 ... +5000m) Derating 20K

[1)] ISA –S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O3 < 0.1 ppm; NO_X < 5.2 ppm
Threshold / limit value (max. 30 min/d): SO_2 < 17.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O3 < 1.0 ppm; NO_X < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface wh4en operated in atmospheres containing corrosive gases!

For technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS interface module IM 151-8 PN/DP CPU (extended temperature range and medial exposure) Including termination module • for areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C	**6AG1 151-8AB01-7AB0**
Accessories	See SIMATIC IM 151-8 PN/DP CPU interface module

ET 200S

Interface module with fail-safe CPU IM 151-7 F-CPU

Overview

- Interface module with integrated fail-safe CPU for SIMATIC ET 200S
- With DP/MPI interface
- For design of a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, IEC 62061 and Cat. 4 according to EN 954-1
- Fail-safe I/O modules can be connected in a distributed configuration through DP master modules (PROFIsafe)
- The fail-safe I/O modules of ET200S PROFIsafe can be connected in a centralized configuration
- Standard modules can be used for non-safety-relevant applications

Note:
Micro Memory Card required for operation of CPU.

Technical specifications

	6ES7 151-7FA21-0AB0
General information	
Hardware product version	01
Engineering with	
• Programming package	V5.5 + SP1 or higher or V5.2 + SP1 or higher + HSP219 + Distributed Safety
Supply voltage	
24 V DC	Yes
Input current	
Inrush current, max.	1.8 A; typ.
I^2t	0.09 $A^2 \cdot s$
from supply voltage 1L+, max.	320 mA; 410 mA with DP master module
Output current	
Current output to backplane bus (5 V DC), max.	700 mA
Power losses	
Power loss, typ.	4.2 W
Memory	
Work memory	
• Integrated	192 kbyte
• Expandable	No
• Size of retentive memory for retentive data blocks	64 kbyte
Load memory	
• Pluggable (MMC)	Yes
• Pluggable (MMC), max.	8 Mbyte
• Data management on MMC (after last programming), min.	10 a
Backup	
• Present	Yes; ensured by SIMATIC Micro Memory Card (maintenance-free)
CPU processing times	
for bit operations, min.	0.06 µs
for word operations, min.	0.12 µs
for fixed point arithmetic, min.	0.16 µs
for floating point arithmetic, min.	0.59 µs

	6ES7 151-7FA21-0AB0
CPU-blocks	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
• Number, max.	1 024; number range: 1 to 16000
• Size, max.	64 kbyte
FB	
• Number, max.	1 024; number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	1 024; number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• Size, max.	64 kbyte
Nesting depth	
• per priority class	16
• Additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
• Number	256
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	255
- Preset	Z 0 to Z 7
• Counting range	
- Lower limit	0
- Upper limit	999
IEC counter	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)

Technical specifications (continued)

	6ES7 151-7FA21-0AB0
S7 times	
• Number	256
• Retentivity	
- Adjustable	Yes
- Lower limit	0
- Upper limit	255
- Preset	No retentivity
• Time range	
- Lower limit	10 ms
- Upper limit	9 990 s
IEC timer	
• Present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Flag	
• Number, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Data blocks	
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes
Local data	
• per priority class, max.	32 kbyte; max. 2 048 bytes per block
Address area	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
• of which, distributed	
- Inputs	2 048 byte
- Outputs	2 048 byte
Process image	
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
• Inputs, default	128 byte
• Outputs, default	128 byte
Digital channels	
• Inputs	16 336
• Outputs	16 336
• Inputs, of which central	496
• Outputs, of which central	496
Analog channels	
• Inputs	1 021
• Outputs	1 021
• Inputs, of which central	124
• Outputs, of which central	124
Hardware configuration	
Number of modules per system, max.	63; centralized

	6ES7 151-7FA21-0AB0
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• Battery-backed and synchronizable	Yes
• Deviation per day, max.	10 s; typ.: 2 s
• Backup time	6 wk; at 40 °C ambient temperature, typically
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
• Number	1
• Number/Number range	0
• Range of values	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour
• Retentive	Yes; must be restarted at each restart
Clock synchronization	
• Supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; with DP slave only slave clock
• to DP, slave	Yes
• in AS, master	No
• in AS, slave	No
1st interface	
Type of interface	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	80 mA
Functionality	
• MPI	Yes
• DP master	No
• DP slave	Yes; active / passive
• Point-to-point connection	No
MPI	
• Services	
- PG/OP communication	Yes
- Routing	Yes; with master module
- Global data communication	Yes
- S7 basic communication	Yes
- S7 communication	Yes; only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
• Transmission rate, max.	12 Mbit/s

Technical specifications (continued)

	6ES7 151-7FA21-0AB0
DP slave	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	No
- S7 communication	Yes; only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	No
• GSD file	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
• Transmission rate, max.	12 Mbit/s
• Automatic baud rate search	Yes; only with passive interface
• Transfer memory	
- Inputs	244 byte
- Outputs	244 byte
• Address area, max.	32
• User data per address area, max.	32 byte; up to max. size of the transfer memory
2nd interface	
Type of interface	External interface via master module 6ES7138-4HA00-0AB0
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	No
Functionality	
• MPI	No
• DP master	Yes
• DP slave	No
DP master	
• Services	
- PG/OP communication	Yes
- Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 communication	Yes; only server, configured on one side
- S7 communication, as client	No
- S7 communication, as server	Yes
- Equidistance mode support	Yes
- Isochronous mode	No
- SYNC/FREEZE	Yes
- Activation/deactivation of DP slaves	Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.	8
- Direct data exchange (slave-to-slave communication)	Yes
- DPV1	Yes
• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	32; per station
• Address area	
- Inputs, max.	2 kbyte
- Outputs, max.	2 kbyte
• User data per DP slave	
- Inputs, max.	244 byte
- Outputs, max.	244 byte

	6ES7 151-7FA21-0AB0
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Communication functions	
PG/OP communication	Yes
Data record routing	Yes; with DP master module
Global data communication	
• Supported	Yes
• Number of GD loops, max.	8
• Number of GD packets, max.	8
• Number of GD packets, transmitter, max.	8
• Number of GD packets, receiver, max.	8
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
• Supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
• Supported	Yes
• as server	Yes
• as client	No
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
• User data per job (of which consistent), max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
Number of connections	
• Usable for PG communication	11
- Adjustable for PG communication, min.	1
• Usable for routing	4; as slave only with active interface, with IM 151-7 CPU as DP master
S7 message functions	
Number of login stations for message functions, max.	12; depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes; ALARM_S, ALARM_SC, ALARM_SQ, ALARM_D, ALARM_DQ
Simultaneously active Alarm-S blocks, max.	300

Technical specifications (continued)

	6ES7 151-7FA21-0AB0
Test commissioning functions	
Status/control	
• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
• of which status variables, max.	30
• of which control variables, max.	14
Forcing	
• Forcing	Yes
• Force, variables	Inputs, outputs
• Number of variables, max.	10
Status block	Yes; up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Diagnostic buffer	
• Present	Yes
• Number of entries, max.	500
- Adjustable	No
- of which powerfail-proof	100; only the last 100 entries are retained
• Number of entries readable in RUN, max.	499
- Adjustable	Yes; from 10 to 499
- Preset	10
Interrupts/diagnostics/status information	
Diagnostics indication LED	
• Monitoring 24 V voltage supply ON (green)	Yes

	6ES7 151-7FA21-0AB0
Permissible potential difference	
between different circuits	75 V DC / 60 V AC
Isolation	
Isolation checked with	500 V DC
Configuration	
Configuration software	
• STEP 7 Lite	No
Programming	
• Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes; optional
- CFC	Yes; optional
- GRAPH	Yes; optional
- HiGraph	Yes; optional
• Command set	See instruction list
• Nesting levels	8
Know-how protection	
• User program protection/ password protection	Yes
• Block encryption	Yes; with S7 block Privacy
Dimensions	
Width	60 mm; DP master module: 35 mm
Height	119.5 mm
Depth	75 mm
Weight	
Weight, approx.	200 g; DP master module: Approx. 100 g

Ordering data

	Order No.
IM151-7 F-CPU interface module	
for configuring a fail-safe automation system	
192 KB	**6ES7 151-7FA21-0AB0**
Accessories	
Distributed Safety V5.4 programming tool	
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S	
Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Distributed Safety Upgrade	**6ES7 833-1FC02-0YE5**
From V5.x to V5.3; Floating license for 1 user	
MMC 64 kByte	**6ES7 953-8LF20-0AA0**
for program backup	

	Order No.
MMC 128 kByte	**6ES7 953-8LG20-0AA0**
for program backup	
MMC 512 kByte	**6ES7 953-8LJ30-0AA0**
for program backup	
MMC 2 MByte	**6ES7 953-8LL20-0AA0**
for program backup and/or firmware update	
MMC 4 MByte	**6ES7 953-8LM20-0AA0**
for program backup	
External prommer	**6ES7 792-0AA00-0XA0**
for MMC with USB interface	
Termination module	**6ES7 193-4JA00-0AA0**
as spare part for ET 200S	
SIMATIC S5, 35 mm DIN rail	
• Length: 483 mm for 19" cabinets	**6ES5 710-8MA11**
• Length: 530 mm for 600 mm cabinets	**6ES5 710-8MA21**
• Length: 830 mm for 900 mm cabinets	**6ES5 710-8MA31**
• 2 m long	**6ES5 710-8MA41**

SIPLUS interface modules with fail-safe CPU
SIPLUS IM 151-8 F PN/DP CPU

Overview

- Interface module for SIPLUS ET 200S with integrated CPU S7-314
- For high-performance control solutions in ET 200S
- Increase in the availability of systems and machines
- PROFINET IO Controller for up to 128 IO Devices
- PROFINET I Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO Controller
- PROFINET interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With many communication options: PG/OP communication, PROFINET IO, PROFINET CBA, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Fast, simple and uniform programming of a system with modular programs via STEP 7
- Compact SIMATIC micro memory card (MMC)
- Optional PROFIBUS master for 32 PROFIBUS DP slaves (with master interface 6ES7138-4HA00-0AB0)
- Fail-safe IM 151-8 F PN/DP CPU PROFIsafe available

SIMATIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS IM 151-8 F PN/DP CPU	
Order No.	**6AG1 151-8FB01-2AB0**
Order No. based on	**6ES7 151-8FB01-0AB0**
Ambient temperature range	-25 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the environmental conditions.
Environmental conditions:	
Relative humidity	5 … 100 % Condensation permissible

For further technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme

Ordering data	**Order No.**
SIPLUS IM 151-8 F PN/DP CPU interface module (extended temperature range and medial exposure) Including termination module	**6AG1 151-8FB01-2AB0**
Accessories	See SIMATIC IM 151-8 F PN/DP CPU interface module

9

Overview

- Mechanical modules as receptacles for the electronic modules
- For setting up permanent wiring via build-as-you-go voltage buses
- Keyed connection technology to ensure an enhanced vibration resistance of up to 5 g
- Different variants for accepting power modules and electronic modules
- Replaceable terminal box (even within the station network)
- Automatic coding of the electronics modules
- Build-as-you-go shielding of the backplane bus for high data security
- Color coding facility for the terminals and for identifying the slot numbers
- Alternatively available with screw-type or spring-loaded terminals as well as with no-strip fast connection system "FastConnect" for up to 60 % quicker process wiring

Ordering data

	Order No.
TM-P terminal modules for PM-E power modules	
TM-P15S23-A1	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	
Ordering unit 1 item	**6ES7 193-4CC20-0AA0**
Ordering unit 5 items	**6ES7 193-4CC20-1AA0**
TM-P15C23-A1	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	
Ordering unit 1 item	**6ES7 193-4CC30-0AA0**
Ordering unit 5 items	**6ES7 193-4CC30-1AA0**
TM-P15N23-A1	**6ES7 193-4CC70-0AA0**
Ordering unit 1 item 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, FastConnect	
TM-P15S23-A0	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, screw-type terminals	
Ordering unit 1 item	**6ES7 193-4CD20-0AA0**
Ordering unit 5 items	**6ES7 193-4CD20-1AA0**
TM-P15C23-A0	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, spring-loaded terminals	
Ordering unit 1 item	**6ES7 193-4CD30-0AA0**
Ordering unit 5 items	**6ES7 193-4CD30-1AA0**
TM-P15N23-A0	**6ES7 193-4CD70-0AA0**
Ordering unit 1 item 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, FastConnect	

	Order No.
TM-P15S22-01	
2 x 2 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	
Ordering unit 1 item	**6ES7 193-4CE00-0AA0**
Ordering unit 5 items	**6ES7 193-4CE00-1AA0**
TM-P15C22-01	
2 × 2 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	
Ordering unit 1 item	**6ES7 193-4CE10-0AA0**
Ordering unit 5 items	**6ES7 193-4CE10-1AA0**
TM-P15N22-01	**6ES7 193-4CE60-0AA0**
Ordering unit 1 item 2 x 2 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, FastConnect	
TM-P30S44-A0	**6ES7 193-4CK20-0AA0**
Ordering unit 1 item 7 x 2 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, screw-type terminals for PM-E F PROFIsafe	
TM-P30C44-A0	**6ES7 193-4CK30-0AA0**
Ordering unit 1 item 7 x 2 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, spring-loaded terminals for PM-E F PROFIsafe	

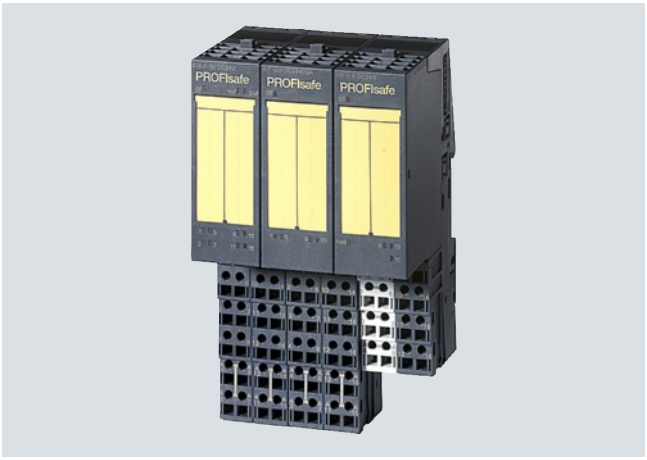
Ordering data	Order No.
Terminal module TM-E for electronic modules[1]	
TM-E15S24-A1 Ordering unit 5 items 2 x 4 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CA20-0AA0**
TM-E15C24-A1 Ordering unit 5 items 2 x 4 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CA30-0AA0**
TM-E15S24-01 Ordering unit 5 items 2 x 4 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CB20-0AA0**
TM-E15C24-01 Ordering unit 5 items 2 x 4 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CB30-0AA0**
TM-E15S23-01 Ordering unit 5 items 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CB00-0AA0**
TM-E15C23-01 Ordering unit 5 items 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CB10-0AA0**
TM-E15N23-01 Ordering unit 5 items 2 x 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, FastConnect	**6ES7 193-4CB60-0AA0**
TM-E15N24-01 Ordering unit 5 items 2 x 4 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, FastConnect	**6ES7 193-4CB70-0AA0**
TM-E15S26-A1 Ordering unit 5 items 2 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CA40-0AA0**
TM-E15C26-A1 Ordering unit 5 items 2 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CA50-0AA0**
TM-E15N24-A1 Ordering unit 5 items 2 x 4 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, FastConnect	**6ES7 193-4CA70-0AA0**
TM-E15N26-A1 Ordering unit 5 items 2 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, FastConnect	**6ES7 193-4CA80-0AA0**
TM-E30S44-01 Ordering unit 1 item 4 x 4 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CG20-0AA0**
TM-E30C44-01 Ordering unit 1 item 4 x 4 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CG30-0AA0**
TM-E30S46-A1 Ordering unit 1 item 4 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CF40-0AA0**
TM-E30C46-A1 Ordering unit 1 item 4 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CF50-0AA0**
TM-E15S24-AT Ordering unit 1 piece for internal temperature compensation with 2 AI TC High Feature, screw-type terminals	**6ES7 193-4CL20-0AA0**
TM-E15C24-AT Ordering unit 1 piece for internal temperature compensation with 2 AI TC High Feature, spring-loaded terminals	**6ES7 193-4CL30-0AA0**

[1] Observe project planning help for selecting the suitable TM-E and TM-P

Ordering data	Order No.
Accessories for shield connection	
Shield connection element Ordering unit 5 pieces For plugging into TM-E and TM-P	**6ES7 193-4GA00-0AA0**
Shield clamps Ordering unit 5 pieces For busbar 3 × 10 mm	**6ES7 193-4GB00-0AA0**
Grounding terminal Ordering unit 1 item for cable cross-sections up to 25 mm^2	**8WA2 868**
3 × 10 mm busbars Ordering unit 1 item	**8WA2 842**

	Order No.
Accessories for coding	
Color coding plates	
Ordering unit 200 pieces for TM-P, TM-E	
• white	**6ES7 193-4LA20-0AA0**
• yellow	**6ES7 193-4LB20-0AA0**
• yellow/green	**6ES7 193-4LC20-0AA0**
• red	**6ES7 193-4LD20-0AA0**
• blue	**6ES7 193-4LF20-0AA0**
• brown	**6ES7 193-4LG20-0AA0**
• turquoise	**6ES7 193-4LH20-0AA0**
Labels, inscribed	
Ordering unit 1 set	
200 items for slot numbering (1 to 20) 10 ×	**8WA8 861-0AB**
200 items for slot numbering (1 to 40) 5 ×	**8WA8 861-0AC**
200 items for slot numbering (1 to 64) 1 ×, (1 to 68) 2 ×	**8WA8 861-0DA**
Labels, blank	
200 items for slot numbering	**8WA8 848-2AY**

Overview



- Mechanical modules as receptacles for the electronic modules
- For setting up permanent wiring through self-configuring voltage buses
- Keyed connection technology to ensure an enhanced vibration resistance of up to 5 g
- Different versions to accommodate power modules and electronic modules
- Replaceable terminal box (even within the station network)
- Automatic coding of the electronic modules
- Self-shielding of the backplane bus for high data security
- Color coding facility for the terminals and for identifying the slot numbers
- Alternatively available with screw-type or spring-loaded terminals
- For up to 60 % faster process wiring also with FastConnect connection method (available soon)

9

Ordering data

Ordering data	Order No.
Terminal modules for power modules	
TM-P15S23-A1	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	
Ordering unit 1 item	**6ES7 193-4CC20-0AA0**
Ordering unit 5 items	**6ES7 193-4CC20-1AA0**
TM-P15C23-A1	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	
Ordering unit 1 item	**6ES7 193-4CC30-0AA0**
Ordering unit 5 items	**6ES7 193-4CC30-1AA0**
TM-P15S23-A0	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, screw-type terminals	
Ordering unit 1 item	**6ES7 193-4CD20-0AA0**
Ordering unit 5 items	**6ES7 193-4CD20-1AA0**
TM-P15C23-A0	
2 × 3 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, spring-loaded terminals	
Ordering unit 1 item	**6ES7 193-4CD30-0AA0**
Ordering unit 5 items	**6ES7 193-4CD30-1AA0**
TM-P15S22-01	
2 x 2 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	
Ordering unit 1 item	**6ES7 193-4CE00-0AA0**
Ordering unit 5 items	**6ES7 193-4CE00-1AA0**
TM-P15C22-01	
2 × 2 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	
Ordering unit 1 item	**6ES7 193-4CE10-0AA0**
Ordering unit 5 items	**6ES7 193-4CE10-1AA0**
TM-P30S44-A0	**6ES7 193-4CK20-0AA0**
Ordering unit 1 item 7 x 2 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, screw-type terminals for PM-E F PROFIsafe	
TM-P30C44-A0	**6ES7 193-4CK30-0AA0**
Ordering unit 1 item 7 x 2 terminals, terminal access to AUX1 bus, AUX1 interrupted to the left, spring-loaded terminals for PM-E F PROFIsafe	

Ordering data	Order No.
Terminal modules for electronic modules	
TM-E30S44-01 Ordering unit 1 item 4 x 4 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CG20-0AA0**
TM-E30C44-01 Ordering unit 1 item 4 x 4 terminals, no terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CG30-0AA0**
TM-E30S46-A1 Ordering unit 1 item 4 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, screw-type terminals	**6ES7 193-4CF40-0AA0**
TM-E30C46-A1 Ordering unit 1 item 4 x 6 terminals, terminal access to AUX1 bus, AUX1 interconnected to the left, spring-loaded terminals	**6ES7 193-4CF50-0AA0**

	Order No.
Accessories	
Color coding plates	
Ordering unit 200 pieces for TM-P, TM-E	
• white	**6ES7 193-4LA20-0AA0**
• yellow	**6ES7 193-4LB20-0AA0**
• yellow/green	**6ES7 193-4LC20-0AA0**
• red	**6ES7 193-4LD20-0AA0**
• blue	**6ES7 193-4LF20-0AA0**
• brown	**6ES7 193-4LG20-0AA0**
• turquoise	**6ES7 193-4LH20-0AA0**
Grounding terminal	**8WA2 868**
Ordering unit 1 item	
For cable cross-sections up to 25 mm^2	
3 × 10 mm busbars	**8WA2 842**
Ordering unit 1 item	
Labels, inscribed	
Ordering unit 1 set	
• 200 items for slot numbering (1 to 20) 10 ×	**8WA8 861-0AB**
• 200 items for slot numbering (1 to 40) 5 ×	**8WA8 861-0AC**
• 200 items for slot numbering (1 to 64) 1 ×, (1 to 68) 2 ×	**8WA8 861-0DA**
Labels, blank	
200 items for slot numbering	**8WA8 848-2AY**

SIPLUS interface modules
SIPLUS IM 153-1/153-2

Overview

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS IM 153-1	SIPLUS IM 153-2	SIPLUS IM 153-2
Order number	**6AG1 153-1AA03-2XB0**	**6AG1 153-2BA02-2XY0**	**6AG1 153-2BA02-7XB0**
Order number based on	**6ES7 153-1AA03-0XB0**	**6ES7 153-2BA02-0XB0**	**6ES7 153-2BA02-0XB0**
Ambient temperature range	-40 ... +70 °C Startup temperature -25 °C	-25 ... +60 °C	-40 ... +70 °C Startup temperature -25 °C
Compliant with the standards for electronic equipment used on railway rolling stock (EN 50155, temperature T1, category 1).	No	Yes	No
Conformal coating	Coating of the printed circuit boards and the electronic components		
Technical data	The technical data of the standard product applies except for the ambient conditions.		

SIPLUS bus module	for accommodating a PS and an IM 153	For accommodating two 40 mm wide I/O modules
Order number	**6AG1 195-7HA00-2XA0**	**6AG1 195-7HB00-7XA0**
Order number based on	**6ES7 195-7HA00-0XA0**	**6ES7 195-7HB00-0XA0**
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on railway rolling stock (EN 50155, temperature T1, category 1).	No	Yes
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	

SIPLUS bus module	for accommodating an 80 mm module	for accommodating two IM 153-2
Order number	**6AG1 195-7HC00-2XA0**	**6AG1 195-7HD10-2XA0**
Order number based on	**6ES7 195-7HC00-0XA0**	**6ES7 195-7HD10-0XA0**
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C
Compliant with the standards for electronic equipment used on railway rolling stock (EN 50155, temperature T1, category 1).	No	Yes
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	

Overview (continued)

Ambient conditions	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA –S71.04 severity level G1; G2; G3; GX [1)2)]
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust [2)]
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

1) ISA –S71.04 severity level GX: Long-term load: SO_2 < 4.8 ppm; H_2S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O_3 < 0.1 ppm; NOX < 5.2 ppm
Limit value (max. 30 min/d): SO_2 < 17.8 ppm; H_2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O_3 < 1.0 ppm; NOX < 10.4 ppm

2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
IM 153-1 interface module	
Slave interface for connecting an ET 200M to PROFIBUS DP	
• Standard temperature range	**6AG1 153-1AA03-2XB0**
IM 153-2 interface module	
Slave interface for connecting an ET 200M to PROFIBUS DP; also for use in redundant systems	
• High Feature, -25 ... +60 °C	**6 AG1 153-2BA02-2XY0**
• High Feature, -40 ... +70 °C	**6 AG1 153-2BA02-7XB0**
Active IM 153/IM 153 bus module	**6 AG1 195-7HD10-2XA0**
For two IM 153-2 High Feature modules for designing redundant systems	
Bus module for ET 200M	
• To accommodate a power supply and an IM 153 for the hot-swapping function during RUN, incl. bus module cover	**6AG1 195-7HA00-2XA0**
• To accommodate two 40 mm wide I/O modules for the hot-swapping function	**6AG1 195-7HB00-7XA0**
• To accommodate one 80 mm wide I/O module for the hot swapping function	**6AG1 195-7HC00-2XA0**
Accessories	See SIMATIC ET 200M IM 153-1/153-2

9

IM 154-8 F PN/DP CPU

Overview

- Interface module for SIMATIC ET 200pro with integrated fail-safe CPU
- CPU with PLC functionality equivalent to CPU S7-315F PN/DP; with distributed intelligence for preprocessing
- For constructing a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, IEC 62061, up to PLe according to ISO 13849-1:2006 and Cat. 4 according to EN 954-1
- For high-performance control solutions in ET 200pro
- Increase of the availability of systems and machines
- Integral Web server with the option of creating user-defined Web sites
- Isochronous mode on PROFIBUS or PROFINET
- PROFINET IO Controller for up to 128 IO Devices
- PROFINET interface with integrated 3-port switch
- With many communication options: PG/OP communication, PROFINET IO, PROFINET CBA, open IE communication (TCP, ISO-on-TCP and UDP), web server and S7-communication (with loadable FBs)
- Fast, simple and end-to-end programming of a system with modular programs via STEP 7
- Compact SIMATIC Micro Memory Card (MMC)

Note:
SIMATIC Micro Memory Card required for operation of CPU.

Technical specifications

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
General information		
Hardware product version	01	01
Firmware version	V3.2	V3.2
Engineering with		
• Programming package	STEP 7 V 5.5 or higher, Distributed Safety V 5.4 SP4	STEP7 V5.5 or higher with HSP 222 + Distributed Safety V5.4 SP4
Supply voltage		
24 V DC	Yes	Yes
Input current		
Current consumption (rated value)	350 mA; typical	350 mA; typical
Current consumption (in no-load operation), typ.	250 mA; typical, current consumption for CPU in STOP state	250 mA; typical, current consumption for CPU in STOP state
Inrush current, typ.	2 A; typical	2 A; typical
I^2t	0.25 $A^2 \cdot s$; typical	0.25 $A^2 \cdot s$; typical
Power losses		
Power loss, typ.	8.5 W; typical	8.5 W; typical
Memory		
Work memory		
• Integrated	512 kbyte	512 kbyte
• Expandable	No	No
Load memory		
• Pluggable (MMC)	Yes	Yes
• Pluggable (MMC), max.	8 Mbyte	8 Mbyte
• Data management on MMC (after last programming), min.	10 a	10 a
Backup		
• Present	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)
• without battery	Yes; program and data	Yes; program and data

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
CPU processing times		
for bit operations, min.	0.05 µs	0.025 µs
for word operations, min.	0.09 µs	0.03 µs
for fixed point arithmetic, min.	0.12 µs	0.04 µs
for floating point arithmetic, min.	0.45 µs	0.16 µs
CPU-blocks		
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB		
• Number, max.	1 024; number range: 1 to 16000	1 024; number range: 1 to 16000
• Size, max.	64 kbyte	64 kbyte
FB		
• Number, max.	1 024; number range: 0 to 7999	1 024; number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte
FC		
• Number, max.	1 024; number range: 0 to 7999	1 024; number range: 0 to 7999
• Size, max.	64 kbyte	64 kbyte
OB		
• Size, max.	64 kbyte	64 kbyte
Nesting depth		
• per priority class	16	16
• Additional within an error OB	4	4

Technical specifications (continued)

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
Counters, timers and their retentivity		
S7 counter		
• Number	256	256
• Retentivity		
- Adjustable	Yes	Yes
- Lower limit	0	0
- Upper limit	255	255
- Preset	Z 0 to Z 7	Z 0 to Z 7
• Counting range		
- Adjustable	Yes	Yes
- Lower limit	0	0
- Upper limit	999	999
IEC counter		
• Present	Yes	Yes
• Type	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
S7 times		
• Number	256	256
• Retentivity		
- Adjustable	Yes	Yes
- Lower limit	0	0
- Upper limit	255	255
- Preset	No retentivity	No retentivity
• Time range		
- Lower limit	10 ms	10 ms
- Upper limit	9 990 s	9 990 s
IEC timer		
• Present	Yes	Yes
• Type	SFB	SFB
• Number	Unlimited (limited only by RAM capacity)	Unlimited (limited only by RAM capacity)
Data areas and their retentivity		
Retentive data area, total	All, 128 KB max.	All, 128 KB max.
Flag		
• Number, max.	2 048 byte	2 048 byte
• Retentivity available	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 2047
• Retentivity preset	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories	8	8
Data blocks		
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	Yes	Yes
Local data		
• per priority class, max.	32 768 byte; max. 2 048 bytes per block	32 768 byte; max. 2 048 bytes per block
Address area		
I/O address area		
• Inputs	2 048 byte	2 048 byte
• Outputs	2 048 byte	2 048 byte
• of which, distributed		
- Inputs	2 048 byte	2 048 byte
- Outputs	2 048 byte	2 048 byte
Process image		
• Inputs, adjustable	2 048 byte	2 048 byte
• Outputs, adjustable	2 048 byte	2 048 byte
• Inputs, default	128 byte	128 byte
• Outputs, default	128 byte	128 byte

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
Subprocess images		
• Number of subprocess images, max.	1; with PROFINET IO, the length of the user data is limited to 1 600 bytes	1; with PROFINET IO, the length of the user data is limited to 1 600 bytes
Digital channels		
• Inputs	16 384	16 384
• Outputs	16 384	16 384
• Inputs, of which central	128	128
• Outputs, of which central	64	64
Analog channels		
• Inputs	1 024	1 024
• Outputs	1 024	1 024
• Inputs, of which central	64	64
• Outputs, of which central	64	64
Hardware configuration		
Racks, max.	1	1
Modules per rack, max.	16; expansion width max. 1 m	16; expansion width max. 1 m
Number of DP masters		
• integrated	1	1
Time of day		
Clock		
• Hardware clock (real-time clock)	Yes	Yes
• Battery-backed and synchronizable	Yes	Yes
• Deviation per day, max.	10 s; typ.: 2 s	10 s; typ.: 2 s
• Backup time	6 wk; at 40 °C ambient temperature	6 wk; at 40 °C ambient temperature
Operating hours counter		
• Number	1	1
• Number/Number range	0	0
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 h	1 h
• Retentive	Yes; must be restarted at each restart	Yes; must be restarted at each restart
Clock synchronization		
• Supported	Yes	Yes
• to MPI, master	Yes	Yes
• to MPI, slave	Yes	Yes
• to DP, master	Yes; with DP slave only slave clock	Yes; with DP slave only slave clock
• to DP, slave	Yes	Yes
• on Ethernet via NTP	Yes; as client	Yes; as client
1st interface		
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485/ connection: 2 x M12 b-coded	RS 485/ connection: 2 x M12 b-coded
Isolated	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	May only be used for external terminating resistor	May only be used for external terminating resistor

IM 154-8 F PN/DP CPU

Technical specifications (continued)

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
Functionality		
• MPI	Yes	Yes
• DP master	Yes	Yes
• DP slave	Yes	Yes
• Point-to-point connection	No	No
MPI		
• Services		
- PG/OP communication	Yes	Yes
- Routing	Yes	Yes
- Global data communication	Yes	Yes
- S7 basic communication	Yes	Yes
- S7 communication	Yes	Yes
- S7 communication, as client	No	No
- S7 communication, as server	Yes	Yes
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
DP master		
• Services		
- PG/OP communication	Yes	Yes
- Global data communication	No	No
- S7 basic communication	Yes; I blocks only	Yes; I blocks only
- S7 communication	Yes	Yes
- S7 communication, as client	No	No
- S7 communication, as server	Yes; connection configured on one side only	Yes; connection configured on one side only
- Equidistance mode support	Yes	Yes
- Isochronous mode	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)
- SYNC/FREEZE	Yes	Yes
- Activation/deactivation of DP slaves	Yes	Yes
- Direct data exchange (slave-to-slave communication)	Yes; as subscriber	Yes; as subscriber
- DPV1	Yes	Yes
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.	124	124
• Address area		
- Inputs, max.	2 048 byte	2 048 byte
- Outputs, max.	2 048 byte	2 048 byte
• User data per DP slave		
- Inputs, max.	244 byte	244 byte
- Outputs, max.	244 byte	244 byte

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
DP slave		
• Services		
- Global data communication	No	No
- S7 basic communication	No	No
- S7 communication	Yes	Yes
- S7 communication, as client	No	No
- S7 communication, as server	Yes; connection configured on one side only	Yes; connection configured on one side only
- Direct data exchange (slave-to-slave communication)	Yes	Yes
- DPV1	No	No
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
• Transfer memory		
- Inputs	244 byte	244 byte
- Outputs	244 byte	244 byte
• Address area, max.	32	32
• User data per address area, max.	32 byte	32 byte
2nd interface		
Type of interface	PROFINET	PROFINET
Physics	Ethernet (2 x M12 d-coded; 1 x RJ45)	Ethernet (2 x M12 d-coded; 1 x RJ45)
Isolated	Yes; galvanic isolation for P3 is implemented in IM 154-8, for P1 and P2 in CM	Yes; galvanic isolation for P3 is implemented in IM 154-8, for P1 and P2 in CM
Integrated switch	Yes	Yes
Number of ports	3	3
Automatic detection of transmission speed	Yes; 10/100 Mbit/s	Yes; 10/100 Mbit/s
Autonegotiation	Yes	Yes
Autocrossing	Yes	Yes
Media redundancy		
• Supported	Yes	Yes
• Switchover time on line break, typically	200 ms; PROFINET MRP	200 ms; PROFINET MRP
• Number of stations in the ring, max.	50	50
Change of IP address at runtime, supported	Yes	Yes
Functionality		
• MPI	No	No
• DP master	No	No
• DP slave	No	No
• PROFINET IO Controller	Yes; also simultaneously with IO Device functionality	Yes; also simultaneously with IO Device functionality
• PROFINET IO Device	Yes; also simultaneously with IO Controller functionality	Yes; also simultaneously with IO Controller functionality
• PROFINET CBA	Yes	Yes

Technical specifications (continued)

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
PROFINET IO Controller		
• Services		
- PG/OP communication	Yes	Yes
- S7 communication	Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32	Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32
- Isochronous mode	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)
- Open IE communication	Yes; via TCP/IP, ISO on TCP, and UDP	Yes; via TCP/IP, ISO on TCP, and UDP
• Transmission rate, max.	100 Mbit/s	100 Mbit/s
• Number of connectable IO Devices, max.	128	128
• Max. number of connectable IO Devices for RT	128	128
- of which in line, max.	128	128
• Number of IO Devices with IRT and the option "high flexibility"	128	128
- of which in line, max.	61	61
• Number of IO Devices with IRT and the option "high performance", max.	64	64
- of which in line, max.	64	64
• IRT, supported	Yes	Yes
• Prioritized startup supported	Yes	Yes
- Number of IO Devices, max.	32	32
• Activation/deactivation of IO Devices	Yes	Yes
- Maximum number of IO Devices that can be activated/deactivated at the same time.	8	8
• IO Devices changing during operation (partner ports), supported	Yes	Yes
- max. number of IO Devices per tool	8	8
• Device replacement without swap medium	Yes	Yes
• Send cycles	250 µs, 500 µs, 1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)	250 µs, 500 µs, 1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)
• Updating time	250 µs to 512 ms (depending on the operating mode, see "IM 154-8 CPU Interface Module" operating instructions for more details)	250 µs to 512 ms (depending on the operating mode, see "IM 154-8 CPU Interface Module" operating instructions for more details)
• Address area		
- Inputs, max.	2 048 byte	2 048 byte
- Outputs, max.	2 048 byte	2 048 byte
• User data per address area, max.		
- User data consistency, max.	1 024 byte	1 024 byte

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
PROFINET IO Device		
• Services		
- PG/OP communication	Yes	Yes
- S7 routing	Yes	Yes
- S7 communication	Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32	Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32
- Isochronous mode	No	No
- Open IE communication	Yes; via TCP/IP, ISO on TCP, and UDP	Yes; via TCP/IP, ISO on TCP, and UDP
- IRT, supported	Yes	Yes
- PROFIenergy, supported	Yes; with SFB 73 / 74 prepared for loadable PROFIenergy standard FB for I Device	Yes; with SFB 73 / 74 prepared for loadable PROFIenergy standard FB for I Device
- Shared device, supported	Yes	Yes
- Number of IO Controllers with shared device, max.	2	2
• Transfer memory		
- Inputs, max.	1 440 byte; per IO Controller with shared device	1 440 byte; per IO Controller with shared device
- Outputs, max.	1 440 byte; per IO Controller with shared device	1 440 byte; per IO Controller with shared device
• Submodules		
- Number, max.	64	64
- User data per submodule, max.	1 024 byte	1 024 byte
Open IE communication		
• Open IE communication, supported	Yes	Yes
• Number of connections, max.	8	8
• Local port numbers used at the system end	0, 20, 21, 23, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
• Keep-alive function, supported	Yes	Yes
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes; via PROFIBUS DP or PROFINET interface	Yes; via PROFIBUS DP or PROFINET interface
Communication functions		
PG/OP communication	Yes	Yes
Global data communication		
• Supported	Yes	Yes
• Number of GD loops, max.	8	8
• Number of GD packets, max.	8	8
• Number of GD packets, transmitter, max.	8	8
• Number of GD packets, receiver, max.	8	8
• Size of GD packets, max.	22 byte	22 byte
• Size of GD packet (of which consistent), max.	22 byte	22 byte

9

Technical specifications (continued)

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
S7 basic communication		
• Supported	Yes	Yes
• User data per job, max.	76 byte	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication		
• Supported	Yes	Yes
• as server	Yes	Yes
• as client	Yes; (via integrated PROFINET interface and loadable FBs)	Yes; (via integrated PROFINET interface and loadable FBs)
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communi-cation)	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communi-cation)
Open IE communication		
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	8
- Data length, max.	32 768 byte; 1 460 bytes with connection type 01H; 32 768 bytes with connection type 11H	32 768 byte; 1 460 bytes with connection type 01H; 32 768 bytes with connection type 11H
- Several passive connec-tions per port, supported	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes
- Number of connections, max.	8	8
- Data length, max.	32 768 byte	32 768 byte
• UDP	Yes	Yes
- Number of connections, max.	8	8
- Data length, max.	1 472 byte	1 472 byte
Web server		
• Supported	Yes	Yes
• Number of HTTP clients	5	5
• User-defined websites	Yes	Yes

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
PROFINET CBA (at set setpoint communication load)		
• Setpoint for the CPU communication load	50 %	50 %
• Number of remote interconnection partners	32	32
• Number of functions, master/slave	30	30
• Total of all Master/Slave connections	1 000	1 000
• Data length of all incoming connections master/slave, max.	4 000 byte	4 000 byte
• Data length of all outgoing connections master/slave, max.	4 000 byte	4 000 byte
• Number of device-internal and PROFIBUS interconnections	500	500
• Data length of device-internal und PROFIBUS interconnections, max.	4 000 byte	4 000 byte
• Data length per connection, max.	1 400 byte	1 400 byte
• Remote interconnections with acyclic transmission		
- Sampling frequency: Sampling time, min.	500 ms	500 ms
- Number of incoming inter-connections	100	100
- Number of outgoing inter-connections	100	100
- Data length of all incoming interconnections, max.	2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.	2 000 byte	2 000 byte
- Data length per connection, max.	1 400 byte	1 400 byte
• Remote interconnections with cyclic transmission		
- Transmission frequency: Transmission interval, min.	1 ms	1 ms
- Number of incoming interconnections	200	200
- Number of outgoing interconnections	200	200
- Data length of all incoming interconnections, max.	2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.	2 000 byte	2 000 byte
- Data length per connection, max.	450 byte	450 byte
• HMI variables via PROFINET (acyclic)		
- Number of stations that can log on for HMI variables (PN OPC/iMap)	3; 2x PN OPC/ 1x iMap	3; 2x PN OPC/ 1x iMap
- HMI variable updating	500 ms	500 ms
- Number of HMI variables	200	200
- Data length of all HMI variables, max.	2 000 byte	2 000 byte
• PROFIBUS proxy functionality		
- Supported	Yes	Yes
- Number of linked PROFIBUS devices	16	16
- Data length per connection, max.	240 byte; slave-dependent	240 byte; slave-dependent

Technical specifications (continued)

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
Number of connections		
• Usable for routing	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.
S7 message functions		
Number of login stations for message functions, max.	16; depending on the configured connections for PG/OP and S7 basic communication	16; depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes
Simultaneously active Alarm-S blocks, max.	300	300
Test commissioning functions		
Status/control		
• Status/control variable	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30
• of which status variables, max.	30	30
• of which control variables, max.	14	14
Forcing		
• Forcing	Yes	Yes
• Force, variables	I/O	I/O
• Number of variables, max.	10	10
Status block	Yes; up to 2 simultaneously	Yes; up to 2 simultaneously
Single step	Yes	Yes
Number of breakpoints	4	4
Diagnostic buffer		
• Present	Yes	Yes
• Number of entries, max.	500; only the last 100 entries are retentive at power on/off	500; only the last 100 entries are retentive at power on/off
- Adjustable	No	No
- Preset	10	10
Galvanic isolation		
between backplane bus and electronics	No	No
between backplane bus and all other circuit components	Yes	Yes
between supply and all other circuits	Yes	Yes

	6ES7 154-8FB01-0AB0	6ES7 154-8FX00-0AB0
Permissible potential difference		
between different circuits	75 VDC / 60 VAC	75 VDC / 60 VAC
Isolation		
Isolation checked with	In general 500 V DC, Ethernet interface 1500 V AC (for P1 and P2 on CM, for P3 on IM)	In general 500 V DC, Ethernet interface 1500 V AC (for P1 and P2 on CM, for P3 on IM)
Configuration		
Programming		
• Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	Yes	Yes
- GRAPH	Yes	Yes
- HiGraph	Yes	Yes
• Command set	See instruction list	See instruction list
• Nesting levels	8	8
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Block encryption	Yes; with S7 block Privacy	Yes; with S7 block Privacy
Dimensions		
Width	135 mm	135 mm
Height	130 mm	130 mm
Depth	65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover for RJ45 socket	65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover for RJ45 socket
Weight		
Weight, approx.	720 g	720 g

IM 154-8 F PN/DP CPU

Ordering data	Order No.
IM 154-8 F PN/DP CPU interface module, V3.2	
Fail-safe PROFINET IO Controller to operate distributed I/Os on PROFINET, with integrated PLC functionality	
Work memory 512 kbyte	**6ES7 154-8FB01-0AB0**
Work memory 1,5 Mbyte	**6ES7 154-8FX00-0AB0**
Distributed Safety V5.4 programming tool	
Task: Software for configuring fail-safe application programs for SIMATIC S7-300F, S7-400F, ET 200S	
Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Distributed Safety Upgrade	**6ES7 833-1FC02-0YE5**
from V5.3 to V5.4; Floating license for 1 user	
Accessories	
MMC 64 KB [1]	**6ES7 953-8LF20-0AA0**
for program backup	
MMC 128 KB [1]	**6ES7 953-8LG20-0AA0**
for program backup	
MMC 512 KB [1]	**6ES7 953-8LJ30-0AA0**
for program backup	
MMC 2 MB [1]	**6ES7 953-8LL20-0AA0**
for program backup and/or firmware updates	
MMC 4 MB [1]	**6ES7 953-8LM20-0AA0**
for program backup	
MMC 8 MB [1]	**6ES7 953-8LP20-0AA0**
for program backup	
Connection module	**6ES7 194-4AN00-0AA0**
for CPU IM 154-8 PN/DP, with 4 x M12 and 2 x 7/8", to connect PROFINET and PROFIBUS DP	
SCALANCE X-200 Industrial Ethernet Switches	
with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics, for setting up linear, star and ring structures SCALANCE X208PRO, in degree of protection IP65, with eight 10/100 Mbit/s M12 ports, incl. eleven M12 dust caps	**6GK5 208-0HA00-2AA6**

	Order No.
Industrial Ethernet FC RJ45 Plug 90	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 90° cable outlet	
1 unit	**6GK1 901-1BB20-2AA0**
10 units	**6GK1 901-1BB20-2AB0**
Industrial Ethernet FC RJ45 Plug 180	
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
Industrial Ethernet FastConnect installation cables	
• FastConnect standard cable	**6XV1 840-2AH10**
• FastConnect trailing cable	**6XV1 840-3AH10**
• FastConnect marine cable	**6XV1 840-4AH10**
Industrial Ethernet FastConnect installation cables	
• **IE FC TP Trailing Cable GP 2 x 2**; Sold by the meter, max. order quantity 1000 m; minimum order quantity 20 m	**6XV1 870-2D**
• **IE TP Torsion Cable GP 2 x 2**; Sold by the meter, max. order quantity 1000 m; minimum order quantity 20 m	**6XV1 870-2F**
Industrial Ethernet FastConnect	
Stripping Tool	**6GK1 901-1GA00**

[1] An MMC is essential for operating the CPU.

Ordering data	Order No.
IE Connecting Cable M12-180/M12-180	
Preassembled IE FC TP Trailing Cable GP 2 x 2 (PROFINET Type C) with two 4-pin M12 plugs (4-pin, D-coded), degree of protection IP65/IP67, length:	
0.3 m	**6XV1 870-8AE30**
0.5 m	**6XV1 870-8AE50**
1.0 m	**6XV1 870-8AH10**
1.5 m	**6XV1 870-8AH15**
2.0 m	**6XV1 870-8AH20**
3.0 m	**6XV1 870-8AH30**
5.0 m	**6XV1 870-8AH50**
10 m	**6XV1 870-8AN10**
15 m	**6XV1 870-8AN15**
PROFINET M12 connecting cable, trailing cable preassembled at both ends with angled M12 connectors (male insert)	
3.0 m	**3RK1 902-2NB30**
5.0 m	**3RK1 902-2NB50**
10 m	**3RK1 902-2NC10**
PROFINET M12 connecting cable, trailing cable preassembled at one end with angled M12 connector (male insert at one end, other end unconnected)	
3.0 m	**3RK1 902-2HB30**
5.0 m	**3RK1 902-2HB50**
10 m	**3RK1 902-2HC10**
IE FC M12 Plug PRO	
PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet	
1 unit	**6GK1 901-0DB20-6AA0**
8 units	**6GK1 901-0DB20-6AA8**
PROFINET M12 plug connector, D-coded, angled	**3RK1 902-2DA00**
IE panel feedthrough	
Cabinet feedthrough for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units	**6GK1 901-0DM20-2AA5**

	Order No.
7/8" connecting cable to power supply	
5-core, 5 x 1.5 mm^2, trailing type, preassembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m	
• 1.5 m long	**6XV1 822-5BH15**
• 2.0 m long	**6XV1 822-5BH20**
• 3.0 m long	**6XV1 822-5BH30**
• 5.0 m long	**6XV1 822-5BH50**
• 10 m long	**6XV1 822-5BN10**
• 15 m long	**6XV1 822-5BN15**
• Other special lengths with 90° or 180° cable outlet	See http://support.automation.siemens.com/WW/view/en/26999294
Power cable, can be trailed, 5 x 1.5 mm^2, preassembled at both ends with 7/8" angled connectors (female insert at one end, male insert at the other end)	
• 3.0 m long	**3RK1 902-3NB30**
• 5.0 m long	**3RK1 902-3NB50**
• 10 m long	**3RK1 902-3NC10**
Power cable, can be trailed, 5 x 1.5 mm^2, preassembled at one end with 7/8" angled connector with female insert (female insert at one end, other end unconnected)	
• 3.0 m long	**3RK1 902-3GB30**
• 5.0 m long	**3RK1 902-3GB50**
• 10 m long	**3RK1 902-3GC10**
Power line	**6XV1 830-8AH10**
5-core, 5 x 1.5 mm^2, trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1,000 m	
7/8" cable connector	
for ET 200eco, with axial cable outlet	
• with male insert, 5 per pack	**6GK1 905-0FA00**
• with female insert, 5 per pack	**6GK1 905-0FB00**
• angled, with female insert, 1 unit	**3RK1 902-3DA00**
• angled, with male insert, 1 unit	**3RK1 902-3BA00**
7/8" cover cap, 10 per pack	**6ES7 194-3JA00-0AA0**
Twisted Pair cables 4x2 with RJ45 connectors	
0.5 m long	**6XV1 870-3QE50**
1 m long	**6XV1 870-3QH10**
2 m long	**6XV1 870-3QH20**
6 m long	**6XV1 870-3QH60**
10 m long	**6XV1 870-3QN10**

IM 154-8 F PN/DP CPU

Ordering data	Order No.
Crossed Twisted Pair cables 4x2 with RJ45 connectors	
0.5 m long	**6XV1 870-3RE50**
1 m long	**6XV1 870-3RH10**
2 m long	**6XV1 870-3RH20**
6 m long	**6XV1 870-3RH60**
10 m long	**6XV1 870-3RN10**
M12 sealing cap	**3RX9 802-0AA00**
for protection of unused M12 connections with ET 200pro	
M12 sealing caps with female thread	**6ES7 194-4JD60-0AA0**
5 units	
PROFIBUS M12 connecting cable	
Preassembled, with two 5-pole M12 connectors/sockets, up to 100 m; length:	
• 1.5 m	**6XV1 830-3DH15**
• 2.0 m	**6XV1 830-3DH20**
• 3.0 m	**6XV1 830-3DH30**
• 5.0 m	**6XV1 830-3DH50**
• 10 m	**6XV1 830-3DN10**
• 15 m	**6XV1 830-3DN15**
Other special lengths with 90° or 180° cable outlet	See http://support.automation.siemens.com/WW/view/en/26999294
M12 bus termination connector for PROFIBUS, female insert	**6GK1 905-0ED00**
M12 bus termination connector for PROFIBUS, male insert	**6GK1 905-0EC00**
M12 plug connector, axial outlet, with male insert	**6GK1 905-0EA00**

Ordering data	Order No.
PROFIBUS FC Standard Cable GP	**6XV1 830-0EH10**
Standard type specially designed for fast assembly, 2-core, shielded,	
Sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Trailing Cable	**6XV1 830-3EH10**
2-core, shielded	
PROFIBUS FC Food Cable	**6XV1 830-0GH10**
2-core, shielded	
Sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Robust Cable	**6XV1 830-0JH10**
2-core, shielded	
Sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS M12 cable connector	
5-pole, B-coded, metal casing, 1 pack = 5 units	
• Female insert	**6GK1 905-0EB00**

Overview

- Automatically detects transmission rate
- 45.45 kbit/s transmission rate is possible
- 24 V DC voltage display
- Bus activity segment 1 and 2 display
- The separation of segment 1 and segment 2 on switch is possible
- Separation of the right segment with an inserted terminator
- Decoupling of segment 1 and segment 2 with static interference

Designed for Industry

- To increase the number of participants and the extension
- Segment electric isolation
- Commissioning support
  - Segment separation switch
  - Bus activity display
  - Segment separation with an incorrectly inserted terminator

Please also note in this context the diagnostics repeater that provides extensive diagnostics functions for physical line diagnostics in addition to the normal repeater functionality. This is described in "Distributed I/O / diagnostics / diagnostics repeater for PROFIBUS DP".

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS RS 485 repeater for PROFIBUS	
Order No.	**6AG1 972-0AA02-7XA0**
Order No. based on	**6ES7 972-0AA02-0XA0**
Ambient temperature range	-25 °C … +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the environmental conditions.
Environmental conditions	
• Relative humidity	5 … 100 % Condensation permissible
• Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
• Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX[1)2)]
• Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including sand, dust [2)]
• Air pressure (depending on the highest positive temperature range specified)	1 080...795 hPa (-1 000 ... +2 000 m) See ambient temperature range 795...658 hPa (+2 000 ... +3 500 m) Derating 10 K 658...540 hPa (+3 500 ... +5 000m) Derating 20K

[1)] ISA-S71.04 severity level GX: Long-term load: SO2 <4.8 ppm; H2S <9.9 ppm; Cl <0.2 ppm; HCl <0.66 ppm; HF <0.12 ppm; NH <49 ppm; O3 <0.1 ppm; NOX <5.2 ppm
Threshold / limit value (max. 30 min/d): SO2 < 14.8 ppm; H2S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O3 < 1.0 ppm; NOX < 10.4 ppm

[2)] The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

For further technical documentation on SIPLUS, see:

http://www.siemens.com/siplus-extreme

Ordering data

	Order No.
SIPLUS RS 485 repeater for PROFIBUS	
for temperature range -25 °C to +70 °C and use under medial exposure (e.g. sulfur chloride atmosphere)	
Transfer rate up to max. 12 Mbit/s, 24 V DC, enclosure IP20	**6AG1 972-0AA02-7XA0**
Accessories	See SIMATIC RS 485 repeater for PROFIBUS

Notes

Software for SIMATIC controllers

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Software Update Service

Overview

- Service for automatic dispatch of all new software versions during contract lifetime.
- Reduced logistics effort thanks to automatic contract extension.
- Reduced costs as updates are provided free of charge.

Ordering

- The Software Update Service is ordered in the same way as any other product. The corresponding order number is given in the ordering information of the software product in question.
- You must own the current version of the software.
- One Software Update Service is ordered for each software license installed.
- The Software Update Service runs for 1 year from date of order.
- It is extended automatically by a further year in each case, as long as it is not canceled 3 months before it expires.
- An annual lump sum is invoiced per license.

Application

SIMATIC software is continuously enhanced and improved. The **Software Update Service** is the easiest way to regularly take advantage of these improvements. This service automatically sends new software updates when they are released so you always have the latest version.

The Software Update Service

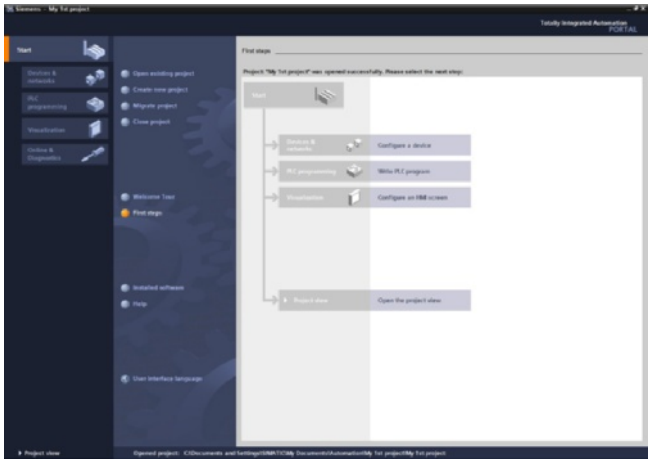
- Saves time and effort:
  Once it is ordered, the Software Update Service is automatically renewed every year.
- Lowers costs:
  The service pays for itself after the first update as it costs less than an individually ordered update.
- Makes budgeting easier:
  Software expenditures can be accounted for early in the budgeting process and they are easier to write off.

Design

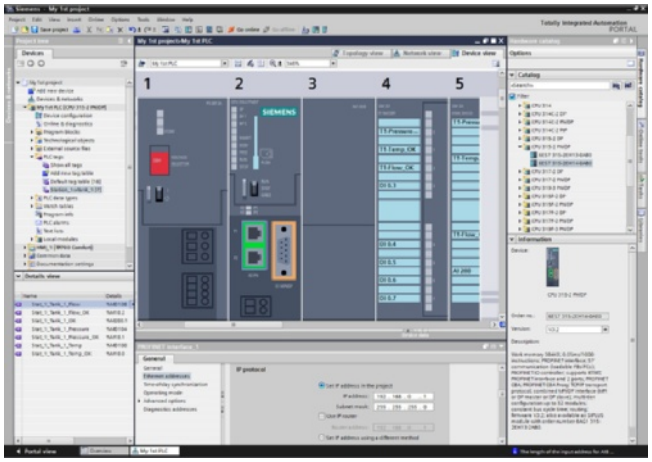
Scope of delivery

- All software versions released after ordering the Software Update Service (usually several consignments per year).
- SIMATIC Customer Support Knowledge Base CD-ROM with FAQs, tips & tricks and downloads (several issues per year).

Overview



STEP 7 V11 (TIA Portal), portal view



STEP 7 V11 (TIA Portal), device view: configuring and parameterizing in photographically realistic representation

Intuitive, efficient and future-oriented - the new engineering software for programming the S7 controllers

SIMATIC STEP 7 Professional V11 is the easy-to-use, integrated engineering system for the current SIMATIC S7-1200, S7-300, S7-400 controllers and WinAC.

SIMATIC STEP 7 Basic V11 is the successor to STEP 7 Basic V10.5 and supports the additional functions of the firmware 2.0 of the S7-1200 controller.

STEP 7 V11 is based on the new central engineering framework Totally Integrated Automation Portal (TIA Portal), which offers the user a uniform, efficient and intuitive solution to all automation tasks. TIA Portal forms the integrated working environment for IA and DT engineering software.

WinCC Basic for configuration of Basic Panels is included in the scope of supply.

Technical specifications

	STEP 7 Professional / Basic V11 (TIA Portal)		
Type of license	Floating license		
Software class	A		
Current version	V11		
Target system	SIMATIC S7-1200, S7-300, S7-400, WinAC		
Operating system	Microsoft Windows XP Home SP3 (STEP 7 Basic only) Windows XP Professional SP3 (32 bit) Microsoft Windows 7 Home Premium (STEP 7 Basic only) Microsoft Windows 7 Professional (32/64 bit) Microsoft Windows 7 Enterprise (32/64 bit) Microsoft Windows 7 Ultimate (32/64 bit) Microsoft Server 2003 R2 Std. SP2 (32 bit) Microsoft Server 2008 Std. SP2 (32/64 bit)		
Minimum PG/PC hardware	Processor: Pentium 4, 1.7 GHz or comparable	RAM: 1 GB	Graphics: 1024x768
Recommended PG/PC hardware	Processor: Core Duo, 2 GHz or comparable	RAM: 2 GB	Graphics: 1280x1024
Note	Includes the IEC programming languages SCL, LAD, FBD, STL, GRAPH		

Compatibility with other SIMATIC products

STEP 7 Professional / Basic V11 (incl. WinCC Basic V11) can be installed on a PC in parallel with other versions of STEP 7 (V5.4/V5.5), STEP 7 Micro/WIN, WinCC flexible (from 2008) and WinCC (V7.0 SP2).

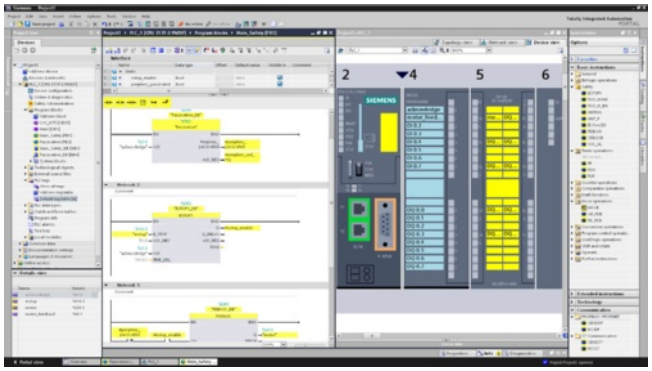
STEP 7 (TIA Portal)

Ordering data	Order No.
STEP 7 Professional / Basic V11 Target system: SIMATIC S7-1200, S7-300, S7-400, WinAC Requirement: Windows XP Home SP3 (STEP 7 Basic only), Windows XP Professional SP3 (32 bit), Windows 7 Home Premium (STEP 7 Basic only), Windows 7 Professional (32/64 bit), Windows 7 Enterprise (32/64 bit), Windows 7 Ultimate (32/64 bit), Microsoft Server 2003 R2 Std. SP2 (32 bit), Microsoft Server 2008 Std. SP2 (32/64 bit) Delivery package: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V11, floating license	**6ES7 822-1AA01-0YA5**
STEP 7 Professional V11, floating license, license key download without software and documentation E-mail address required for delivery.	**6ES7 822-1AA01-0YH5**
STEP 7 Prof. V11, trial license	**6ES7 822-1AA01-0YA7**
STEP 7 Professional V11, trial license, software download E-mail address required for delivery.	**6ES7 822-1AA01-0YG7**
Upgrade STEP 7 Prof. 2006/2010 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0XE5**
Upgrade STEP 7 Prof 2006/2010 to STEP 7 Prof. V11, floating license, license key download without software and documentation E-mail address required for delivery.	**6ES7 822-1AA01-0XK5**
PowerPack & Upgrade STEP 7 V5.4/V5.5 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0XC5**
PowerPack & Upgrade STEP 7 V5.4/V5.5 to STEP 7 Prof. V11, floating license, license key download without software and documentation E-mail address required for delivery.	**6ES7 822-1AA01-0XJ5**
Powerpack STEP 7 Basic V11 to STEP 7 Prof. V11, floating license	**6ES7 822-1AA01-0YC5**
Powerpack STEP 7 Basic V11 to STEP 7 Prof. V11, floating license, license key download without software and documentation E-mail address required for delivery.	**6ES7 822-1AA01-0YJ5**

	Order No.
STEP 7 Basic V11, floating license	**6ES7 822-0AA01-0YA0**
STEP 7 Basic V11, floating license, license key download without software and documentation E-mail address required for delivery.	**6ES7 822-0AA01-0YH5**
STEP 7 Basic V11, trial license	**6ES7 822-0AA01-0YA7**
Upgrade STEP 7 Basic V10.5 to STEP 7 Basic V11, floating license	**6ES7 822-0AA01-0YE0**
Upgrade STEP 7 Basic V10.5 to STEP 7 Basic V11, floating license, license key download without software and documentation E-mail address required for delivery.	**6ES7 822-0AA01-0YK5**
Software Update Service For a period of 12 months and for a fixed price, the customer is automatically provided with all upgrades and service packs for each installed software package. The contract is automatically extended by a further year unless canceled up to 12 weeks prior to expiration. Requires the current software version.	
Software Update Service (Standard Edition)[1] The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.)	
• STEP 7 Professional V11	**6ES7 822-1AA00-0YL5**
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7 810-5CC04-0YE2**
• STEP 7 Basic	**6ES7 822-0AA00-0YL0**
Software Update Service (Compact Edition)[1] The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied. The delivery items to be combined must be ordered as one item.	
• STEP 7 Professional V11	**6ES7 822-1AA00-0YM5**
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7 810-5CC00-0YM2**
• STEP 7 Basic	**6ES7 822-0AA00-0YM0**

[1] For more information on the Software Update Service, see Chapter 11, page 11/2.

Overview



- For creating safety-related programs in the STEP 7 operator interface.
- For seamless and easy to use integration of safety-related functions into the standard automation.
- All the required configuration and programming tools are integrated into the STEP7 operator interface and utilize a common project structure.

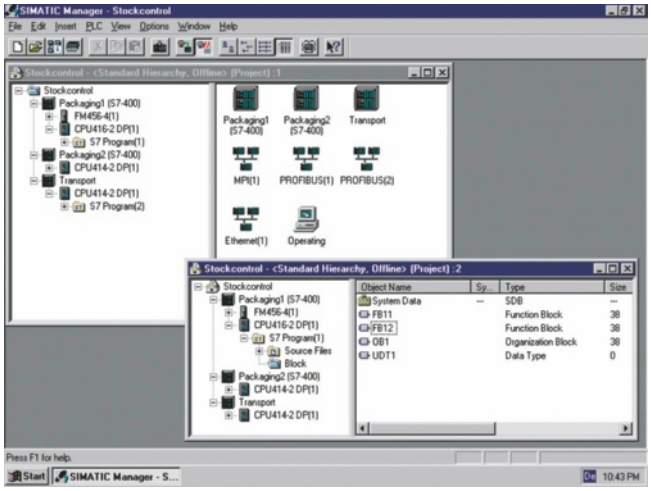
Ordering data

Ordering data	Order No.
STEP 7 Safety Advanced V11 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco. Requirement: STEP 7 Professional V11 SP1.	
Floating license for 1 user.	**6ES7 833-1FA11-0YA5**
Floating license for 1 user, licence key download without softare and documentation; E-mail address required for delivery.	**6ES7 833-1FA11-0YH5**
Software Update Service (Standard Edition)[1)] The delivery is implemented according to the number of ordered SUS products, (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.). Requires the current software version.	**6ES7 833-1FC00-0YX2**
Software Update Service (Compact Edition)[1)] The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied. The delivery items to be combined must be ordered as one item. Requires the current software version. Minimum ordering quantity: 5 units.	**6ES7 833-1FC00-0YM2**
STEP 7 Safety Advanced Upgrade	
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; incl. software on CD; combo license for 1 user.	**6ES7 833-1FA11-0YE5**
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V11 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation; E-mail address required for delivery.	**6ES7 833-1FA11-0YK5**

[1)] For more information on the Software Update Service, see Chapter 11, page 11/2.

STEP 7

Overview



- STEP 7 basic software:
  The standard tool for the SIMATIC S7, SIMATIC C7 and SIMATIC WinAC automation systems.
- Makes use of the full performance capabilities of the systems.
- User-friendly functions for all phases of an automation project:
  - Configuring and parameterizing the hardware
  - Definition of communication
  - Programming
  - Testing, commissioning and service
  - Documentation, archiving
  - Operating, diagnostics functions

Components for connecting a PC to MPI and PROFIBUS

The components described below are used to connect programming devices and PCs (incl. notebooks) to PROFIBUS and to the multipoint SIMATIC S7 MPI interface in conjunction with STEP 7.

PC adapter USB

- To connect a PC to the SIMATIC S7 programmable controller via the USB port
- Connectable to USB 1.1 and 2.0 ports
- Applicable for SIMATIC S7-200, S7-300, S7-400 and C7
- Supports routing
- Automatic transmission rates and profile search
- Noticeably improved performance (up to three times faster than the PC adapter via RS 232)
- Including subsequently updatable firmware (e.g. for function expansions or troubleshooting)
- Applicable in Windows XP, Windows Vista, Windows 7 (32/64 bit)
- Scope of delivery:
  - PC adapter USB
  - CD "SIMATIC Software PC Adapter USB" including software and documentation
  - USB cable, 5 m
  - MPI cable, 0.3 m

CP 5512

- For programming devices/ PCs/notebooks with PCMCIA slot
- PCMCIA slot Type II (32 bit cardbus)
- Incl. adapter with 9-pin sub-D socket for connection to PROFIBUS

CP 5611/CP 5611-MPI

- For programming devices/PCs with PCI slot
- Short PCI card (32 bit)
- CP 5611-MPI including MPI cable

Components for connecting the PC to Industrial Ethernet

The PC modules described below are used to connect programming devices and AT-compatible PCs/notebooks to Industrial Ethernet in conjunction with STEP 7 and SOFTNET-PG (as of V6.0).

CP 1512

- For programming devices/ PCs/notebooks with PCMCIA slot
- PCMCIA slot Type II (32 bit cardbus); 10/100 Mbit/s
- Incl. adapter with RJ45 socket for connection to Industrial Ethernet

CP 1612

- For programming devices/PCs with PCI slot
- Short PCI card (32 bit); 10/100 Mbit/s
- Incl. RJ45 socket for connection to Industrial Ethernet

Please refer to the respective product catalog for technical information regarding product versions and supported operating systems.

You will find additional information about the online connection of PCs and SIMATIC S7/C7 controllers under "SIMATIC NET Communication Systems".

Technical specifications

	STEP 7
Type of license	Floating license
Software class	A
Current version	V 5.5
Target system	SIMATIC S7-300 SIMATIC S7-400
Operating system	Windows XP Professional, Windows 7 Professional, Windows 7 Ultimate
Work memory expansion in programming device / PC, min.	Depends on Microsoft Windows operating system used. Recommendation: 1 to 2 GB
Hard drive requirement in programming device / PC	Depending on scope of installation, 650 to 900 MB
Size of user program in the CPU	Approx. factor 1.5 compared with STEP 5 with AWL (STL - instruction list), KOP (LAD - ladder diagram), FUP (FBD - function block diagram)
Comment	-

	6ES7 972-0CB20-0XA0
Supply voltage	
24 V DC	Yes
Input current	
Current consumption, typ.	100 mA
Power	
Power consumption, typ.	Max. 2.5 W
EMC	
Interference immunity against discharge of static electricity	
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes; 6 kV, contact discharge (to IEC 61000-4-2); 8 kV, air discharge (to IEC 61000-4-2)

11

Technical specifications (continued)

	6ES7 972-0CB20-0XA0
Interference immunity to cable-borne interference	
• on the supply lines acc. to IEC 61000-4-4	Yes; 2 kV (to IEC 61000-4-4, burst)
• Interference immunity on signal lines acc. to IEC 61000-4-4	Yes; 1 kV (to IEC 61000-4-4; burst; length < 3 m); 2 kV (to IEC 61000-4-4; burst; length > 3 m)
Surge immunity	
• on the supply lines acc. to IEC 61000-4-5	Yes; 1 kV (to IEC 61000-4-5; surge symm.); 2 kV (to IEC 61000-4-5; surge asymm.)
Immunity against high-frequency electromagnetic fields	
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3	Yes; 10 V/m, 80 to 1000 MHz (to IEC 61000-4-3); 10 V/m, 900 MHz, 1.89 GHz, 50% ED (to IEC 61000-4-3)
Immunity against conducted interference induced by high-frequency fields	
• Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes; 10 V, 9 kHz to 80 MHz (to IEC 61000-4-6)
Immunity to magnetic field interference	
• Interference immunity to magnetic fields at 50 Hz	30 A/m; to IEC 61000-4-8
Emission of radio interference acc. to EN 55 022	
• Interference emission acc. to EN 55022, class B	Yes

	6ES7 972-0CB20-0XA0
Ambient conditions	
Operating temperature	
• Min.	5 °C
• Max.	40 °C
• Permissible temperature change	10 °C/h; operation: 10 K/h; storage/transport: 20 K/h
Storage/transport temperature	
• Min.	-20 °C
• Max.	60 °C
Relative humidity	
• Operation, min.	5 %
• Operation, max.	80 %; at 25 °C (no condensation)
• Storage/transport, min.	5 %
• Storage/transport, max.	95 %; at 25 °C (no condensation)
Vibrations	
• Operation, checked according to IEC 60068-2-6	Yes; 10 to 58 Hz: Amplitude 0.075 mm; 58 to 500 Hz: Acceleration 9.8 m/s^2
• Transport tested checked to IEC 60068-2-6	Yes; (packed) 5 to 9 Hz, amplitude 3.5 mm; 9 to 500 Hz, acceleration 9.8 m/s^2
Shock test	
• Shock test	Tested to IEC 60068-2-2; Operation: 950 m/s^2 (10 g), 30 ms, 100 shocks; Transport (packaged): 250 m/s^2 (25 g), 6 ms, 1000 shocks
Dimensions	
Width	105 mm
Height	58 mm
Depth	26 mm
Weight	
Weight, approx.	100 g

Ordering data

	Order No.
STEP 7 Version 5.5	
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Prof., Windows 7 Professional / Ultimate Delivery package: German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation	
Floating license on DVD	**6ES7 810-4CC10-0YA5**
Floating license, license key download without software and documentation; e-mail address required for the delivery	**6ES7 810-4CE10-0YB5**
Rental license for 50 hours	**6ES7 810-4CC10-0YA6**
Floating license for 50 hours, license key download without software and documentation; e-mail address required for the delivery	**6ES7 810-4CE10-0YB6**
Software Update Service on DVD (requires current software version)[1]	**6ES7 810-4BC01-0YX2**
Upgrade Floating License 3.x/4.x/5.x to V5.5; on DVD	**6ES7 810-4CC10-0YE5**
Trial License STEP 7 V5.5; on DVD, 14 day trial	**6ES7 810-4CC10-0YA7**
STEP 7 Version 5.5 Japanese	
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Professional Japanese Delivery package: English, Japanese; incl. license key on USB stick, with electronic documentation	
Floating License Japanese on DVD	**6ES7 810-4CC10-0JA5**
Upgrade Floating License Japanese 3.x/4.x/5.x to V5.5; on DVD	**6ES7 810-4CC10-0JE5**

[1] For more information on the Software Update Service, see Chapter 11, page 11/2.

STEP 7

Ordering data	Order No.
STEP 7 Version 5.5, Chinese	
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Professional Chinese Delivery package: English, Chinese; incl. license key on USB stick, with electronic documentation	
Floating License Chinese on DVD	**6ES7 810-4CC10-0KA5**
Upgrade Floating License Chinese 3.x/4.x/5.x to V5.5; on DVD	**6ES7 810-4CC10-0KE5**
Documentation package STEP 7 basic information	
Comprising Getting Started, hardware configuration manual, programming manual, migration manual	
German	**6ES7 810-4CA10-8AW0**
English	**6ES7 810-4CA10-8BW0**
French	**6ES7 810-4CA10-8CW0**
Spanish	**6ES7 810-4CA10-8DW0**
Italian	**6ES7 810-4CA10-8EW0**
STEP 7 reference manuals	
Consisting of STL, LAD and FBD manuals as well as a reference manual for standard and system functions for SIMATIC S7-300/400	
German	**6ES7 810-4CA10-8AW1**
English	**6ES7 810-4CA10-8BW1**
French	**6ES7 810-4CA10-8CW1**
Spanish	**6ES7 810-4CA10-8DW1**
Italian	**6ES7 810-4CA10-8EW1**
SIMATIC Manual Collection	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
SIMATIC Manual Collection update service for 1 year	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	

	Order No.
EPROM programming device, USB prommer	**6ES7 792-0AA00-0XA0**
For programming SIMATIC memory cards and EPROM modules	
MPI cable	**6ES7 901-0BF00-0AA0**
For linking SIMATIC S7 and PG through MPI (5 m)	
Components for connecting a PC to MPI and PROFIBUS	
For PCs with a free PCI slot	
CP 5611	**6GK1 561-1AA01**
CP 5611 MPI	**6GK1 561-1AM01**
incl. MPI cable (5 m)	
For PCs with a free PCMCIA slot	
CP 5512	**6GK1 551-2AA00**
For Windows XP Professional	
For PCs without a free PCI slot	
PC adapter USB	**6ES7 972-0CB20-0XA0**
For connecting a PC to S7-300/-400/C7 through a USB interface; with USB cable (5 m)	
Components for connecting the PC to Industrial Ethernet	
For PCs with a free PCI slot	
Layer 2 Ethernet cards	
For PCs with a free PCMCIA slot	
SOFTNET-IE RNA V7.1 (Win XP/Vista/Server2003)	**6GK1 704-1PW71-3AA0**
SOFTNET-IE RNA V8.1 (Win 7/server2008)	**6GK1 704-1PW08-1AA0**

Overview

STEP 7 Professional supports all IEC languages.

In addition to the languages recognized by STEP 7

- LAD
- FBD
- IL

The following are also available:

- "Sequential Function Chart"
- "Structured Text"

An offline simulation of programs created with these languages is included. STEP 7 Professional thus replaces the combination of the individual packages STEP 7, S7-GRAPH, S7-SCL and S7-PLCSIM.

A POWERPACK is offered to customers who use STEP 7 already and wish to change. A valid STEP 7 license is required for purchasing the POWERPACK. A separate update service is available for STEP 7 Professional.

Technical specifications

Standard Tool	STEP 7 Professional
Type of license	Floating license
Software class	A
Current version	Edition 2010
Target system	SIMATIC S7-300 SIMATIC S7-400 SIMATIC C7
Operating system	Windows XP Professional, Windows 7 Professional, Windows 7 Ultimate
Work memory expansion in programming device / PC, min.	Depends on Microsoft Windows operating system used. Recommendation: 1 to 2 GB
Hard drive requirement in programming device / PC	Depending on scope of installation, 700 to 1000 MB
Size of user program in the CPU	approx. factor 1.5 compared with STEP 5 with AWL (STL - instruction list), KOP (LAD - ladder diagram), FUP (FBD - function block diagram)
Comment	Includes all 5 IEC programming languages KOP (LAD - ladder diagram), FUP (FBD - function block diagram), AWL (STL - instruction list), SCL (structured control language), GRAPH and the PLC simulation software S7-PLCSIM

Ordering data

Ordering data	Order No.
STEP 7 Professional 2010 Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Prof. (32 bit), Windows 7 Professional / Ultimate (32/64 bit) Delivery package: German, English, French, Spanish, Italian; license key on USB stick, with electronic documentation	
Floating combo license on DVD	**6ES7 810-5CC11-0YA5**
Floating license, license key download without software and documentation; e-mail address required for the delivery	**6ES7 810-5CE11-0YB5**
Rental license for 50 hours	**6ES7 810-5CC11-0YA6**
Rental license for 50 hours, license key download without software and documentation; e-mail address required for the delivery	**6ES7 810-5CE11-0YB6**
Upgrade of Floating License to Edition 2010; on DVD	**6ES7 810-5CC11-0YE5**
Powerpack Floating License for upgrading from STEP 7 to STEP 7 Professional	**6ES7 810-5CC11-0YC5**
Trial License STEP 7 Professional 2010; on DVD, runs for 14 days	**6ES7 810-5CC11-0YA7**
Software Update Service For a period of 12 months and for a fixed price, the customer is automatically provided with all upgrades and service packs for each installed software package. The contract is automatically extended by a further year unless canceled up to 12 weeks prior to expiration. Requires the current software version.	
Software Update Service (Standard Edition)[1)] The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.)	
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7 810-5CC04-0YE2**

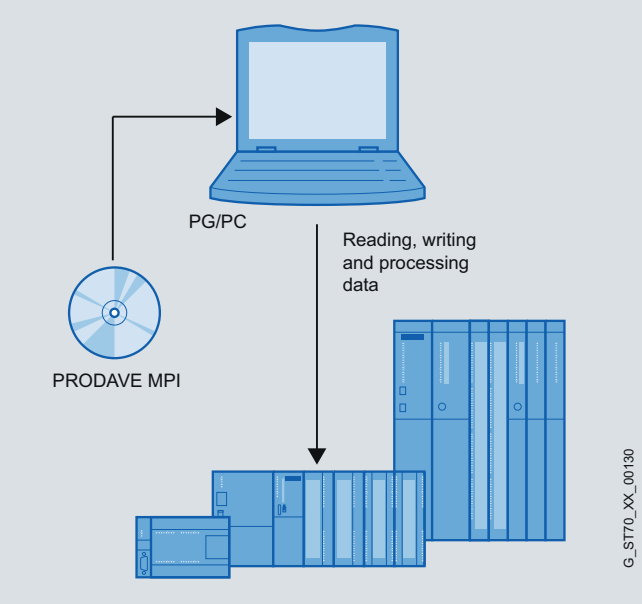
1) For more information on the Software Update Service, see Chapter 11, page 11/2.

STEP 7 Professional

Ordering data	Order No.
Software Update Service (Compact Edition)[1)] The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied. The delivery items to be combined must be ordered as one item.	
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7 810-5CC00-0YM2**
Documentation package STEP 7 basic information Comprising Getting Started, hardware configuration manual, programming manual, migration manual	
German	**6ES7 810-4CA10-8AW0**
English	**6ES7 810-4CA10-8BW0**
French	**6ES7 810-4CA10-8CW0**
Spanish	**6ES7 810-4CA10-8DW0**
Italian	**6ES7 810-4CA10-8EW0**
STEP 7 reference manuals Consisting of STL, LAD and FBD manuals as well as a reference manual for standard and system functions for SIMATIC S7-300/400	
German	**6ES7 810-4CA10-8AW1**
English	**6ES7 810-4CA10-8BW1**
French	**6ES7 810-4CA10-8CW1**
Spanish	**6ES7 810-4CA10-8DW1**
Italian	**6ES7 810-4CA10-8EW1**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**
EPROM programming device, USB prommer for programming SIMATIC memory cards and EPROM modules	**6ES7 792-0AA00-0XA0**
MPI cable for linking SIMATIC S7 and PG through MPI (5 m)	**6ES7 901-0BF00-0AA0**
Components for connecting a PC to MPI and PROFIBUS	
for PCs with a free PCI slot	
CP 5611	**6GK1 561-1AA01**
CP 5611 MPI incl. MPI cable (5 m)	**6GK1 561-1AM01**
for PCs with a free PCMCIA slot	
CP 5512 for Windows XP Professional	**6GK1 551-2AA00**
for PCs without a free PCI slot	
PC adapter USB for connecting a PC to S7-300/-400/C7 through a USB interface; with USB cable (5 m)	**6ES7 972-0CB20-0XA0**
Components for connecting the PC to Industrial Ethernet	
for PCs with a free PCI slot	
Layer 2 Ethernet cards	
for PCs with a free PCMCIA slot	
SOFTNET-IE RNA V7.1 (Win XP/Vista/Server2003)	**6GK1 704-1PW71-3AA0**
SOFTNET-IE RNA V8.1 (Win 7/server2008)	**6GK1 704-1PW08-1AA0**

[1)] For more information on the Software Update Service, see Chapter 11, page 11/2.

Overview



- The toolbox for exchange of process data between SIMATIC S7, SIMATIC C7 and a PG/PC
- For autonomous handling of data traffic over MPI/PPI, PROFIBUS and Industrial Ethernet

Technical specifications

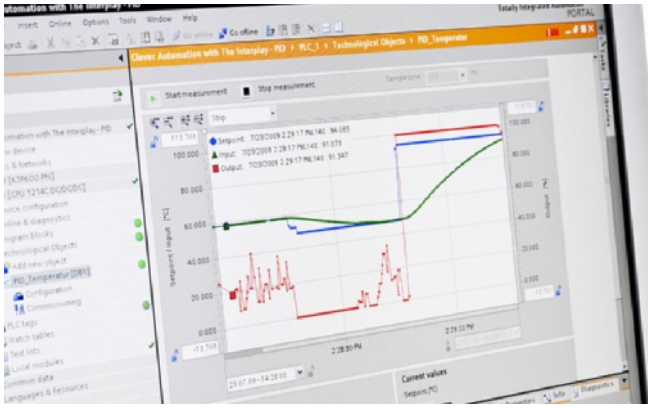
Runtime software	
Parameterization software	**PRODAVE**
Type of license	Simple license, copy license
Software class	A
Current version	V6.2
Target system	SIMATIC S7-200 SIMATIC S7-300 SIMATIC S7-400 SIMATIC C7
Operating system	Windows XP Professional, Windows 7 Professional and Ultimate (32 and 64 bit in each case)
Required software packages	-
Work memory configuration in target system	8 MB on PG/PC
Disk space required in PG/PC	2 MB
Standard FBs	
Required libraries	-

Ordering data

	Order No.
PRODAVE MPI/IE V6.2 for Windows XP Professional, Windows 7 Professional and Ultimate (32 and 64 bit in each case) Task: Data link between PG/PC and SIMATIC S7/C7 via MPI (S7-200 via PPI) or Industrial Ethernet Requirements: Windows XP Professional, Windows 7 Professional and Ultimate (32 and 64 bit in each case); CP 5611, integrated MPI or PC adapter Delivery package: CD incl. electr. documentation (German, English)	
Single license	**6ES7 807-4BA03-0YA0**
Copy license, without software and documentation	**6ES7 807-4BA03-0YA1**
PRODAVE MPI Mini V6.0 for Windows 95/98/ME/NT 4.0/ 2000 Prof./XP Prof. Task: Data link between PG/PC and SIMATIC S7/C7 over MPI (S7-200 over PPI); with reduced functional scope) Requirements: Windows 95/98/ME/NT 4.0/ 2000 Prof./XP Prof.; CP 5611, integrated MPI or PC adapter Delivery package: CD incl. electr. documentation (German, English)	
Single license	**6ES7 807-3BA01-0YA0**
Copy license, without software and documentation	**6ES7 807-3BA01-0YA1**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**

PID Professional V11

Overview



- PID Professional V11 combines the two option packages Modular PID Control and Standard PID Control in the TIA Portal.
- Permits the simple integration of continuous PID controllers, pulse controllers and step controllers in the application program.
- Can be used for simple to complex closed-loop control tasks in SIMATIC S7-300 (CPU 313 or higher), S7-400, and WinAC.
- Tuning functionality by means of PID Self-Tuner (part of STEP 7 as of V11 SP1).
- Reduces engineering costs thanks to time-saving parameterization and optimization of the controller.

Technical specifications

Parameterization software	
Type of license	Single license
Software class	A
Current version	V11
Target system	SIMATIC S7-300 (CPU 313 or higher) SIMATIC S7-400 WinAC
Required software packages	STEP 7 V11 SP2 Update 2 or higher
RAM	1 GB
Disk space required in PG/PC	2 GB
Processor, at least	Pentium M, 1.6 GHz or comparable
Operating systems	• Windows XP Professional SP3 • Windows 2003 Server R2 StdE SP2 • Windows 7 (Professional, Enterprise, Ultimate, 32/64 bit) • Windows 2008 Server StdE SP2
Standard FBs in general	
Required libraries	PID Professional V11
Forms of license	Single license and 1 runtime license
Software class	A
Current version	V11
Work memory configuration in PG/PC	16 MB
Disk space required in PG/PC	1.85 MB

Ordering data

	Order No.
PID Professional V11 Task: Start-up tool for PID controllers Requirement: STEP 7 as of V11 SP2 Update 2 Delivery package: on CD	
Floating license for the engineering and blocks	**6ES7 860-1XA01-0XA5**
Software Update Service (requires current software version)[1]	**6ES7 860-1XA01-0YL0**
Upgrade license from Standard PID Control or Modular PID Control V5.x to PID Professional V11	**6ES7 860-1XA01-0XE5**
Single license (certificate of license) for blocks; per CPU	**6ES7 860-1XA01-0XB0**

[1] For more information on the Software Update Service, see Chapter 11, page 11/2.

Overview

- Low-priced package for simple, controlled positioning and simple geared synchronous motion
- For use with any standard variable-speed drive, such as frequency converter or servo drive
- For incremental and absolute encoders.

Technical specifications

Supported hardware:

Easy Motion Control is runnable on the following CPUs:

- S7-300
- S7-400
- WinAC
- ET 200S
- ET 200pro

Supported modules for the measuring of actual values:

- CPU 314C (FW version 2.0 of the CPU or higher)
- ET 200S 1 Count 5V/500 kHz
- ET 200S 1 Count 24V/100kHz
- ET 200S 1SSI
- SM 338
- FM 350-1, FM 450-1
- SIMODRIVE sensor with PROFIBUS DP
- IM 174
- Other modules for measuring actual values (using free driver)

Supported modules for setpoint output:

- ET 200S 2AO U
- SM 332
- SM 432
- IM 174
- Other modules for setpoint output (using free driver)

Supported drives using PROFIBUS DP:

- Micromaster 4
- SINAMICS G120
- SINAMICS S120

Storage space requirements

Required main storage in byte		
Block	Required main storage per block	Additional main storage required per instance
MC_Init	1086	-
MC_MoveAbsolute	3924	112
MC_MoveRelative	2982	110
MC_MoveJog	3110	110
MC_Home	2886	104
MC_StopMotion	1114	70
MC_Control	1756	58
MC_Simulation	410	64
MC_GearIn	3476	128
Input driver	1416 ... 2654	76 ... 128
Output driver	384 ... 1242	52 ... 68
Axis data block	-	294

Technical specifications (continued)

Runtime load

Typical runtimes of the blocks in µs				
Block	CPU 416-2 DP 6ES7 416-2XK02-0AB0	CPU 314C 6ES7 314-6CF00-0AB0	CPU 315-2 DP 6ES7 315-2AF03-0AB0	WinLC RTX 3.1 on AMD, 1333 MHz
MC_Init	53	967	2203	21
MC_MoveAbsolute [1]	67	908	2138	18
MC_MoveRelative [1]	67	911	2143	18
MC_MoveJog [1]	48	605	1387	15
MC_Home [1]	49	592	1332	15
MC_StopMotion [1]	23	309	696	8
MC_Control	27	343	819	11
MC_Simulation	23	259	584	6
MC_GearIn	66	931	2130	21
Input driver	50	662	1323	44
Output driver	20	223	413	31

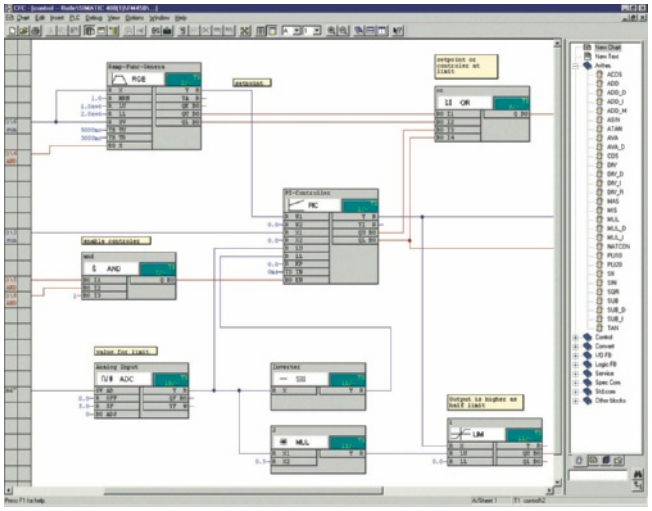
[1] The highlighted travel blocks require more runtime once at the start of a trip. For more information please consult the manual.

Ordering data

	Order No.
Easy Motion Control V2.1 Task: Controlled positioning with standard variable-speed drives Requirement: STEP 7 V5.3 SP2 Delivery package: incl. software and documentation (German, English), on CD	
Single license	**6ES7 864-0AC01-0YX0**
Easy Motion Control V11 Task: Controlled positioning with standard variable-speed drives Requirement: STEP 7 V11 SP2 Delivery package: incl. software and documentation (German, English), on CD, license key on USB stick	
Single license	**6ES7 864-2XA01-0XA5**

	Order No.
Easy Motion Control without software and documentation Type of delivery: CoL for one runtime license (valid for Easy Motion Control V2.x and V11)	
Single license, without software and documentation	**6ES7 864-0AF01-0YX0**

Overview



- Add-on for STEP 7/CFC/SFC for configuration of control and automation tasks with T400, FM 458, SIMADYN D or SIMATIC TDC
- Contains function blocks for every application
- Scope of delivery: Software packages D7-SYS, CFC, SFC, TH-PO
- Optional:
  D7-FB-Gen, function block generator for the creation of customized function blocks

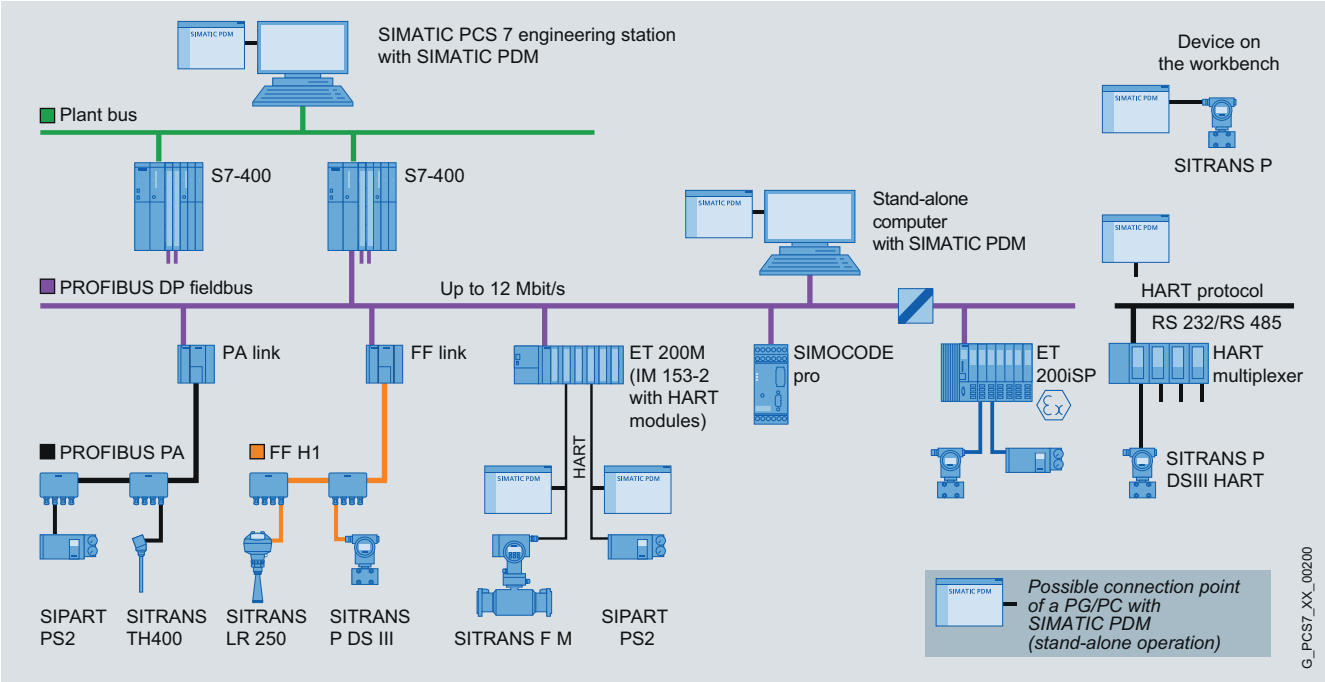
Ordering data

Ordering data	Order No.
SIMATIC D7-SYS V8.0 Task: Function block library for configuring closed-loop control and automation tasks Target system: SIMATIC S7-400/FM 458/ SIMATIC TDC/T400/SIMADYN Requirement: Windows XP, Windows 7 32/64 bit, Windows Server 2003/2008 Type of delivery: on CD, German, English, with electronic documentation	
Floating license	**6ES7 852-0CC03-0YA5**
Upgrade License V7.x and higher	**6ES7 852-0CC03-0YE5**
Software Update Service[1]	**6ES7 852-0CC01-0YL5**
SIMATIC D7 FB Gen V2.1 Function block generator	**6DD1 805-5DA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**

[1] For more information on the Software Update Service, see Chapter 11, page 11/2.

SIMATIC PDM process device manager

Overview



Configuration options with SIMATIC PDM

SIMATIC PDM (Process Device Manager) is a universal, vendor-independent tool for the configuration, parameter assignment, commissioning, diagnostics and servicing of intelligent field devices (sensors and actuators) and field components (remote I/Os, multiplexers, control-room devices, compact controllers), which in the following sections will be referred to simply as devices.

Using *one* software, SIMATIC PDM enables the processing of more than 2 500 devices from Siemens and over 200 vendors worldwide on *one* homogeneous user interface.

The user interface satisfies the requirements of the VDI/VDE GMA 2187 and IEC 65/349/CD directives. Parameters and functions for all supported devices are displayed in a consistent and uniform fashion independent of their communications interface. Even complex devices with several hundred parameters can be represented clearly and processed quickly. Using SIMATIC PDM it is very easy to navigate in highly complex stations such as remote I/Os and even connected field devices.

From the viewpoint of device integration, SIMATIC PDM is the most powerful open device manager available in the world. Devices which previously were not supported can be easily integrated in SIMATIC PDM at any time by importing their device descriptions (EDD/DD). This provides security for your investment and saves you investment costs, training expenses and follow-up costs.

SIMATIC PDM supports the operative system management in particular through:

- Uniform presentation and operation of devices
- Indicators for preventive maintenance and servicing
- Detection of changes in the project and device
- Increasing the operational reliability
- Reducing the investment, operating and maintenance costs
- Graded user privileges including password protection.

When used in SIMATIC PCS 7, SIMATIC PDM is integrated in the asset management of the process control system. You can change directly to the SIMATIC PDM views from the diagnostics faceplates in the Maintenance Station.

The process device manager provides more detailed information for all devices described by means of an Electronic Device Description (EDD/DD), e.g.:

- Detailed diagnostics information (manufacturer information, information on error diagnostics and troubleshooting, further documentation)
- Information on changes (audit trail report)
- Parameter information

Technical specifications

	SIMATIC PDM V6.1	SIMATIC PDM V7.0	SIMATIC PDM V8.0
Hardware	• PG/PC/notebook with processor corresponding to operating system requirements	• PG/PC/notebook with processor corresponding to operating system requirements	• PG/PC/notebook with processor corresponding to operating system requirements
Operating systems (alternative)	• Microsoft Windows XP Professional SP3 • Microsoft Windows Server 2003 R2 SP2	• Microsoft Windows XP Professional SP3 with Internet Explorer 7 • Microsoft Windows Server 2003 SP2/R2 with Internet Explorer 7	• Microsoft Windows XP Professional 32 bit • Microsoft Windows Server 2003 R2 Standard 32 bit • Microsoft Windows 7 Ultimate 32/64 bit • Windows Server 2008 R2 Standard 64 bit
Integration in STEP 7 / PCS 7	• STEP 7 V5.3+SP2 • STEP 7 V5.4+SP5 • STEP 7 V5.5 or V5.5+SP1/SP2 • SIMATIC PCS 7 V6.1+SP4 • SIMATIC PCS 7 V7.1 or V7.1+SP1/SP2/SP3 • SIMATIC PCS 7 V8.0	• SIMATIC PCS 7 V7.1+SP2/SP3 • SIMATIC PCS 7 V8.0	• SIMATIC PCS 7 V8.0 • STEP 7 V5.5+SP2

Ordering data

Selection and order data for TIA applications with SIMATIC PDM V6.1

	Order No.
Product packages	
Minimum configuration	
SIMATIC PDM Single Point V6.1 for operation and configuration of one field device; communication via PROFIBUS DP/PA, HART modem or Modbus, including 1 TAG Cannot be expanded with respect to functions or with TAG option/ PowerPack 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions; software SIMATIC PDM V6.1 and device library on CD/DVD	**6ES7 658-3HX16-0YA5**
Basic configuration for individual product packages	
SIMATIC PDM Basic V6.1 Product package for operator input and configuration of field devices and components, communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS), SIREC bus, SIPART DR, Modbus or Ethernet, including 4 TAGs 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions; software SIMATIC PDM V6.1 and device library on CD/DVD	**6ES7 658-3AX16-0YA5**
Application-specific configurations	
SIMATIC PDM Service V6.1 Product package for stand-alone users for servicing, with • SIMATIC PDM Basic V6.1 • 128 TAGs 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions; software SIMATIC PDM V6.1 and device library on CD/DVD	**6ES7 658-3JX16-0YA5**
SIMATIC PDM S7 V6.1 Product package for use in a SIMATIC S7 configuration environment, with • SIMATIC PDM Basic V6.1 • Integration in STEP 7 / PCS 7 • 128 TAGs 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions; software SIMATIC PDM V6.1 and device library on CD/DVD	**6ES7 658-3KX16-0YA5**

SIMATIC PDM process device manager

Ordering data	Order No.
Optional product components for SIMATIC PDM V6.1	
Integration in STEP 7 / SIMATIC PCS 7 only required for integration of SIMATIC PDM into HW Config 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions	**6ES7 658-3BX16-2YB5**
Routing via S7-400 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions	**6ES7 658-3CX16-2YB5**
Communication via standard HART multiplexer 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions	**6ES7 658-3EX16-2YB5**
TAG options/PowerPacks for SIMATIC PDM V6.1	
SIMATIC PDM TAG option for TAG expansion, additive to SIMATIC PDM Basic V6.1 Software class A, runs with Windows XP Professional/Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions	
• Up to 128 TAGs	**6ES7 658-3XA16-2YB5**
• Up to 512 TAGs	**6ES7 658-3XB16-2YB5**
• Up to 1 024 TAGs	**6ES7 658-3XC16-2YB5**
• Up to 2 048 TAGs	**6ES7 658-3XD16-2YB5**

	Order No.
SIMATIC PDM PowerPack for TAG expansion, for any SIMATIC PDM V6.1 product packages Software class A, runs with Windows XP Professional/Server 2003, floating license for 1 user Delivery package: License key memory stick, Certificate of License including Terms and Conditions	
• From 128 TAGs to 512 TAGs	**6ES7 658-3XB16-2YD5**
• From 512 TAGs to 1 024 TAGs	**6ES7 658-3XC16-2YD5**
• From 1 024 TAGs to 2 048 TAGs	**6ES7 658-3XD16-2YD5**
• From 2 048 TAGs to unlimited number of TAGs	**6ES7 658-3XH16-2YD5**
Demonstration software	
SIMATIC PDM Demo V6.1 Without online communication and storage functionality 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003 Delivery package: SIMATIC PDM V6.1 software and device library on CD/DVD	**6ES7 658-3GX16-0YC8**

Ordering data

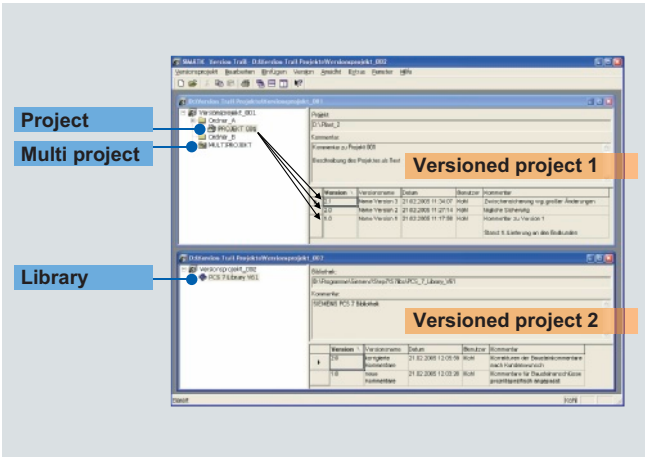
Selection and order data for TIA applications with SIMATIC PDM V8.0

	Order No.
Product packages	
SIMATIC PDM S7 V8.0 Product package for use in a SIMATIC S7 configuration environment, with • SIMATIC PDM Basic and Extended • Integration in STEP 7 / PCS 7 • 100 TAGs 5 languages (German, English, French, Italian, Spanish), software class A, runs with Windows XP Professional 32 bit, Windows 7 Ultimate 32/64 bit, Windows Server 2003 R2 Standard 32 bit or Windows Server 2008 R2 Standard 64 bit, floating license for 1 user Note: SIMATIC PDM PCS 7 V8.0 requires the installation of STEP 7 V5.5+SP2! Delivery package: License key memory stick, certificate of license; SIMATIC PDM V8.0 software and device library on DVD	**6ES7 658-3KX08-0YA5**

	Order No.
Product packages	
Optional product components	
Routing via S7-400 V8.0 5 languages (German, English, French, Italian, Spanish), software class A, runs with Windows XP Professional 32 bit, Windows 7 Ultimate 32/64 bit, Windows Server 2003 R2 Standard 32 bit or Windows Server 2008 R2 Standard 64 bit, floating license for 1 user Delivery package: License key memory stick, certificate of license	**6ES7 658-3CX08-2YB5**
SIMATIC PDM TAGs for SIMATIC PDM as of V7.0	
SIMATIC PDM TAGs TAG licenses for expansion of SIMATIC PDM product packages as of V7.0, cumulative Software class A, runs with Windows XP Professional 32 bit, Windows 7 Ultimate 32/64 bit, Windows Server 2003 R2 Standard 32 bit, or Windows Server 2008 R2 Standard 64 bit Floating license for 1 user Delivery package: License key memory stick, certificate of license	
• 10 TAGs	**6ES7 658-3XC00-2YB5**
• 100 TAGs	**6ES7 658-3XD00-2YB5**
• 1 000 TAGs	**6ES7 658-3XE00-2YB5**

Version Trail

Overview



SIMATIC Version Trail is a software option for engineering which, together with the SIMATIC Logon central user administration, can assign a version history to libraries, projects and multi-projects.

Ordering data

Ordering data	Order No.
SIMATIC Version Trail V8.0 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32 bit, Windows 7 Ultimate 32/64 bit, Windows Server 2003 R2 Standard 32 bit, or Windows Server 2008 R2 Standard 64 bit, floating license for 1 user Delivery package: License key memory stick, certificate of license as well as TIA Engineering Toolset CD V8.0	**6ES7 658-1FX08-2YA5**

SIMATIC programming devices

12

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Field PG M3

Overview

- The mobile, industry-compatible programming device with powerful Intel Core i processor technology.
- Optimal for commissioning, service and maintenance of automation systems.
- Industrial notebook with wireless technology, large 15.6" widescreen display, long battery service life, high-speed RAM, and integral data backup concept.
- With all commonly used interfaces for industrial applications.

Technical specifications

	SIMATIC Field PG M3
General features	
Design	Notebook
Processor	• Intel P4500 Processor (1.86 GHz, 2 MB Cache) • Intel CORE i5-520M processor (2.40 GHz, 3 MB cache)
RAM	Expandable up to 8 GB DDR3 SODIMM
Free slots for expansions	• 1 x PC Card (Type I, Type II) • 1 x Express Card (34 and 54 mm)
Graphics	Intel HD Graphics with Dual View (e.g. desktop across 2 screens)
Display	15.6" widescreen display, 16:9 format • 1366 x 768 (HD ready) • 1920 x 1080 (full HD)
Speakers	Built-in stereo speakers
Pointing device	Touchpad with 2 mouse buttons
Operating system	Windows XP Prof. SP3 Engl. MUI (Eng., Fr., Ger., Sp., It.; additional languages can be installed later) Windows 7 Ultimate 32 bit MUI (Eng., Fr., Ger., Sp., It.; additional languages can be installed later)
Power supply	Wide-range power supply unit 100-240 V AC, 50-60 Hz, high-power lithium-ion battery 71 Wh (running time up to 3 hours)
Warranty conditions	24 months for hardware components (6 months for battery[1])
Drives	
Hard disk	2.5" serial ATA with 250 GB or 500 GB; easily replaceable, optional 300 GB SSD
Optical drive	Multistandard DVD+-R/+-RW

	SIMATIC Field PG M3
Interfaces	
PROFIBUS DP/MPI	CP 5611-compatible, 9.6 Kbit/s to 12 Mbit/s, 9-pin sub D socket
COM 1	V.24/TTY (for SIMATIC S5; TTY as optional version); over supplied adapter on 9-pin sub-D male connector
SIMATIC Memory Card	Programming interface for SIMATIC Memory Card and S5 memory module (S5 EPROM module as optional equipment variant)
SIMATIC Micro Memory Card	Interface for SIMATIC Micro Memory Card
Media Card Reader	Interface for SMC (SIMATIC Memory Card) SD/SHC xD-Picture Card MS Pro
Ethernet	2 x Gigabit Ethernet (RJ45)
USB 2.0	5 interfaces for high-speed universal serial bus. Max. 2 high current (500 mA); for each interface block, only 1 interface can be used for high current
PC Card (PCMCIA)/Express Card/54	• 1 x PC Card (Type I, Type II) • 1 x Express Card (34 and 54 mm)
DVI-I	1 interface for external monitor (VGA monitors can be operated with a DVI/VGA adapter)
WLAN[2]	Integrated IEEE802.11 a, b, g, n
Modem	Analog, V.92 compatible
Headphones/microphone	Connection in each case for 3.5 mm stereo jack

[1] The capacity of the battery decreases for technological reasons with each charging/discharging operation and also as the result of being stored at excessively high or low temperatures. The running time per charge decreases therefore in the course of time. In normal use the battery can be charged and discharged over a period of six months from when the Field PG is purchased.
Capacity loss is not covered by the warranty. For the battery's operation we grant a warranty of six months. We recommend replacing the battery with an original Siemens battery at the end of these six months if there is a significant drop in performance.

[2] Integral WLAN with antennas specially designed for the Field PG M3. The integral wireless LAN is approved for operation in Europe (CE), USA (FCC), Canada (IC), and China (CCC).
For operation outside these countries, the relevant national regulations must be observed.

Technical specifications (continued)

	SIMATIC Field PG M3
Ambient conditions	
Degree of protection in accordance with IEC 60529	Front IP30 when covers closed
Vibrations	Tested in accordance with DIN IEC 60068-2-6
• Operation	10 to 58 Hz: Amplitude 0.0375 mm, 58 to 500 Hz: Acceleration 4.9 m/s^2
• Transport	5 to 9 Hz: Amplitude 3.5 mm; 9 to 500 Hz: Acceleration 9.8 m/s^2
Resistance to shock	Tested in accordance with IEC 60068-2-27, IEC 60068-2-29
• Operation	Half-sine 50 m/s^2, 30 ms, 100 shocks
• Storage/transport	Half-sine 250 m/s^2, 6 ms, 1000 shocks
Electromagnetic compatibility (EMC)	
• Radiated interference	EN 61000-6-3:2007, EN 61000-3-2 Class D and EN 61000-3-3
• Immunity to conducted interference on the supply lines	± 2 kV; (according to IEC 61000-4-4; burst) ± 1 kV; (according to IEC 61000-4-5; surge sym./line to line) ± 2 kV; (according to IEC 61000-4-5; surge sym./line to ground)
• Noise immunity on signal lines	± 1 kV; (according to IEC 61000-4-4; burst; length < 30 m) ± 2 kV; (according to IEC 61000-4-4; burst; length > 30 m) ± 2 kV; (according to IEC 61000-4-5; surge sym./line to ground; length> 30 m)
• Immunity to static discharge	± 4 kV discharge on contact (in accordance with IEC 61000-4-2: ESD) ± 8 kV discharge to air (in accordance with IEC 61000-4-2: ESD)
• Immunity to high radio frequency interference	10 V (with modem operation max. 3 V), with 80% amplitude modulation with 1 kHz, 10 kHz ... 80 MHz (in accordance with IEC 61000-4-6) 10 V/m (with modem operation max. 3 V/m), with 80% amplitude modulation with 1 kHz, 80 MHz ... 1000 MHz and 1.4 GHz ... 2 GHz (in accordance with IEC 61000-4-3) 1 V/m, with 80% amplitude modulation with 1 kHz, 2.0 GHz ... 2.7 GHz 1 V/m (in accordance with IEC 61000-4-3)
• Immunity to magnetic fields	100 A/m; 50/60 Hz (in accordance with IEC 61000-4-8)

	SIMATIC Field PG M3
Temperature	Tested in accordance with IEC 60068-2-1, IEC 60068-2-2
• Operation[3)]	+ 5 °C ... + 40 °C max. 10°C/h (no condensation)
• Storage/transport	- 20 °C ... + 60 °C max. 20°C/h (no condensation)
Relative humidity	Tested according to IEC 60068-2-78, IEC 60068-2-30, IEC 60068-2-14
• Operation	5 % ... 80% at 25°C/h (no condensation)
• Storage/transport	5 % ... 95% at 25°C/h (no condensation)
Safety	
Safety class	Safety class II according to IEC 61140
Safety regulations	• According to VDE 0805 in conformance with IEC 60950-1:2006 • IEC 60950-1:2005 • EN 60950-1:2006 with change EN 60950-1:2006/A11:2009 • DIN EN 60950-1 (VDE0805-1):2006-11 with change DIN EN 60950-1/A11 (VDE0805-1/A11):2009-11 • UL 60950-1 Second Edition • CAN/CSA-C22.2 No. 60950-1-07 Second Edition
Dimensions and weights	
Dimensions (W x H x D) in mm	385 x 53 x 275
Weight, approx.	Without battery approx. 3 kg With battery approx. 3.4 kg

3) Battery charging and CD/DVD writing is only possible at temperatures up to 35 °C

Field PG M3

Ordering data

Ordering data	Order No.
Field PG M3 programming device	
Field PG M3 standard (HDD): Intel P4500 processor, 1.86 GHz, DL multistandard DVD RW drive, 250 GB S-ATA hard disk; no S5 interface/S5 PROMMER	**6ES7 715-0AA ■ ■ -0 ■ ■ 3**
Field PG M3 Premium (HDD): Intel Core i5 processor, 2.4 GHz, DL multistandard DVD RW drive, 500 GB S-ATA hard disk; no S5 interface/S5 PROMMER	**6ES7 715-1BB ■ ■ -0 ■ ■ 3**
Field PG M3 Premium /S5 (HDD): Intel Core i5 processor, 2.4 GHz, DL Multistandard DVD RW drive, 500 GB S-ATA hard disk; with S5 online interface/ S5 EPROMMER, incl. S5-AG cable and S5 EPROM adapter	**6ES7 715-1CC ■ ■ -0 ■ ■ 3**
Field PG M3 Premium (SSD): Intel Core i5 processor, 2.4 GHz, DL multistandard DVD RW drive, 300 GB S-ATA SSD; no S5 interface/S5 PROMMER	**6ES7 715-1DD ■ ■ -0 ■ ■ 3**
Field PG M3 Premium/S5 (SSD): Intel Core i5 processor, 2.4 GHz, DL Multistandard DVD RW drive, 300 GB S-ATA SSD; with S5 online interface/ S5 EPROMMER, incl. S5-AG cable and S5 EPROM adapter	**6ES7 715-1EE ■ ■ -0 ■ ■ 3**
Display	
• 15.6" display, HD ready (1366 x 768)	**0**
• 15.6" display, full HD (1920 x 1080)	**2**
Keyboard and power cable (absolutely necessary)	
• Keyboard: QWERTY (& German); power plug: EC, Switzerland, without UK; approvals for Europe (CE)	**0**
• Keyboard: QWERTY (& German); power plug: United Kingdom; approvals for Europe (CE)	**1**
• Keyboard: QWERTY (& German); power plug: USA, Canada; approvals for USA and Canada (FCC, IC)	**2**
• Keyboard: QWERTY (& German); power plug: China; approvals for China (CCC)	**3**
• Keyboard: AZERTY; power plug: EC, Switzerland, without UK approvals for Europe (CE)	**4**

	Order No.
Field PG M3 programming device	
Field PG M3 Standard (HDD)	**6ES7 715-0AA ■ ■ -0 ■ ■ 3**
Field PG M3 Premium (HDD)	**6ES7 715-1BB ■ ■ -0 ■ ■ 3**
Field PG M3 Premium /S5 (HDD)	**6ES7 715-1CC ■ ■ -0 ■ ■ 3**
Field PG M3 Premium (SSD)	**6ES7 715-1DD ■ ■ -0 ■ ■ 3**
Field PG M3 Premium /S5 (SSD)	**6ES7 715-1EE ■ ■ -0 ■ ■ 3**
Operating system	
• Windows XP Professional SP3 English MUI (Fr., Span., Ital., Ger.; image stored on HD, other language packages available for downloading); installed memory: Standard: 1 x 2 GB DDR3 RAM Premium: 3 GB DDR3 RAM (1 x 1 GB, 1 x 2 GB)	**A**
• Windows 7 Ultimate, 32 bit (Eng., Fr., Ger., Sp., It., selectable); STEP 5 not pre-installed and cannot run under Windows 7; installed memory: Standard: 1 x 2 GB DDR3 RAM Premium: 1 x 4 GB DDR3 RAM	**B**
• Windows 7 Ultimate, 64 bit (Eng., Fr., Ger., Sp., It., selectable); STEP 5 and STEP 7 Micro/Win not pre-installed and cannot run under Windows 7; installed memory: Standard: 6 GB DDR3 RAM (1 x 2 GB, 1 x 4 GB) Premium: 8 GB DDR3 RAM (2 x 4 GB)	**C**
Licenses for the SIMATIC software	
• Trial license: STEP 7 Prof. 2010, STEP 7 Prof. V11, WinCC flexible Adv. 2008, WinCC Adv. V11; without MPI cable	**A**
• Upgrade License: STEP 7 Prof. V11[1], WinCC Adv. V11[1], • STEP 5; incl. MPI cable	**B**
• Powerpack license: STEP 7 Prof. V11[1]; upgrade license: WinCC Adv. V11[1], STEP 5; incl. MPI cable	**C**
• License: STEP 7 Prof. V11[1], WinCC Adv. V11[1], STEP 5, STEP 7 Micro/Win V4.0; incl. MPI cable	**D**
• License: STEP 7 Prof. V11[1], WinCC Adv. V11[1], STEP 7 Micro/Win V4.0; incl. MPI cable	**E**

[1] Contains STEP 7 Prof. 2010 and WinCC flexible Adv. 2008

12

Ordering data

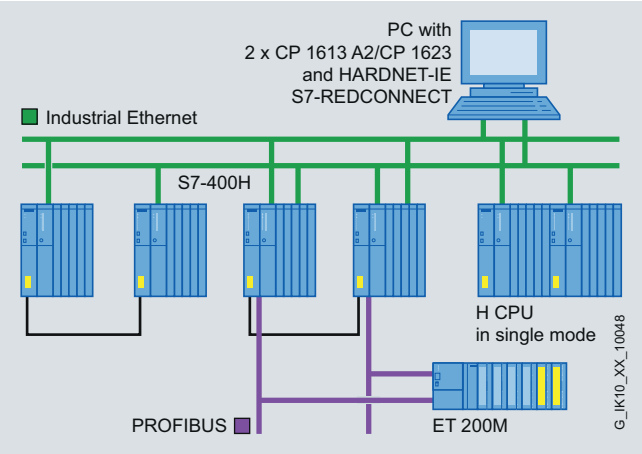
	Order No.
Accessories	
Memory expansion	
1 GB DDR3 RAM 1066 MHz	**6ES7 648-2AH40-0KA0**
2 GB DDR3 RAM 1066 MHz	**6ES7 648-2AH50-0KA0**
4 GB DDR3 RAM 1066 MHz	**6ES7 648-2AH60-0KA0**
USB mouse (PS/2-compatible)	**6ES7 648-0BB00-0XA0**
AC/DC external power supply unit for Field PG M3 only	**6ES7 798-0GA02-0XA0**
Power cord (length 3 m) for Field PG M3 only	
for EC, Switzerland, without UK	**6ES7 900-5AA01-0XA0**
for Great Britain	**6ES7 900-5BA01-0XA0**
for the USA and Canada	**6ES7 900-5DA01-0XA0**
for China	**6ES7 900-5FA01-0XA0**
Spare battery (lithium ion, 6.6 Ah)[1)] for Field PG M3 only	**6ES7 798-0AA06-0XA0**
MPI cable for connecting a PG and SIMATIC S7 via MPI; 5 m	**6ES7 901-0BF00-0AA0**

	Order No.
S5 EPROM programming adapter for SIMATIC S5 EPROM programming using the Field PG	**6ES7 798-0CA00-0XA0**
S5 PLC cable for connecting programming devices to SIMATIC S5 PLCs, 5 m	**6ES5 734-2BF00**
Replaceable hard disk kit Replaceable hard disk 500 GB serial ATA; with protective pocket and Torx screwdriver; for Field PG M3 only	**6ES7 791-2BA01-0AA0**
Replaceable SSD kit Replaceable SSD 300 GB serial ATA; with protective pocket and Torx screwdriver; for Field PG M3 only	**6ES7 791-2BA20-0AA0**
Adapter serial ATA to USB for using the replaceable hard disk of the hard disk kit as an external hard disk (for Field PG M/M2 or M3 only)	**6ES7 790-1AA00-0AA0**
Backpack for Field PG M3	**6ES7 798-0DA01-0XA0**

1) The capacity of the battery decreases for technological reasons with each charging/discharging operation and also as the result of being stored at excessively high or low temperatures. The running time per charge decreases therefore in the course of time. In normal use the battery can be charged and discharged over a period of six months from when the Field PG is purchased.
Capacity loss is not covered by the warranty. For the battery's operation we grant a warranty of six months. We recommend replacing the battery with an original Siemens battery at the end of these six months if there is a significant drop in performance.

HARDNET-IE S7-REDCONNECT

Overview



System configuration for S7-REDCONNECT

ISO	TCP/ UDP	PN	MRP	OPC	PG/OP	S7/S5	IT
●				●	●	●	

- For connecting PCs over redundant Industrial Ethernet to the SIMATIC S7-400H.
- Protected from communication failures arising from a fault in the double bus or in redundant rings.
- For redundant Layer 2 or Layer 3 Industrial Ethernet.
- Can also be implemented in non-redundant networks.
- No additional programming overhead for the PC and in H systems.
- The appropriate OPC server and configuration tools are included in the scope of supply of the respective communication software.
- Enhanced redundancy over 4-way communication (STEP 7 V5.1 + SP4 and higher).

Ordering data

	Order No.
HARDNET-IE S7-REDCONNECT	
Software for fail-safe S7 communication via redundant networks, incl. S7 OPC server, HARDNET-IE S7, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A;	
HARDNET-IE S7-REDCONNECT V8.1	
for 32/64 bit: Windows 7 Professional/Ultimate; for 64 bit: Windows 2008 Server R2 German/English	
• Single License for one installation	**6GK1 716-0HB08-1AA0**
S7-REDCONNECT Edition 2008 (V7.1)	
for 32 bit: Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English	
• Single License for one installation	**6GK1 716-0HB71-3AA0**
Software Update Service	**6GK1 716-0HB00-3AL0**
for 1 year with automatic extension; requirement: Current software version	

	Order No.
Upgrade	
• from Edition 2006 to S7-REDCONNECT Edition 2008 or V8.1	**6GK1 716-0HB00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to S7-REDCONNECT Edition 2008 or V8.1	**6GK1 716-0HB00-3AE1**
HARDNET-IE S7-REDCONNECT Power Pack	
for expansion from HARDNET-IE S7 to S7-REDCONNECT, single license for one installation, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A;	
HARDNET-IE S7-REDCONNECT Power Pack V8.1	**6GK1 716-0HB08-1AC0**
for 32/64 bit: Windows 7 Professional/Ultimate; for 64 bit: Windows 2008 Server R2; German/English;	
S7-REDCONNECT Power Pack Edition 2008 (V7.1)	**6GK1 716-0HB71-3AC0**
for 32 bit: Windows XP Professional SP 2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English	

Ordering data

	Order No.
CP 1613 A2 communications processor PCI card (32 bit, 33 MHz/66 MHz; 3.3 V/5 V universal keyed) for connection to Industrial Ethernet (10/100 Mbit/s) with ITP and RJ45 connection over HARDNET-IE S7 and S7-REDCONNECT, for operating system support see SIMATIC NET Software	**6GK1 161-3AA01**
CP 1623 communications processor PCI Express x1 card for connection to Industrial Ethernet (10/100/1000 Mbit/s), with 2-port switch (RJ45) via HARDNET-IE S7 and S7-REDCONNECT. For operating system support, see SIMATIC NET Software	**6GK1 162-3AA00**
CP 1628 communications processor [1] PCI Express x1 card for connection to Industrial Ethernet (10/100/1000 Mbit/s), with 2-port switch (RJ45) and integral security (firewall, VPN) via HARDNET-IE S7 and S7-REDCONNECT. For operating system support, see SIMATIC NET Software	**6GK1 162-8AA00**

[1] Available soon

Notes

Appendix

Faster and more applicable know-how: Hands-on training from the manufacturer

SITRAIN® - the Siemens Training for Industry - provides you with comprehensive support in solving your tasks.

Training by the market leader in automation and plant engineering enables you to make independent decisions with confidence. Especially where the optimum and efficient use of products and plants are concerned. You can eliminate deficiencies inexisting plants, and exclude expensive faulty planning right from the beginning.

First-class know-how directly pays for itself: In shorter startup times, high-quality end products, faster troubleshooting and reduced downtimes. In other words, increased profits and lower costs.

Achieve more with SITRAIN

- Shorter times for startup, maintenance and servicing
- Optimized production operations
- Reliable configuration and startup
- Minimization of plant downtimes
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Contact

Visit our site on the Internet at:

http://www.siemens.com/sitrain

or let us advise you personally:

SITRAIN Customer Support Germany:

Phone: +49 (0) 911 / 895 7575

Fax: +49 (0) 911 / 895 7576

E-Mail: info@sitrain.com

SITRAIN highlights

Top trainers

Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically designed training equipment. This training approach will give you all the confidence you need.

Wide variety

With a total of about 300 classroom attendance courses, we train thecomplete range of Siemens Industry products as well as interaction of the products in systems.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 standard courses? Our solution: We will provide a program tailoredexactly to your personal requirements. Training can be offered in our Training Centers or at your company.

The right mixture: Blended learning

"Blended learning" means a combination of various training media and sequences. For example, a local classroom course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Additional effect: Reduced traveling costs and periods of absence.

Overview

Siemens specialist books provide you with a profound knowledge of the various fields of automation engineering. They help readers at various levels, from beginners to experts, to familiarize themselves with individual topics, to consolidate their knowledge and they act as reference manuals.

Ordering data	Order No.
Automation with SIMATIC The book is perfectly suited for all those will little advance experience and who wish to familiarize themselves quickly with the field of programmable controllers.	
German	**6ZB3 500-0AE01-0AA0**
English	**6ZB3 500-0AE02-0AA0**
Automating with SIMATIC S7-1200 The book introduces the new hardware components of the S7-1200 automation system and describes its configuration and parameterization. A sound introduction to STEP 7 Basic illustrates the fundamentals of programming and troubleshooting. Beginners learn the fundamentals of automation engineering with SIMATIC S7-1200, and those changing from S7-200 and S7-300 can find the knowledge required for this.	
German	**6ZB3 500-0BK01-0AA0**
English	**6ZB3 500-0BL01-0AA0**
Automating with SIMATIC S7-300 inside TIA Portal STEP 7 Professional V11 engineering software In this book you can find a comprehensive description of the configuration of devices and network for the S7-300 components inside the TIA Portal engineering framework. You learn how to formulate and test a control program with the graphical programming languages LAD and FBD, as well as with the text-based programming languages STL and SCL. You are then introduced to configuring the distributed I/O with PROFIBUS DP and PROFINET IO using SIMATIC S7-300 and data exchange via Industrial Ethernet.	
German	**6ZB3 500-0BM01-0AA0**

	Order No.
Automation with STEP 7 in STL and SCL Now in its sixth edition, this book presents the most recent service pack version of the STEP 7 programming software. It explains elements and applications of the text-oriented programming languages STL (Statement List) and SCL (Structured Control Language) for both SIMATIC S7-300 and SIMATIC S7-400, including new products for distributed I/O and for applications with PROFINET.	
German	**6ZB3 500-0AA01-0AA0**
English	**6ZB3 500-0AA02-0AA0**
Automation with STEP 7 in LAD and FBD The book describes elements and applications of LAD and FBD both for SIMATIC S7-300 and for SIMATIC S7-400. PROFINET IO, SFC 109 Protect and function blocks for I/O access are outlined as special functions.	
German	**6ZB3 500-0AB01-0AA0**
English	**6ZB3 500-0AB02-0AA0**
Controlling with SIMATIC This book describes control engineering in practical terms as a subset of open-loop control and automation engineering based on the SIMATIC S7 control system or the SIMATIC PCS 7 process control system within the scope of Totally Integrated Automation (TIA).	
German	**6ZB3 500-0AD01-0AA0**
English	**6ZB3 500-0AD02-0AA0**

Specialist books for automation engineering

Ordering data	Order No.
Automating with PROFINET This book provides an introduction to the new PROFINET technology. Decision-makers, system designers and students get a compact overview of the concept, fundamentals, and current devices. Project engineers, start-up engineers and technicians obtain extensive knowledge that enables them to plan and solve their own PROFINET-based automation applications.	
German	**6ZB3 500-0AP01-0AA0**
English	**6ZB3 500-0AP02-0AA0**
Electrical drive technology This book deals with all aspects of modern electrical drive systems from a user viewpoint. It is aimed on the one hand at industrial users who want to understand, plan, use and maintain electrical drives and on the other hand at skilled operators, technicians, engineers and students who would like to acquire a comprehensive overview of electrical drive technology.	
German	**6ZB3 500-0BD01-0AA0**
Industrial Ethernet in industrial automation This book provides plant planners and operators, programmers and commissioning engineers with the fundamental information and terminology for using Ethernet LAN technologies in industrial automation with SIMATIC.	
German	**6ZB3 500-0AM01-0AA0**
Dictionary of electrical engineering, power engineering and automation This dictionary is a standard reference work for translators, engineers and technical writers who need a comprehensive and reliable collection of technical terms from the areas of power generation, transmission and distribution as well as drive and automation engineering, electrical installation engineering, power electronics, and measuring and test engineering.	
German-English	**6ZB3 500-0AJ01-0AA0**
English-German	**6ZB3 500-0AJ02-0AA0**
German-English/English-German, on CD-ROM	**6ZB3 500-0AJ03-0AA0**

SIMATIC Manual Collection

Overview

The SIMATIC manual collection brings together the manuals of Totally Integrated Automation in the smallest possible package. It is eminently suitable for startup and service, replaces the space-consuming paper version in the office and provides fast access to the information.

The manual collection contains manuals in 5 languages for

- LOGO!
- SIMADYN
- SIMATIC bus components
- SIMATIC C7
- SIMATIC Distributed I/O
- SIMATIC HMI
- SIMATIC Sensors
- SIMATIC NET
- SIMATIC PC Based Automation
- SIMATIC PCS 7
- SIMATIC PG/PC
- SIMATIC S7
- SIMATIC Software
- SIMATIC TDC

Manuals that are not yet available in all 5 languages will at least be included in English and German.

There is an update contract for the SIMATIC Manual Collection that encompasses supply of the up-to-date collection and three subsequent updates which is valid for one year. If the update contract is not cancelled, it is automatically extended and the list price will be charged to the customer.

Ordering data	Order No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC Bus components, SIMATIC C7, SIMATIC Distributed IO, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7 998-8XC01-8YE2**

Overview

The electronic products described in this catalog comply with the requirements and protection objectives of the following EC directives insofar as they relate to the product concerned. They also comply with the corresponding harmonized European standards (EN) published for these products in the Official Journals of the European Community.

- Directive 2004/108/EC of the European Parliament and Council on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive)
- Directive 2006/95/EC of the European Parliament and of the Council on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (Low Voltage Directive)
- Directive 94/9/EC of the European Parliament and the Council on approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive).
- Directive 1999/5/EC of the European Parics0212
- liament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (RTTE Directive)

The originals of the declarations of conformity are kept available by us for the responsible supervisory authorities.

Note on the EMC Directive:

In terms of their interference emissions, SIMATIC products are designed for industrial applications.

If individual products deviate from this specification, it is noted in the catalog with the products.

The installation instructions in the manuals must be adhered to when installing and operating the products described in this catalog. These contain, for example, important information on installation in cabinets and on the use of shielded cables.

Notes for machine manufacturers

The SIMATIC automation system is not a machine within the context of the EU machine guidelines. Therefore a declaration of conformity with regard to the EU machine directive 89/392/EEC or 2006/42/EU (new edition, applicable from end of 2009) may not be provided for SIMATIC.

The EU machine directive regulates the requirements placed on a machine or a part thereof. A machine is understood for the purposes of this guideline to be a combination of interconnected parts or mechanisms (see also EN 292-1, Paragraph 3.1).

SIMATIC is part of the electrical equipment of a machine, and must therefore be integrated into the evaluation of the complete machine by the machine manufacturer.

As electrical equipment, SIMATIC is subject to the low-voltage directive which, as a "total safety directive", covers all dangers just like the machine directive.

The EN 60204-1 standard (safety of machines, general requirements for the electrical equipment of machines) is applicable to the electrical equipment of machines.

The following table will help you in the provision of your declaration of conformity, and shows which criteria according to EN 60204-1 (2006-06) apply to SIMATIC. You can obtain further information from the enclosed declaration of conformity according to the low-voltage and EMC directives (with list of included standards).

EN 60204-1	Topic/criterion	Notes
Paragraph 4	General requirements	The requirements are met when the equipment is assembled/ installed in accordance with the installation guidelines. Please note the relevant information in the manuals.
Paragraph 11.2	Digital input/output interfaces	The requirements are met
Paragraph 12.3	Programmable equipment	The requirements are met when the equipment is installed in lockable cabinets to protect against alteration of the memory contents by unauthorized persons
Paragraph 20.4	Voltage tests	The requirements are met

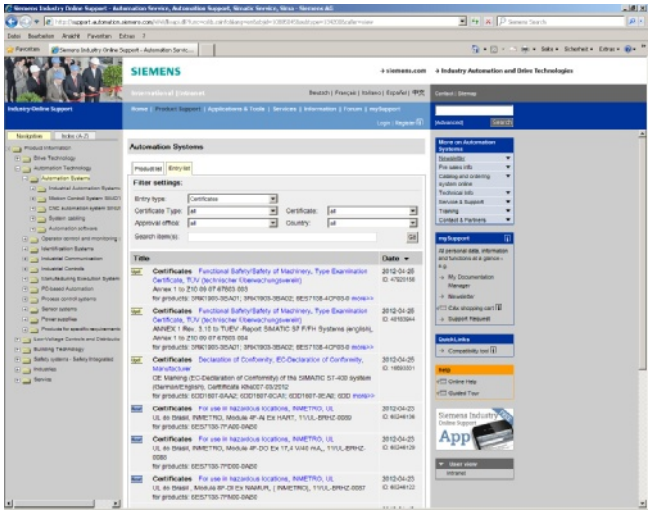
Certificates, authorizations, approbations, declarations of conformity

An overview of the certificates available for SIMATIC products (CE, UL, CSA, FM, shipping authorizations) can be found in the internet at

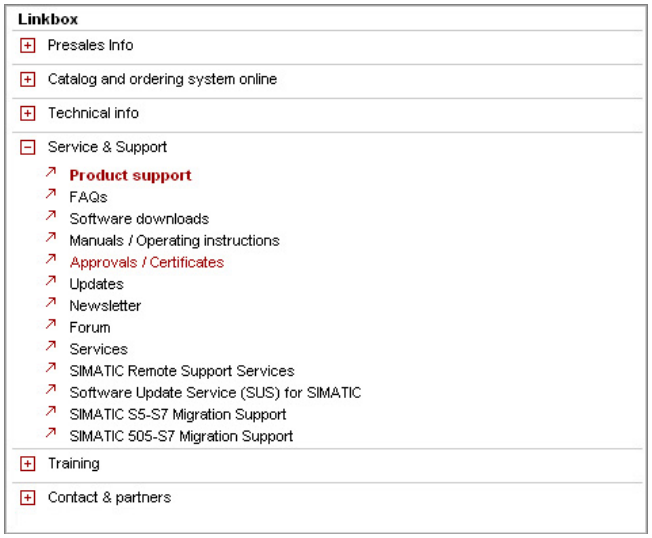
http://www.siemens.com/simatic/certificates

The lists are continously updated. The data for products which have not yet been included in the overview is continously collected and prepared for the subsequent edition.

You can also find certificates, approbations, verification certificates or characteristic curves under Product support "Entry list"



or by going directly to the Link Box:



Quality management

The quality management system of the Industry Sector, Industry Automation Division, complies with the international standard ISO 9001.

The products and systems described in this catalog are sold under application of a quality management system certified by DQS in accordance with DIN EN ISO 9001.

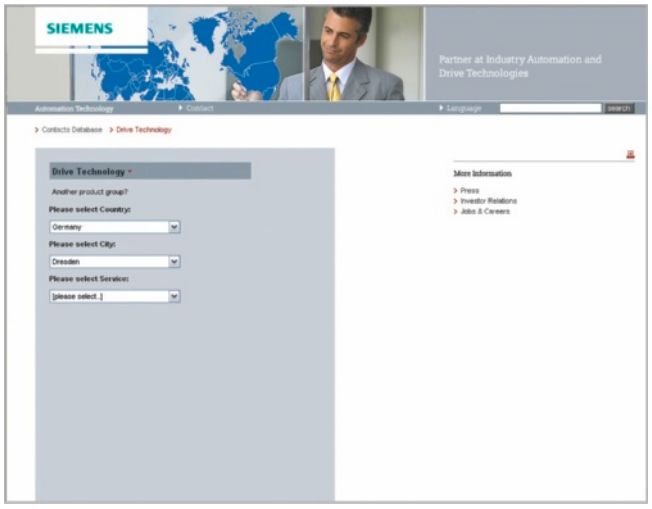
The DQS certificate is recognized in all EQ Net countries.

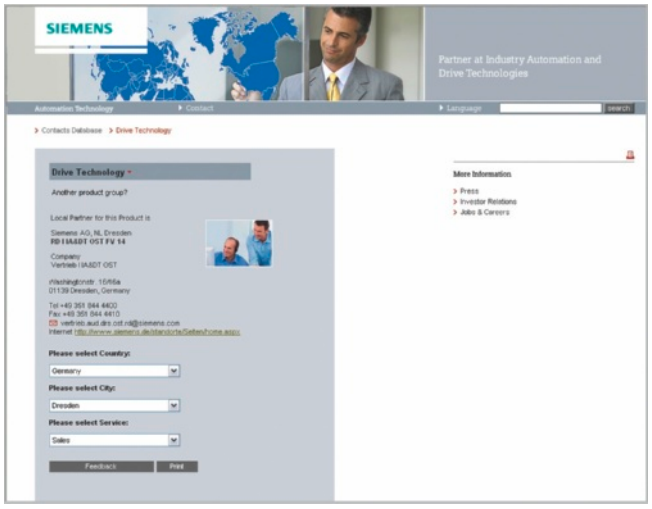
DQS Registered Certificate No.:

Siemens AG

- I IA AS Industrial Automation Systems
  Reg. No.: 001323 QM08

Overview





At Siemens Industry Automation and Drive Technologies, more than 85 000 people are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

Your personal contact can be found in our Contacts Database at:
www.siemens.com/automation/partner

You start by selecting a

- Product group,
- Country,
- City,
- Service.

Siemens Solution Partner Automation

Overview

Siemens Solution Partner Automation

Solution Partner
Automation

SIEMENS

Solution Partner: Highest quality - guaranteed

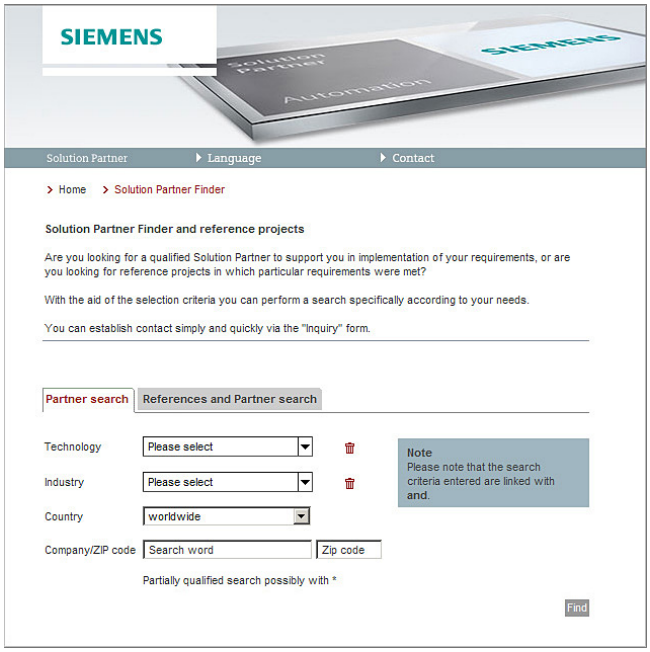
The products and systems from Siemens Industry Automation and Drive Technologies offer the ideal platform for all automation applications.

Under the name of Siemens Solution Partner Automation, selected system integrators around the world act as uniformly qualified solution providers for the Siemens range of products and services in the fields of automation and drives. Day after day, they utilize their qualified product and system know-how as well as their excellent industry expertise to your advantage – for all requirements.

The partner emblem is the guarantee and indicator of proven quality. The basis for this are defined quality features that identify Solution Partners as reliable and competent solution providers:

- Solution quality
  Always a good result with tried and tested solutions expertise.
- Expert quality
  Certified technical competence ensures maximum efficiency.
- Project quality
  With proven project experience straight to the target.
- Portfolio quality
  Comprehensive portfolio for state-of-the-art solutions from a single source.

Solution Partner Finder



The Siemens Solution Partner Program helps you to find the optimum partner for your specific requirements.

Support is provided by the Solution Partner Finder, a comprehensive online platform that showcases the profiles of all our solution partners. You can convince yourself of the competence of the respective Solution Partner by means of the references provided. Various search criteria are available for this purpose.

Once you have located a partner, you are only one small step away from contacting them.

Find the right partner here for your specific task and convince yourself of the solution competence provided:

http://www.siemens.com/automation/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

http://www.siemens.com/automation/solutionpartner

Comprehensive teaching support for educational institutions

Cooperates with Education

Automation

SIEMENS

Siemens Automation Cooperates with Education (SCE) offers a global system for sustained support of technical skills. SCE supports educational institutions in their teaching assignment in the industrial automation sector and offers added value in the form of partnerships, technical expertise, and know-how. As the technological leader, our comprehensive range of services can support you in the transfer of industrial knowledge.

Our services at a glance

- Training curriculums for your lessons
- Trainer packages for hands-on learning
- Courses convey up-to-date, specialist knowledge
- Support for your projects / textbooks
- Complete didactic solutions from our partners
- Personal contact for individual support

Training curriculums for your lessons

Use our profound industrial know-how for practice-oriented and individual design of your course. We offer you more than 90 didactically prepared training documents on the topics of automation and drives technology free of charge. These materials are perfectly matched to your curricula and syllabuses, and optimally suited for use with our trainer packages. This takes into account all aspects of a modern industrial solution: installation, configuration, programming, and commissioning. All documents, including projects, can be individually matched to your specific requirements.

Particular highlight: the new SIMATIC PCS 7 curriculums and trainer packages. Using plant simulation, you can pass on basic, practice-oriented PCS 7 knowledge at universities within about 60 hours (= 1 semester).

siemens.com/sce/documents

Trainer packages for hands-on learning

Our SCE trainer packages offer a specific combination of original industrial components which are perfectly matched to your requirements and can be conveniently used in your course. These price reduced bundles available exclusively to schools include innovative and flexible hardware and software packages. SCE can currently offers more than 80 SCE trainer packages including related equipment. These cover both the factory and process automation sectors. You can use them to impart the complete course contents on industrial automation at a very low cost.

Trainer packages are available for:

- Introduction to automation technology with LOGO! logic module and SIMATIC S7-1200 compact controller
- PLC engineering with SIMATIC S7 hardware and STEP 7 software
- Operator control and monitoring with SIMATIC HMI
- Industrial networking over bus systems with SIMATIC NET
- Sensor systems with VISION, RFID, and SIWAREX
- Process automation with SIMATIC PCS 7
- Networked drive and motion technologies with SINAMICS and SIMOTION
- CNC programming with SinuTrain

Important ordering notes:

Only the following institutions are authorized to obtain trainer packages: vocational schools, Colleges and Universities, in-house vocational training departments, non commercial research institutions and non commercial training departments.

To purchase a trainer package, you require a specific end-use certificate, which you can obtain from your regional sales office.

siemens.com/sce/tp

Applicable practical know-how

Comprehensive teaching support for educational institutions

Courses convey up-to-date specialist knowledge

Profit from our excellent know-how as the leader in industrial technologies. We offer you specific courses for automation and drive technology worldwide. These support you in the practice-oriented transferring of product and system know-how, are in conformance with curriculums, and derived from the training fields. Compact technical courses especially for use at universities are also available.

Our range of courses comprises a wide variety of training modules based on the principle of Totally Integrated Automation (TIA). The focus is on the same subject areas as with the SCE trainer packages.

Every PLC and drive course is oriented on state-of-the-art technology. Your graduates can thus be prepared optimally for their future professional life.

In some countries we are offering classes based on our training documents. Please inquire with your SCE contact partner.

siemens.com/sce/contact

Support for your projects / textbooks

Automation and drive technology is characterized by continuous and rapid developments. Service and Support therefore play an important role.

We can provide you with consulting for selected projects and support from your personal SCE contact as well as our web based and regional Customer Support.

As a particular service, SCE supports technical authors with our know-how as well as with intensive technical consulting. Siemens library of special textbooks covering the industrial automation sector provides an additional resource for you and your students. These can be found at the SCE web site.

siemens.com/sce/contact
siemens.com/sce/books

Complete didactic solutions

Our partners for learning systems offer a wide range of training systems and solutions for use in your courses or laboratory.

These models have been designed based on our trainer packages and thus save you the time and cost of self-construction of individual components. The Partner systems provide you with simple and effective help in the fulfillment of your teaching assignment.

siemens.com/sce/partner

Contact for individual support

You can find your personal SCE contact on our Internet site. Your local SCE Promoter will answer all your questions concerning the complete SCE offering, and provide you with timely and competent information about innovations. When you encounter challenges, you can profit from our global team of excellence.

If a direct SCE contact is not listed for your country, please contact your local Siemens office.

siemens.com/sce/contact

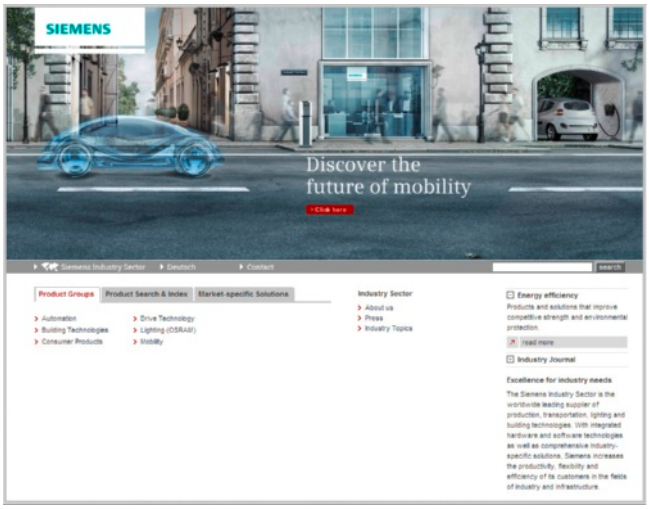
SCE Support Finder for your Internet request

You are an educator and need support on the topic of industry automation? Send us your request now:

siemens.com/sce/supportfinder

Scan the QR code with the QR code reader in your mobile!

Siemens Industry Automation and Drive Technologies in the WWW



A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry

Detailed information together with convenient interactive functions:
The interactive catalog CA 01 covers more than 80 000 products and thus provides a full summary of the Siemens Industry Automation and Drive Technologies product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives.
All information is linked into a user interface which is easy to work with and intuitive.

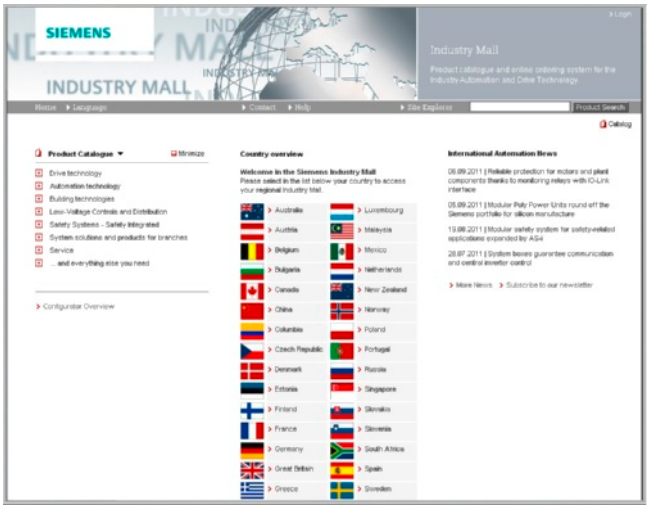
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01 can be found in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the virtual department store of Siemens AG in the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

Numerous functions are available to support you.

For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

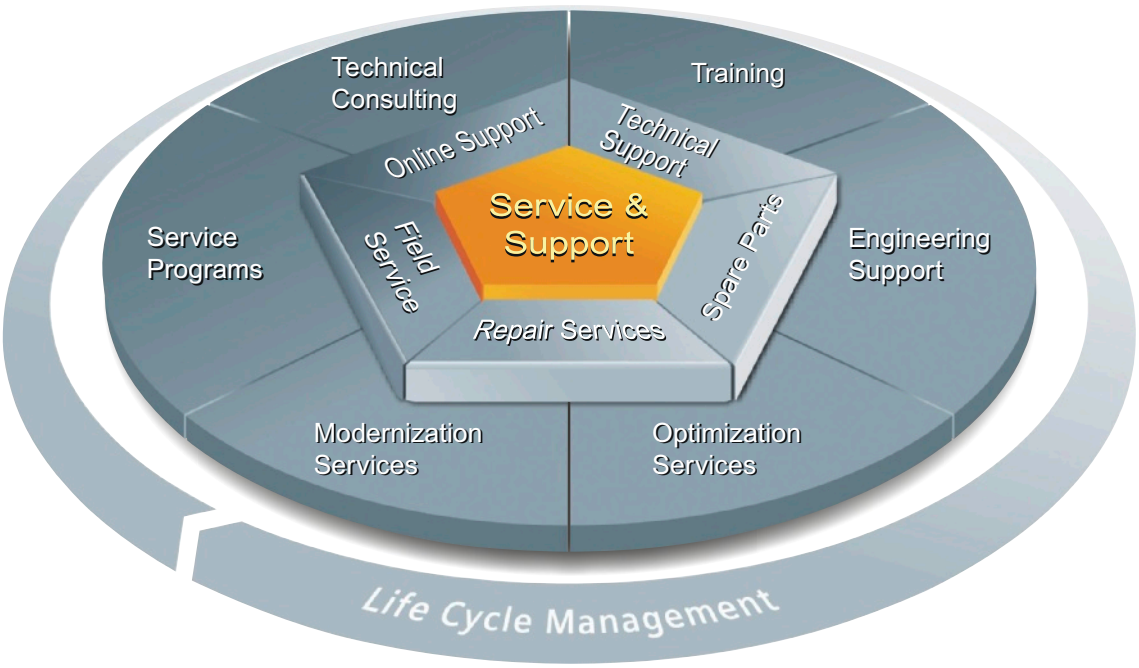
Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall

Appendix

Siemens Industry Online Support

Unmatched complete service for the entire life cycle



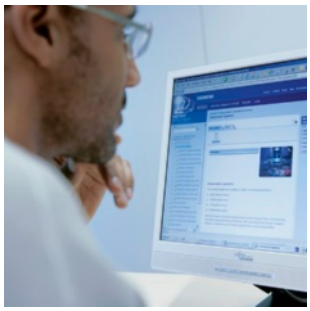
For machine constructors, solution providers and plant operators: The service offering from Siemens Industry, Automation and Drive Technologies includes comprehensive services for a wide range of different users in all sectors of the manufacturing and process industry

To accompany our products and systems, we offer integrated and structured services that provide valuable support in every phase of the life cycle of your machine or plant - from planning and implementation through commissioning as far as maintenance and modernization.

Our Service & Support accompanies you worldwide in all matters concerning automation and drives from Siemens. We provide direct on-site support in more than 100 countries through all phases of the life cycle of your machines and plants.

You have an experienced team of specialists at your side to provide active support and bundled know-how. Regular training courses and intensive contact among our employees - even across continents - ensure reliable service in the most diverse areas.

Online Support



The comprehensive online information platform supports you in all aspects of our Service & Support at any time and from any location in the world.

www.siemens.com/automation/service&support

Technical Consulting

Support in planning and designing your project: From detailed actual-state analysis, definition of the goal and consulting on product and system questions right through to the creation of the automation solution.

Technical Support

Expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

www.siemens.com/automation/support-request

Training

Extend your competitive edge - through practical know-how directly from the manufacturer.

www.siemens.com/sitrain

Contact information is available in the Internet at:
www.siemens.com/automation/partner

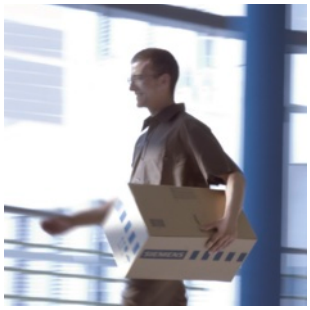
Engineering Support

Support during project engineering and development with services fine-tuned to your requirements, from configuration through to implementation of an automation project.

Field Service

Our Field Service offers you services for commissioning and maintenance - to ensure that your machines and plants are always available.

Spare parts



In every sector worldwide, plants and systems are required to operate with constantly increasing reliability. We will provide you with the support you need to prevent a standstill from occurring in the first place: with a worldwide network and optimum logistics chains.

Repairs

Downtimes cause problems in the plant as well as unnecessary costs. We can help you to reduce both to a minimum - with our worldwide repair facilities.

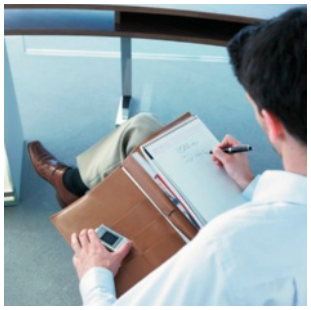
Optimization

During the service life of machines and plants, there is often a great potential for increasing productivity or reducing costs. To help you achieve this potential, we are offering a complete range of optimization services.

Modernization

You can also rely on our support when it comes to modernization - with comprehensive services from the planning phase all the way to commissioning.

Service programs



Our service programs are selected service packages for an automation and drives system or product group. The individual services are coordinated with each over to ensure smooth coverage of the entire life cycle and support optimum use of your products and systems.

The services of a Service Program can be flexibly adapted at any time and used separately.

Examples of service programs:

- Service contracts
- Plant IT Security Services
- Life Cycle Services for Drive Engineering
- SIMATIC PCS 7 Life Cycle Services
- SINUMERIK Manufacturing Excellence
- SIMATIC Remote Support Services

Advantages at a glance:

- Reduced downtimes for increased productivity
- Optimized maintenance costs due to a tailored scope of services
- Costs that can be calculated and therefore planned
- Service reliability due to guaranteed response times and spare part delivery times
- Customer service personnel will be supported and relieved of additional tasks
- Comprehensive service from a single source, fewer interfaces and greater expertise

Contact information is available in the Internet at:
www.siemens.com/automation/partner

Knowledge Base on DVD

For locations without online connections to the Internet there are excerpts of the free part of the information sources available on DVD (Service & Support Knowledge Base). This DVD contains all the latest product information at the time of production (FAQs, Downloads, Tips and Tricks, Updates) as well as general information on Service & Support.

The DVD also includes a full-text search and our Knowledge Manager for targeted searches for solutions. The DVD will be updated every 4 months.

Just the same as our online offer in the Internet, the Service & Support Knowledge Base on DVD comes complete in 5 languages (German, English, French, Italian, Spanish).

You can order the **Service & Support Knowledge Base** DVD from your Siemens contact.

Order no. **6ZB5310-0EP30-0BA2**

Automation Value Card

Small card - great support

The Automation Value Card is an integral component of the comprehensive service concept with which Siemens Drive Automation and Drive Technologies will accompany you in each phase of your automation project.

It doesn't matter whether you want just specific services from our Technical Support or want to purchase something on our Online portal, you can always pay with your Automation Value Card. No invoicing, transparent and safe. With your personal card number and associated PIN you can view the state of your account and all transactions at any time.

Services on card. This is how it's done.

Card number and PIN are on the back of the Automation Value Card. When delivered, the PIN is covered by a scratch field, guaranteeing that the full credit is on the card.

By entering the card number and PIN you have full access to the Service & Support services being offered. The charge for the services procured is debited from the credits on your Automation Value Card.

All the services offered are marked in currency-neutral credits, so you can use the Automation Value Card worldwide.

Order your Automation and Value Card easily and comfortably like a product with your sales contact.

Automation Value Card order numbers	
Credits	Order no.
200	**6ES7 997-0BA00-0XA0**
500	**6ES7 997-0BB00-0XA0**
1 000	**6ES7 997-0BC00-0XA0**
10 000	**6ES7 997-0BG00-0XA0**

Detailed information on the services offered is available on our Internet site at:

www.siemens.com/automation/service&support

Service & Support à la Card: Examples

Technical Support	
"Priority"	Priority processing for urgent cases
"24 h"	Availability round the clock
"Extended"	Technical consulting for complex questions
"Mature Products"	Consulting service for products that are not available any more
Support Tools in the Support Shop	
	Tools that can be used directly for configuration, analysis and testing

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of license (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

Software licenses

Overview

ServicePack

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Order No. index

Fax form

To

Siemens AG
I IA CC PRI1
Mr. Fregien
Gleiwitzer Str. 555
90475 Nürnberg

Fax: +49 (911) 895-154830

E-mail: dirk.fregien@siemens.com

Your address

Name

Job

Company/Department

Street/No.

Postal code/City

Tel. No./Fax

E-mail address

Your opinion is important to us!

Our catalog should be an important and frequently used document. For this reason we are continuously endeavoring to improve it.

A small request on our part to you:
Please take time to fill in the following form and fax it to us.

Thank You!

We invite you to grade our catalog on a point system from 1 (= good) to 6 (= poor):

Do the contents of the catalog live up to your expectations? ☐

Do the technical details meet your expectations? ☐

Is the information easy to find? ☐

How would you assess the graphics and tables? ☐

Can the texts be readily understood? ☐

Did you find any printing errors?

Conditions of sale and delivery

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note! The scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside of Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany the following applies subordinate to T&C

- the "General Terms of Payment"[1)] and
- for software products the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany"[1)] and
- for other supplies and/or services the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)].

1.2 For customers with a seat or registered office outside of Germany

For customers with a seat or registered office outside Germany the following applies subordinate to T&C

- the "General Terms of Payment"[1)] and
- for software products the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office outside of Germany"[1)] and
- for other supplies and/or services the "General Conditions for Supplies of Siemens, Automation and Drives for Customers with a Seat or registered Office outside of Germany"[1)].

2. Prices

The prices are in € (Euro) ex works, exclusive packaging.

The sales tax (value added tax) is not included in the prices.

It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

Surcharges will be added to the prices of products that contain silver, copper, aluminium, lead and/or gold, if the respective basic official prices for these metals are exceeded. These surcharges will be determined based on the official price and the metal factor of the respective product.

The surcharge will be calculated on the basis of the official price on the day prior to receipt of the order or prior to the release order.

The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used. The metal factor, provided it is relevant, is included with the price information of the respective products. An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches only apply to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages, - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill this agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes or other sanctions.

Export of goods listed in this catalog may be subject to license. We shall indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

The export label is made available with the information of the respective goods on Industry Mall, our online-catalog-system, additionally. The deciding factors are the export label "AL" or "ECCN" indicated on order confirmations, delivery notes and invoices.

Even without a label, or with label "AL:N" or "ECCN:N", authorization may be required due to the final whereabouts and purpose for which the goods are to be used.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you shall comply with all applicable national and international (re-) export control regulations.

If required to conduct export control checks, you, upon request by us, shall promptly provide us with all information pertaining to particular end customer, destination and intended use of goods, works and services provided by us, as well as any export control restrictions existing.

Errors excepted and subject to change without prior notice.

1) The text of the Comprehensive Terms and Conditions of Sale and Delivery can be downloaded at: www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Catalogs

Industry Automation, Drive Technologies and Low-Voltage Power Distribution

Further information can be obtained from our branch offices listed in the appendix or at www.siemens.com/automation/partner

Interactive Catalog on DVD	*Catalog*
for Industry Automation, Drive Technologies and Low Voltage Distribution	**CA 01**

Drive Systems	
Variable-Speed Drives	
SINAMICS G130 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units	D 11
SINAMICS GM150, SINAMICS SM150 Medium-Voltage Converters	D 12
ROBICON Perfect Harmony Medium-Voltage Air-Cooled Drives Germany Edition	D 15.1
SINAMICS S120 Chassis Format Units and Cabinet Modules SINAMICS S150 Converter Cabinet Units	D 21.3
SINAMICS DCM Converter Units	D 23.1
SINAMICS and Motors for Single-Axis Drives	D 31
Three-phase Induction Motors • H-compact • H-compact PLUS	D 84.1
Asynchronous Motors Standardline	D 86.1
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2
DC Motors	DA 12
SIMOREG DC MASTER 6RA70 Digital Chassis Converters	DA 21.1
SIMOREG K 6RA22 Analog Chassis Converters	DA 21.2
PDF: *SIMOREG DC MASTER 6RM70 Digital Converter Cabinet Units*	*DA 22*
SIMOVERT PM Modular Converter Systems	DA 45
SIEMOSYN Motors	DA 48
MICROMASTER 420/430/440 Inverters	DA 51.2
MICROMASTER 411/COMBIMASTER 411	DA 51.3
SIMOVERT MASTERDRIVES Vector Control	DA 65.10
SIMOVERT MASTERDRIVES Motion Control	DA 65.11
Synchronous and asynchronous servomotors for SIMOVERT MASTERDRIVES	DA 65.3
SIMODRIVE 611 universal and POSMO	DA 65.4
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21
SINUMERIK, SIMODRIVE and Motors for Machine Tools	NC 60
SINUMERIK, SINAMICS S120 and Motors for Machine Tools	NC 61
Low-Voltage Three-Phase-Motors	
IEC Squirrel-Cage Motors	D 81.1
MOTOX Geared Motors	D 87.1
Mechanical Driving Machines	
FLENDER Standard Couplings	MD 10.1
FLENDER SIG Standard industrial gear unit	MD 30.1

Low-Voltage Power Distribution and Electrical Installation Technology	
SENTRON Protection, Switching, Measuring and Monitoring Devices	LV 10.1
SIVACON · ALPHA Switchboards and Distribution Systems	LV 10.2
SIVACON 8PS Busbar Trunking Systems	LV 70
GAMMA Building Control	ET G1
PDF: *DELTA Switches and Socket Outlets*	*ET D1*

Motion Control	*Catalog*
SINAMICS and Motors for Single-Axis Drives	D 31
SINUMERIK & SIMODRIVE Automation Systems for Machine Tools	NC 60
SINUMERIK & SINAMICS Equipment for Machine Tools	NC 61
SINUMERIK 828D BASIC T/BASIC M, SINAMICS S120 Combi and 1FK7/1PH8 motors	NC 82
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21
Drive and Control Components for Cranes	CR 1

Power Supply and System Cabling	
Power supply SITOP	KT 10.1
System cabling SIMATIC TOP connect	KT 10.2

Process Instrumentation and Analytics	
Field Instruments for Process Automation	FI 01
SIREC Recorders and Accessories	MP 20
SIPART, Controllers and Software	MP 31
Products for Weighing Technology	WT 10
PDF: *Process Analytical Instruments*	*PA 01*
PDF: *Process Analytics, Components for the System Integration*	*PA 11*

Safety Integrated	
Safety Technology for Factory Automation	SI 10

SIMATIC HMI/PC-based Automation	
Human Machine Interface Systems/ PC-based Automation	ST 80/ ST PC

SIMATIC Ident	
Industrial Identification Systems	ID 10

SIMATIC Industrial Automation Systems	
Products for Totally Integrated Automation and Micro Automation	ST 70
SIMATIC PCS 7 Process Control System	ST PCS 7
Add-ons for the SIMATIC PCS 7 Process Control System	ST PCS 7.1
PDF: *Migration solutions with the SIMATIC PCS 7 Process Control System*	*ST PCS 7.2*

SIMATIC NET	
Industrial Communication	IK PI

SINVERT Photovoltaics	
Inverters and Components for Photovoltaic Installations	RE 10

SIRIUS Industrial Controls	
SIRIUS Industrial Controls	IC 10
SIRIUS Industrial Controls (selected content from catalog IC 10)	IC 90

System Solutions

Applications and Products for Industry are part of the interactive catalog CA 01

PDF: *These catalogs are only available as pdf files.*

Download-Center

PDF versions of the catalogs are available on the Internet at: www.siemens.com/automation/infocenter

Siemens AG
Industry Sector
Industrial Automation Systems
Postfach 48 48
90026 NÜRNBERG
GERMANY

Subject to change without prior notice
Order No.: E86060-K4670-A151-A6-7600
MQ.R0.R1.ST70.02.2.01 / Dispo 07900
KG 0512 10. AUM 228 En / IWI TSTJ
Printed in Germany

www.siemens.com/automation