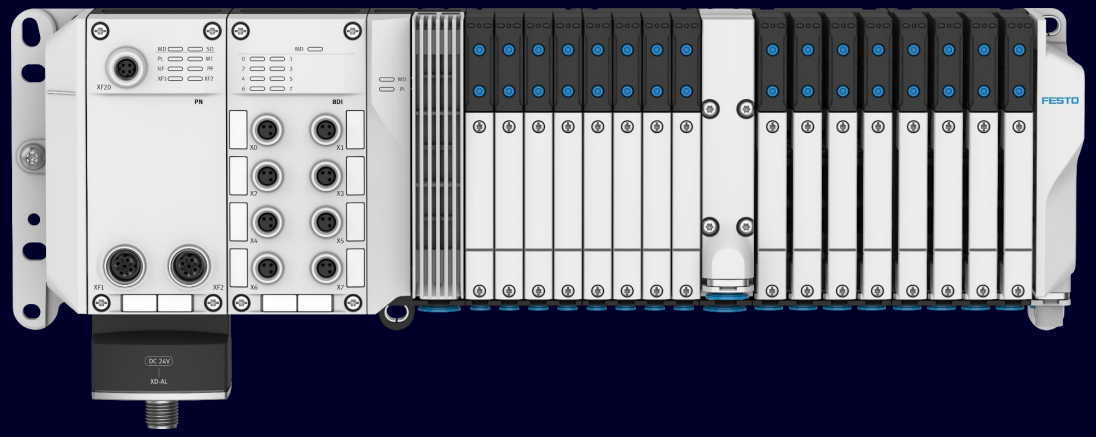
SIMATIC S7-1200 G2

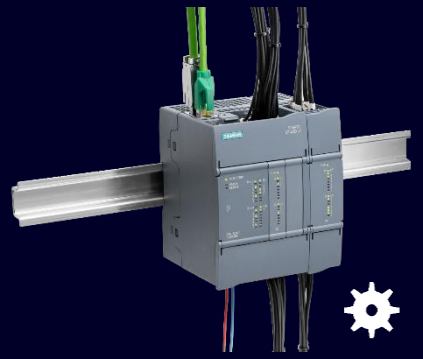
Smart choice for basic automation

FESTO VTUX



SIEMENS

Overview
Highlights of SIMATIC S7-1200 G2



Enhanced performance & scalability

- Enhanced processing power, dedicated communication performance and more memory
- Up to 31 PROFINET devices and synchronized program execution with PROFINET IRT
- Optimized scalable hardware portfolio and seamless scalability across all SIMATIC controllers
- Analysis and optimization of PLC runtime via code with Profiling

Flexible machine safety

- Fail-safe integrated in the complete range (PROFIsafe communication, I/Os)
- Improved F-IO Portfolio with F-SBs and mixed I/O modules
- Fail-safe engineering integrated in STEP 7 Basic

Efficient motion control

- Control of single axes, coordinated axes and simple kinematics
- Integrated motion control technology objects simplifying configuration

Increased data transparency

- Near Field Communication (NFC) for wireless access to diagnostic, operational and device data
- Web API as an interface for reading and writing CPU data

i Scalable, cost-optimized and powerful portfolio for the basic automation segment

SIEMENS

Overview
CPUs and communication

	CPU 1212(F)C	CPU 1214(F)C
RAM Data	500 k	750 k
RAM Progr.	150/200 k	250/300 k
Retentive Memory	20 kB	20 kB
Bit performance	37 ns	37 ns
W x H x D (mm)	70 x 125 x 100	80 x 125 x 100
Integrated DI/DO	8/6	14/10
PROFINET/Modbus TCP	2 ports IRT	2 ports IRT
Communication Modules	3 max	3 max
Total SMs + CMs	6 max	10 max
High-Speed Counter	8	8
Total SBs	1 max	2 max
Position axes Typical[1] | Maximum[2]	4 | 10	4 | 10
Motion Control (MC) Resources[3]	800	800
Extended MC Resources[4]	40	40
NFC	✓	✓
SIMATIC Memory card	Optional	Optional
Variants	DC/DC/DC & DC/DC/RLY & AC/DC/RLY (Std. only)	

Communication

CB 1241
RS485

CM 1241
PtP (RS232/RS485/RS422)

1 At 4 ms Servo/IPO cycle time and 35% CPU load due to Motion Control. Estimated values are subject to implementation of use case I **2** No further TOs applicable
3 Resources for Motion Control technology objects: Speed axis = 40 | Positioning axis = 80 | Synchr. Axis = 160 | Output cam= 20 | Output cam track = 160 | Measuring input = 40 | Ext. Encoder = 80
4 Resources for Extended Motion Control technology objects: Cams (1,000 points and 50 segments) = 2 | Cams (10,000 points and 50 segments) = 20 | Kinematic objects= 30 | Interpreter = 60 | Leading axis proxy = 3

SIEMENS

Overview
Signal boards and signal modules

SBs

Digital SBs	Analog SBs
8 DI 24V 100 kHz	4 AI
8 DQ 24V 100 kHz	4 AQ
4 DI/4 DQ 24V 100 kHz	2 AI/2 AQ
4 DI/4 DQ 5V 200 kHz	4 TC
	2 RTD

SMs

Digital SMs	Analog SMs
DI 16 x 24 V DC	8 AI
DQ 16 x 24 V DC 0.5 A	8 AQ
DQ 16 x Relay	4 AI/4 AQ
8 DI/8 DQ	8 AI TC
8 DI/8 RLY	4 AI RTD

SIEMENS

Overview
Fail-safe: signal boards and signal modules

SBs	SMs
4x F-DI(1oo1)/2x F-DI(1oo2), 4-Vs[1]	8x F-DI(1oo1)/4x F-DI(1oo2), 8-Vs[1]
2x F-DQ, PP-PM[1]	4x F-DQ, PP-PM[1]
2x F-DI(1oo1)/1x F-DI (1oo2), 1x F-DQ. PP-PM[1]	4x F-DI(1oo1)/2x F-DI (1oo2), 2x F-DQ. PP-PM, 2x DI

1oo1 (One out of One):
1oo1 as simple redundancy, a single input connected to a fail-safe digital input

1oo2 (One out of Two):
Redundancy with cross-diagnosis: There are two independent sensors, each connected to an F-DI. Both sensors provide signals to the F-DI. The F-DI monitors the signals and makes decisions based on both inputs. This configuration is normally used in safety-critical applications

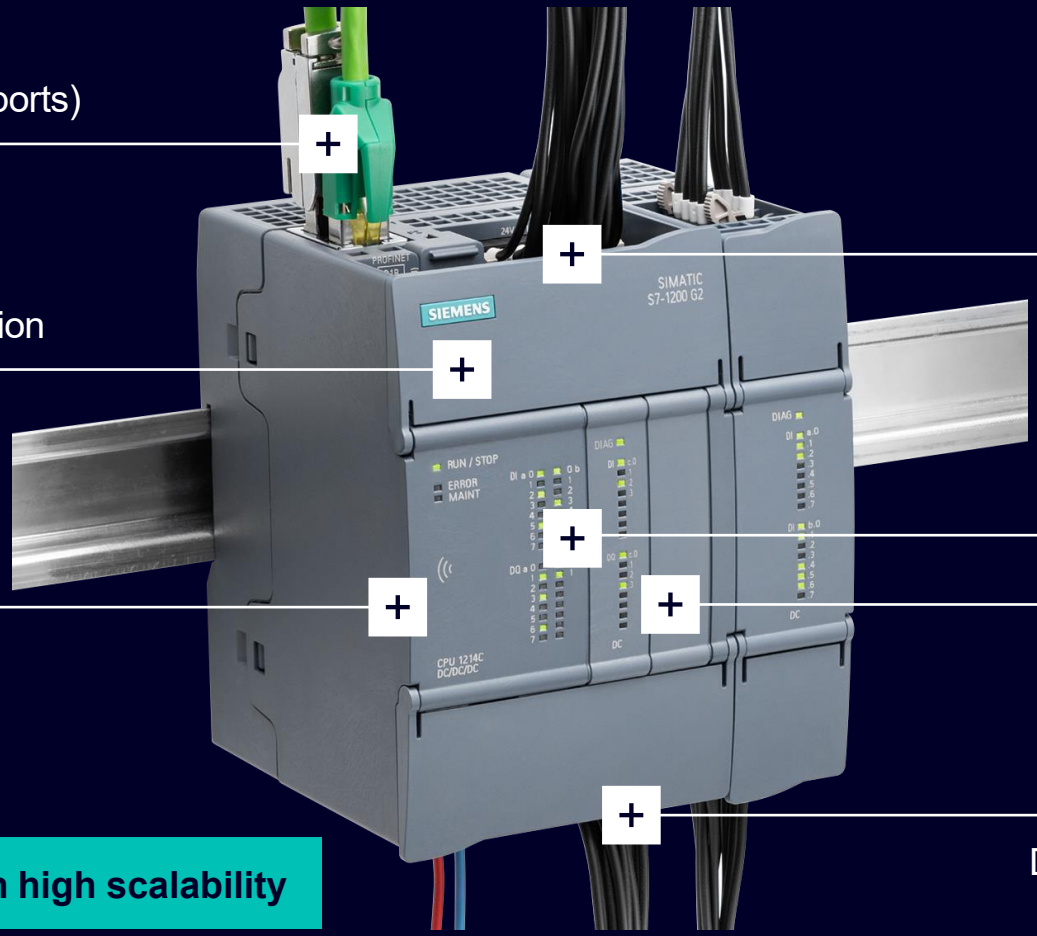
Vs: Integrated Sensor supply,
allows to detect short-circuit or overload scenarios, and react accordingly

i Initial failsafe portfolio release expected by end of 2025

1 Not within initial failsafe Portfolio release

SIEMENS

Design and handling
S7-1200 G2 CPU new hardware design



PROFINET interface (2 ports)

Optional memory extension

NFC tag

Digital inputs (Plush-in wiring design)

Integrated HSCs & PTOs/PWMs

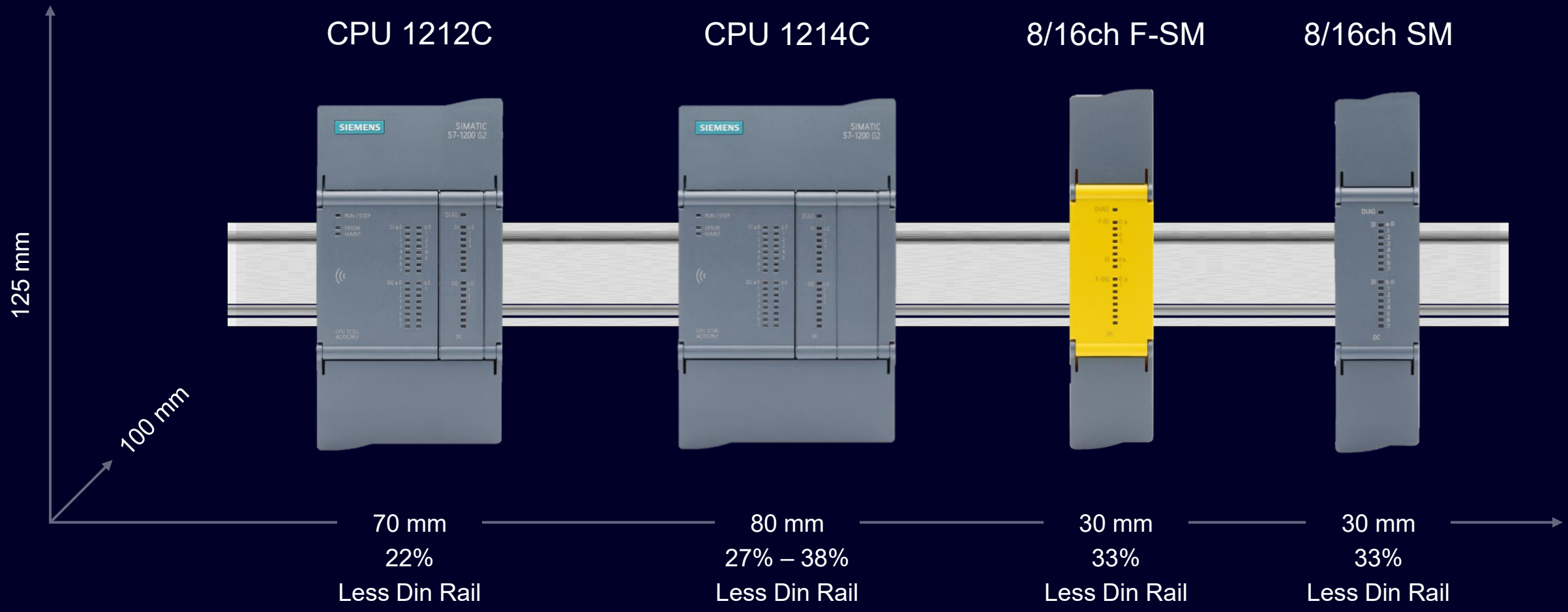
Optional plug-in expansion board

Digital outputs (DC or relay)

Innovative & modular design with high scalability

SIEMENS

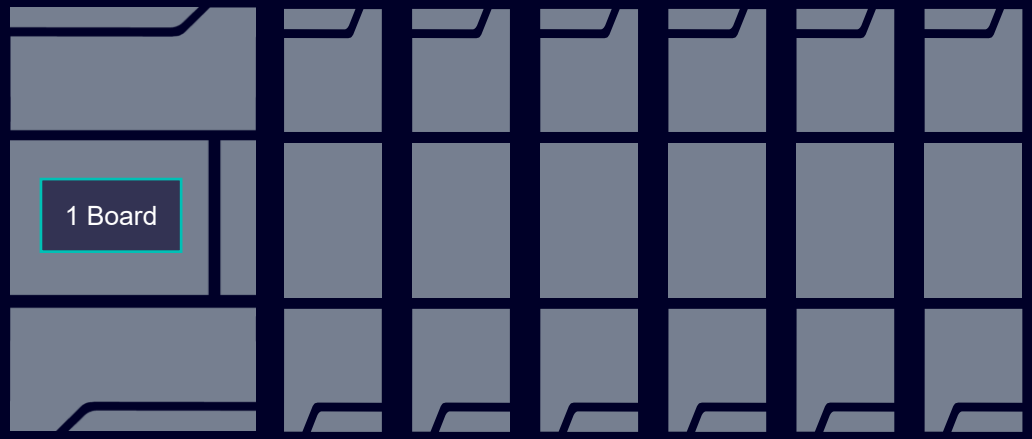
New hardware design
Dimensions



SIEMENS

Design and handling
Set-up and extension options

CPU 1212C **CM/SM – Max. 6 expansion modules**



- Max. **1** signal board or communication board expansion
- Max. **6** signal module expansions including SM and CM
- Max. **3** communication module expansions

CPU 1214C **CM/SM – Max. 10 expansion modules**

- Max. **2** signal board or communication board expansions
- Max. **10** signal module expansions including SM and CM
- Max. **3** communication module expansions

CPU 1212/1214

- Both communication modules and signal modules are installed to the right of the CPU
- CM must connect to the right of the CPU or to the right of another CM
- SM must connect to the right of a CPU, CM, or another SM

Variable extension and set-up options for differing requirements

SIEMENS

Efficient motion control
Integrated motion control for basic automation machines

SIMATIC Motion Control

Supported Technology Objects (TO)[1]

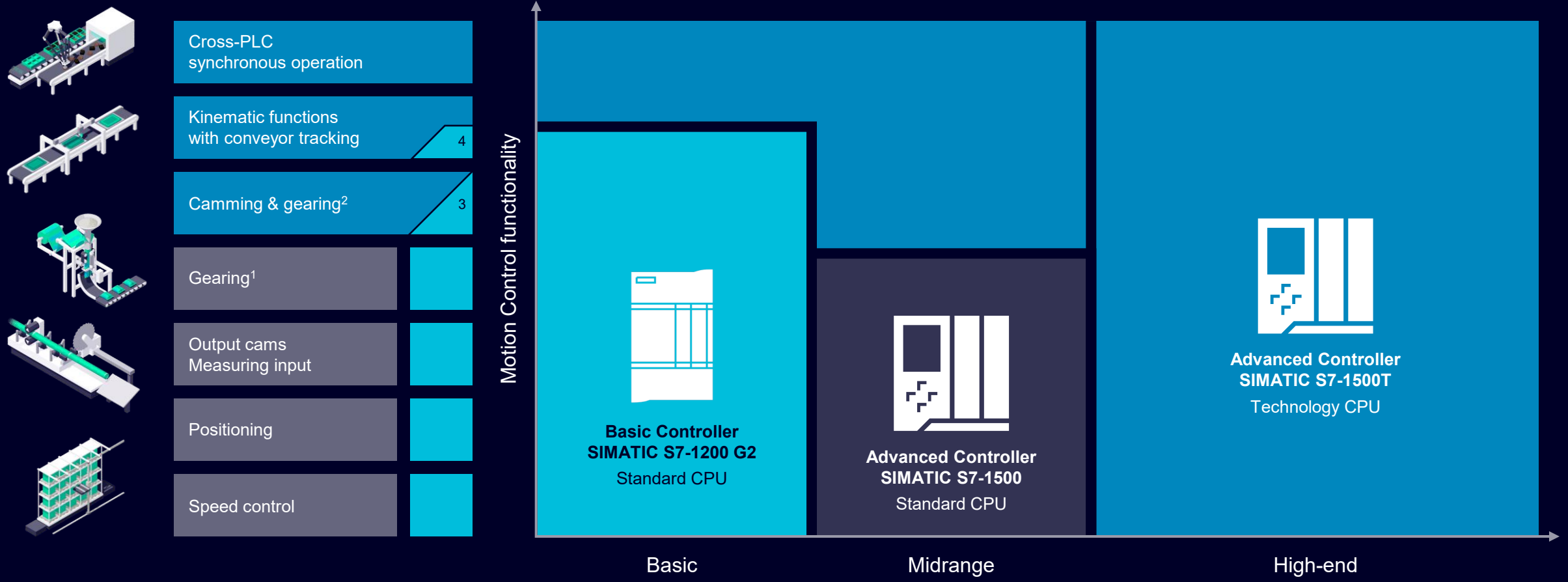
- TO_SpeedAxis
- TO_PositioningAxis
- TO_SynchronousAxis
- TO_ExternalEncoder
- TO_OutputCam
- TO_CamTrack
- TO_MeasuringInput
- TO_Cam
- TO_Kinematics

allowing to address basic motion applications

1 Small differences in the associated instructions for some technology objects compared to S7-1500

SIEMENS

Efficient motion control
SIMATIC S7-1200 G2 within the motion control portfolio



1 Synchronization without specification of the synchronous position
2 Synchronization with specification of the synchronous position, velocity gearing | **3** Camming with points | **4** Cartesian portal without conveyor tracking

SIEMENS

Increased data transparency
Overview NFC functionalities

S7-1200 G2 NFC App button	Operation	Condition						
		1	2	3	4	5	6	7
Allows you to view specific device information for the CPU and its connected CB/SBs and CM/SMs **Devices**	Device type	Read	Read	–	Read	Read	–	Read
	Article number	Read	Read	–	Read	Read	–	Read
	Hardware version	Read	Read	–	Read	Read	–	Read
	Serial number (SN)	Read	Read	–	Read	Read	–	Read
	Firmware version	Read	Read	–	Read	Read	–	Read
	Slot number	Read	Read	–	Read	Read	–	Read
	MAC address	Read	Read	–	Read	Read	–	Read
	IP address, Subnet, Gateway, PROFINET name	Read/Write	Read	–	Read/Write	Read	–	Read
	Webserver on/off	Read	Read	–	Read	Read	–	–
	TIA Portal version	Read	Read	–	Read	Read	–	–
	SD card info	Read	Read	–	Read	–	–	–
Allows you to read/write operations **Operations**	Operation mode	Read/Write	Read	–	Read	–	–	–
	Reset memory	Write	–	–	Write	–	–	–
	Set Time of Day	Write	–	–	Write	–	–	–
Allows you to read diagnostics **Diagnostics**	Configured vs actual device diagnostics	Read	Read	–	Read	Read	–	Read
	Cycle times	Read	Read	–	Read	–	–	–
	CPU memory usage	Read	Read	–	Read	–	–	–
	Diagnostic buffer	Read	Read	–	Read	–	–	–

Condition

CPU is powered on:

1. Configured in STEP 7, NFC and write access enabled for the CPU
2. Configured in STEP 7, NFC enabled for the CPU, write access not enabled for the CPU
3. Configured in STEP 7, NFC is not enabled for the CPU
4. Not configured in STEP 7

CPU is powered off:

5. Configured STEP 7, NFC is enabled for the CPU
6. Configured in STEP 7, NFC is not enabled for the CPU
7. Not configured in STEP 7 configured

SIEMENS

Fail-safe SIMATIC S7-1200 (G2): No more separate Safety license from V20 onwards
STEP 7 Safety Basic will be discontinued from V20 onwards

Until TIA Portal V19

Hardware:
S7-1200 F-CPU/F-DI/F-DQ

Software:
- STEP 7 V19 Basic (or Advanced)
- STEP 7 V19 Safety Basic

Starting with TIA Portal V20

Hardware:
S7-1200 (G2) F-CPU/F-DI/F-DQ

Software:
STEP 7 V20 Basic (or Advanced)

SIMATIC S7-1200

SIMATIC S7-1200 G2

Scalable automation solutions

Scalable portfolio for standard and machine safety functions.

Seamless system integration

Seamlessly integrated in STEP 7 without need for separate license.

Reduce license costs

- Reduce entry costs
- Especially customers requiring just few F-PLCs

Hints

- V18/V19 Safety Basic licenses will still be available
- Future S7-1200 (G2) Hardware will use similar principles
- SUS contracts for Safety Basic will be discontinued end of 2024

SIEMENS

SIMATIC S7-1200 G2
Roadmap – Summary and Outlook

2024

Global product announcement

Hanover Fair April 24

Initial product release with TIA Portal V20

CPUs / Power supply

- CPU 1212C
- CPU 1212FC
- CPU 1214C
- CPU 1214FC
  with NFC iOS app
- PM 1207

2025

Digital SM/SB

- SM 8DI/8DQ (+Relay)
- SM 16DI
- SM 16DQ (+Relay)
- SB 8DI, 8DQ, 4DI/4DQ

Analog SM/SB

- SM 8AI
- SM 8AQ
- SB 4AI, 4AQ, 2AI/2AQ

Further portfolio elements

First communication / temperature modules

- CM RS485 / RS232 / RS422
- CB RS485
- RTD SM 4AI
- TC: SM 8AI, SB 4AI
- CSM 1277

Further portfolio elements

First failsafe I/O module for at least 2 safety functions

Additional safety I/Os towards the end of this year / beginning of next year

2026

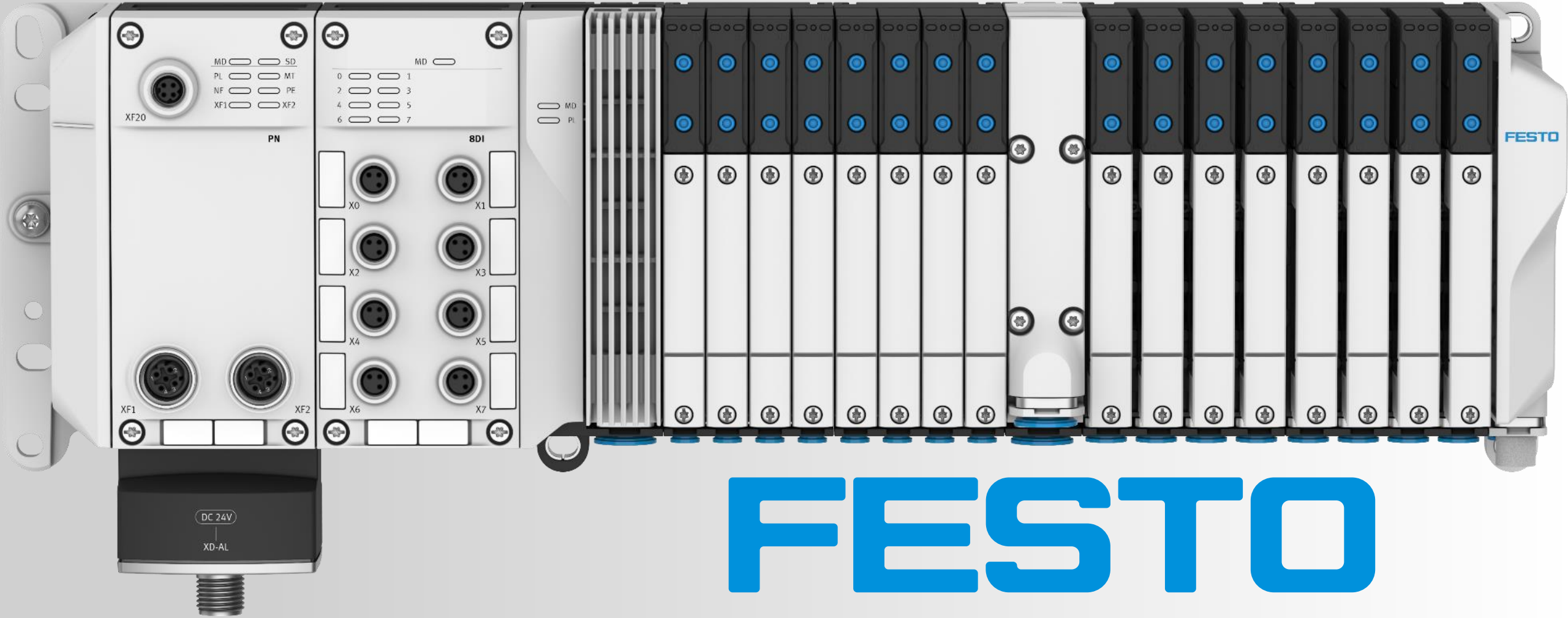
S7-1200 G2 additions

Wide range of additional modules and functions

SIEMENS

Definitely the right choice

The adaptable valve terminal VTUX...



FESTO

The adaptable valve terminal VTUX

Further benefits

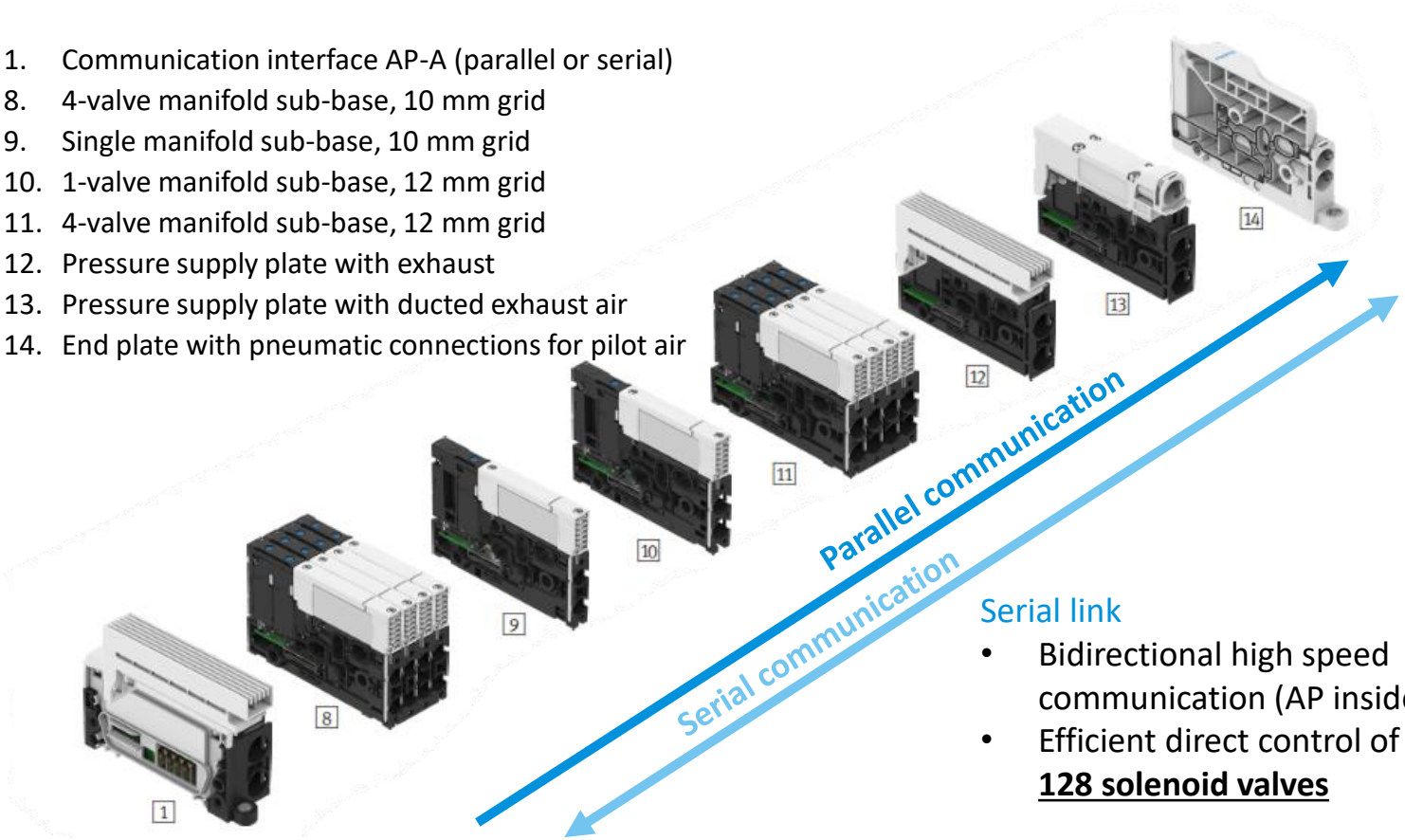
Lightweight	Made almost entirely from high-performance polymer
Cost effective	Very low connection costs with or without AP communication
	Easy to create valve blocks
Quick communication (real time 200 Mbaud data rate)	High data rates and fast processing times
High flow rate (up to 730 l/min)	Easy to configure for common applications

- Extremely flexible to use, for communication and machine concepts
- Highly modular
- All in all, it combines all the benefits of CPV, MPA and VTUG in one platform
- Open for future developments

The adaptable valve terminal VTUX

Pneumatic components can be arranged as required

1. Communication interface AP-A (parallel or serial)
8. 4-valve manifold sub-base, 10 mm grid
9. Single manifold sub-base, 10 mm grid
10. 1-valve manifold sub-base, 12 mm grid
11. 4-valve manifold sub-base, 12 mm grid
12. Pressure supply plate with exhaust
13. Pressure supply plate with ducted exhaust air
14. End plate with pneumatic connections for pilot air



		
Single manifold sub-base (valve block)	Single manifold sub-bases combined (valve blocks)	Combined block of four (valve block)
Flexible individual sub-bases		Economical four-valve grid

Parallel link

- Efficient direct control of up to **32 solenoid valves**

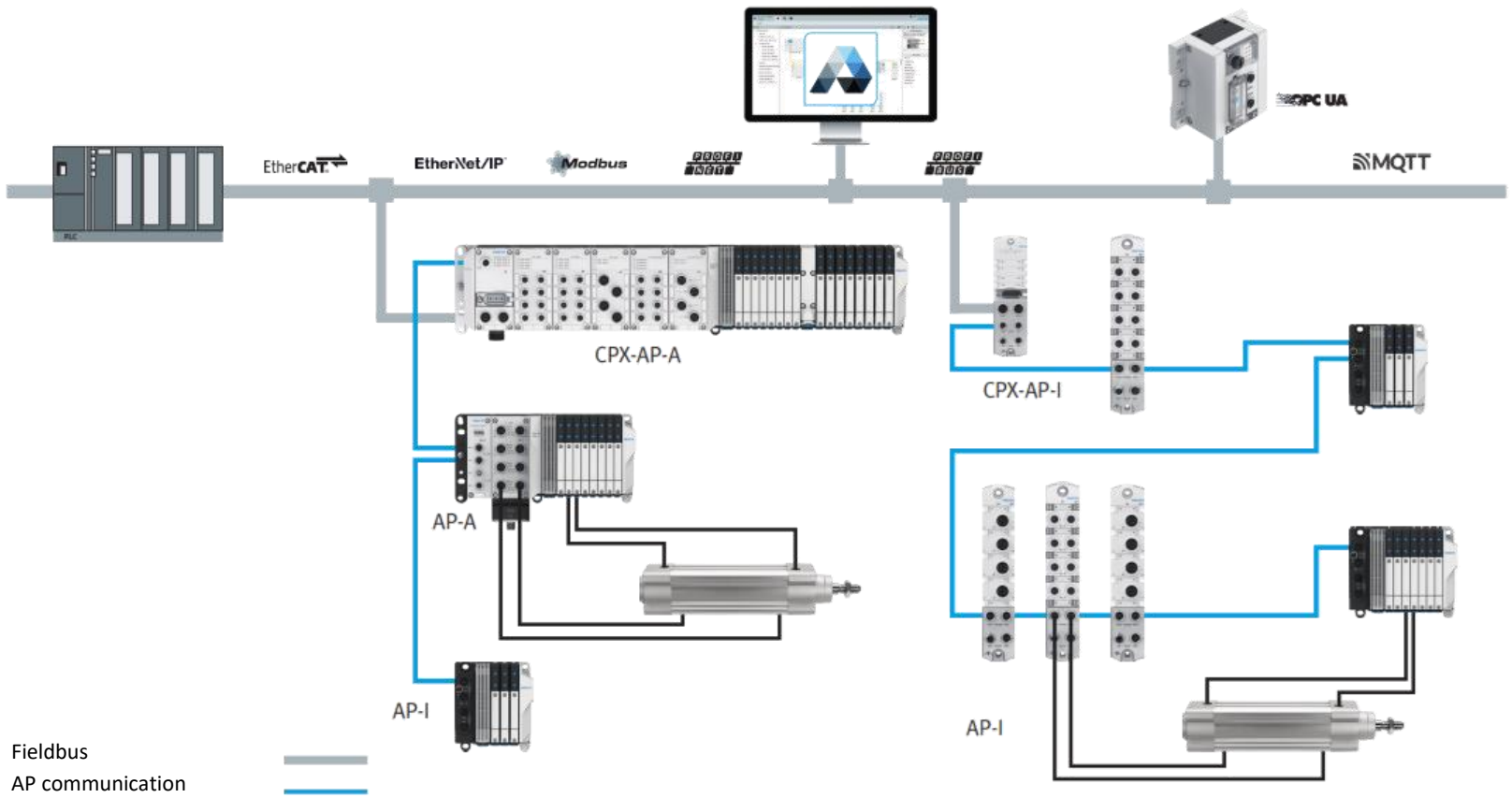
Serial link

- Bidirectional high speed communication (AP inside)
- Efficient direct control of up to **128 solenoid valves**

16

The adaptable valve terminal VTUX

Can be split and decentralized as required



VTUX

For machine architectures of all kinds:

- Centralized
- Decentralized
- Semi-centralized/ decentralized

With communication booster:

- AP communication

The adaptable valve terminal VTUX

Existing valve terminals and further development

CPV

MPA

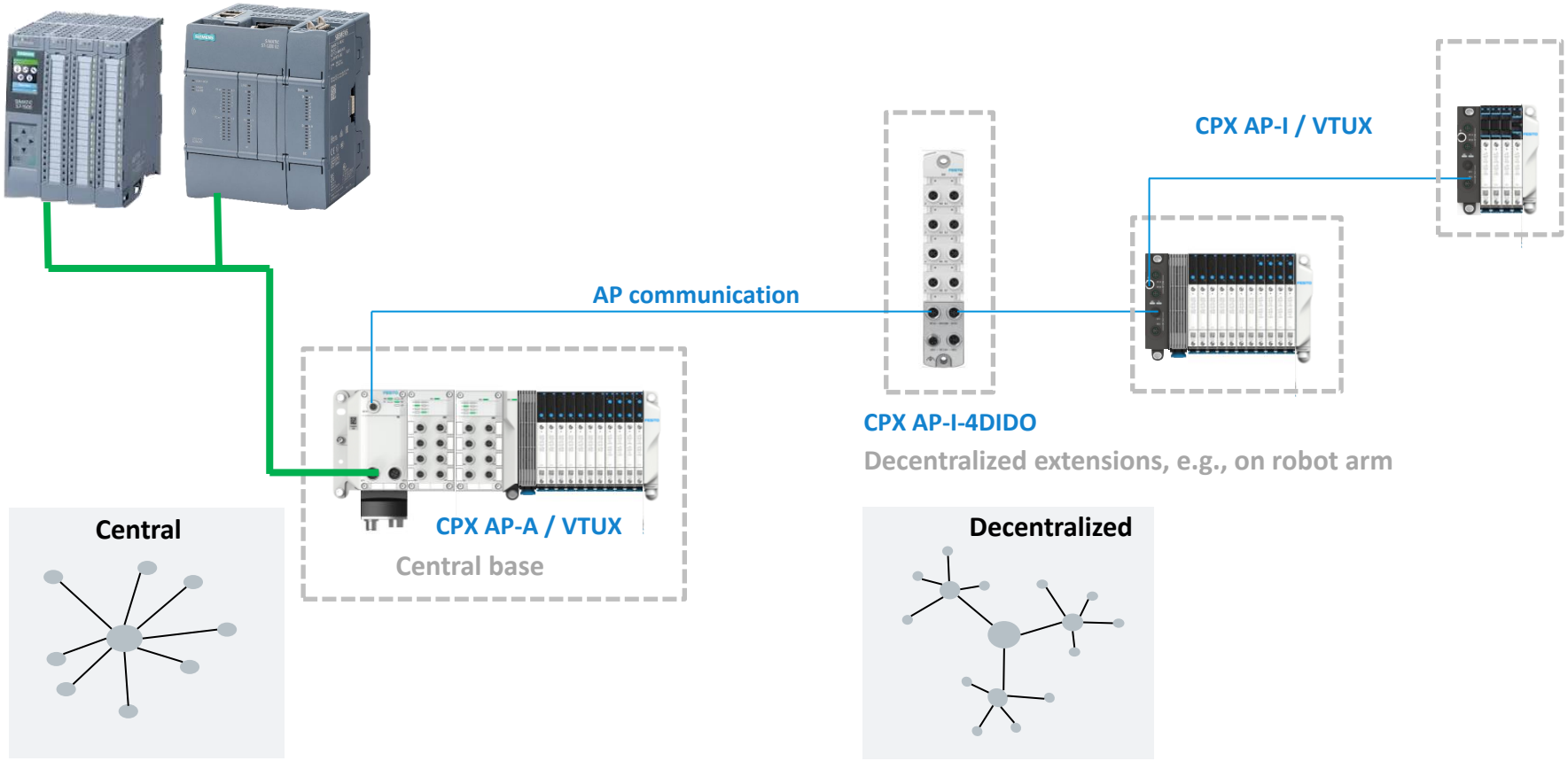
VTUG

VTUX

+ Perfectly customisable for every application
+ Basic and/or performance features
+ One platform
+ Innovation
+ Compact and lightweight
+ Functional safety
+ Available worldwide

The adaptable valve terminal VTUX

Mixed centralized and decentralized concept



VTUX

For machine architectures of all kinds:

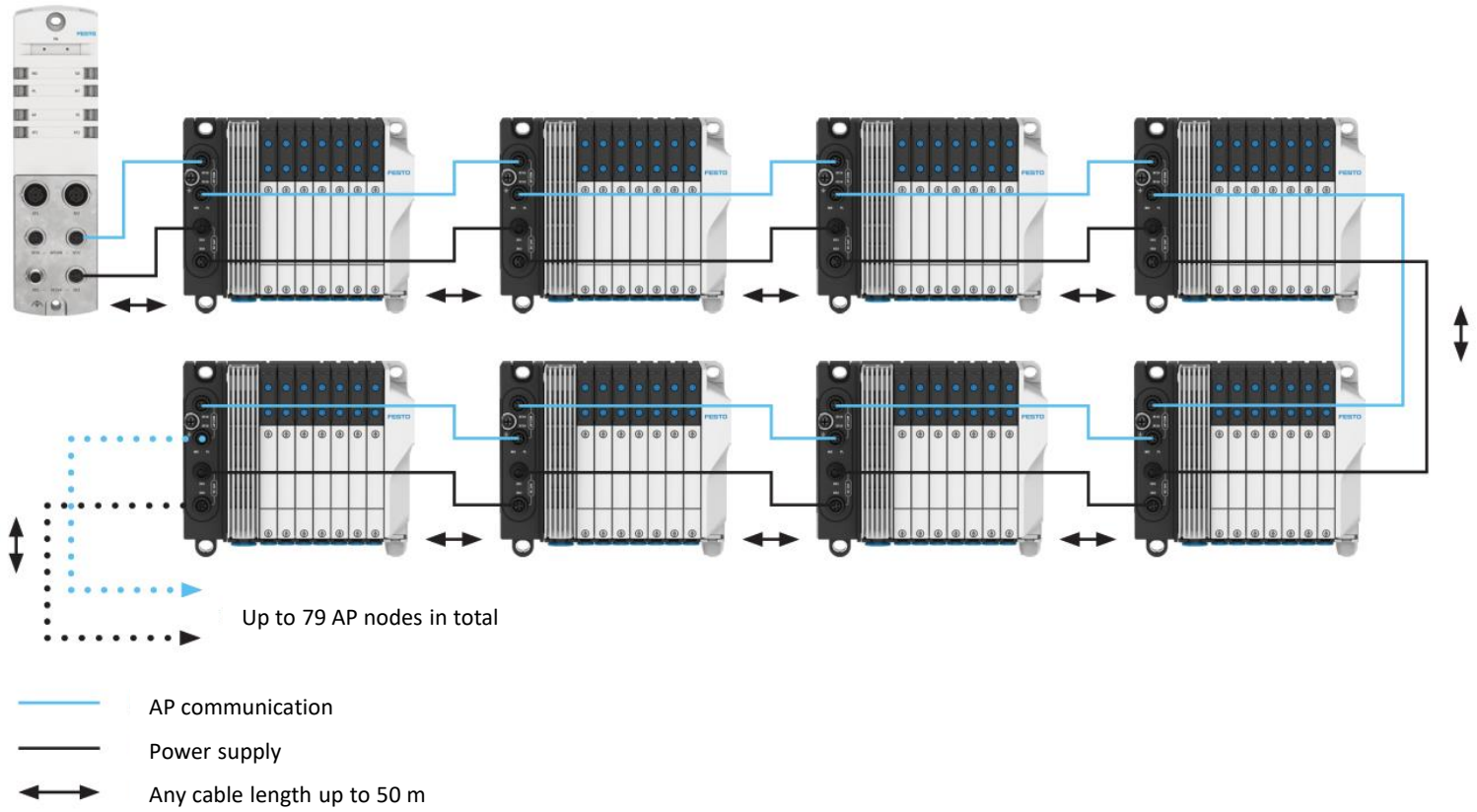
- Centralized
- Decentralized
- Semi-centralized/ decentralized

With communication booster:

- AP communication

The adaptable valve terminal VTUX

Network parameters



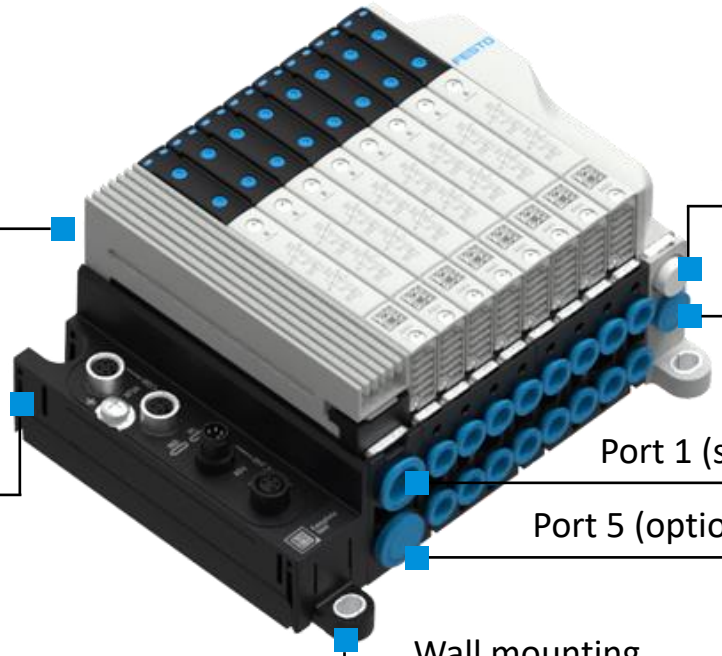
Configuration options

- Up to 79 AP nodes possible
- Distances between the nodes up to 50 m
- Cost-effective communication connection
  Savings potential of up to 30% with 20 nodes
- Mains supply
  - Centralized: 24 V/16 A
  - Individual: 24 V/4 A

The adaptable valve terminal VTUX

Left and right end plates

Left end plate
- Always integrated
- Replaceable silencer
  (no tools needed)



Auxiliary pilot air (silencer or ducted)

Auxiliary pilot air supply
(internal/ external)

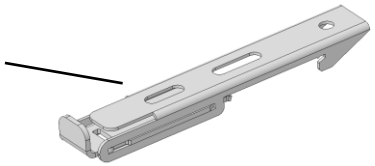
Electrical connection
- Saves lots of space
- Many options

Port 1 (supply)

Port 5 (optional exhaust)

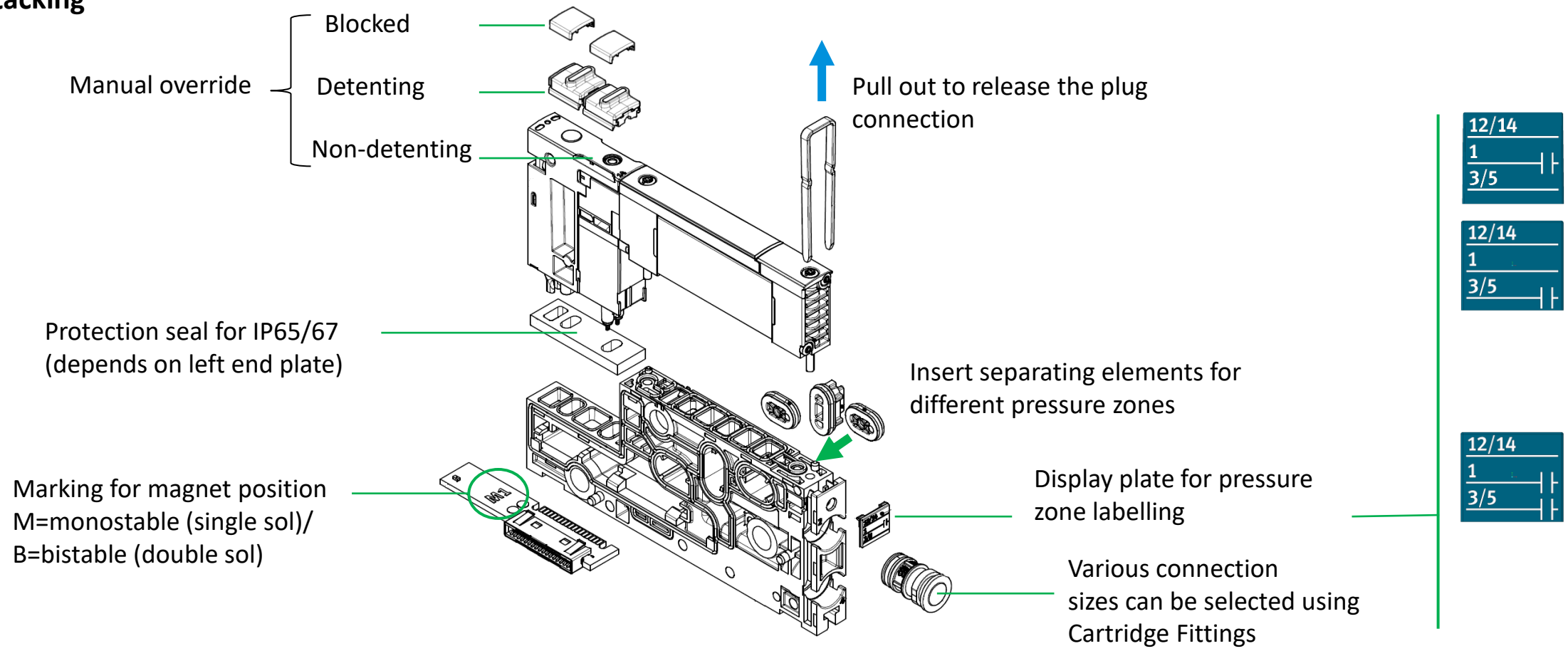
Wall mounting
- space-saving widthways

DIN H-rail mounting
- Easy to mount



The adaptable valve terminal VTUX

Vertical stacking



The adaptable valve terminal VTUX

Backbone

Valve terminal types

Performance

Bidirectional serial link

External characteristic

Blue status LEDs
(AP inside, max. 128 solenoids)

Unidirectional parallel sub-base link

External characteristic

Yellow status LEDs
(max. 32 solenoids)

Valve terminal types

Basis

Blue status LEDs

Serial link

- Bidirectional

For:

- Actuating solenoid coils (max. 128 solenoids)
- Additional functions (smart functions)
- Integrated sensors

Yellow status LEDs

Parallel link
Unidirectional

For:

- Actuating solenoid coils (max. 32 solenoid coils)

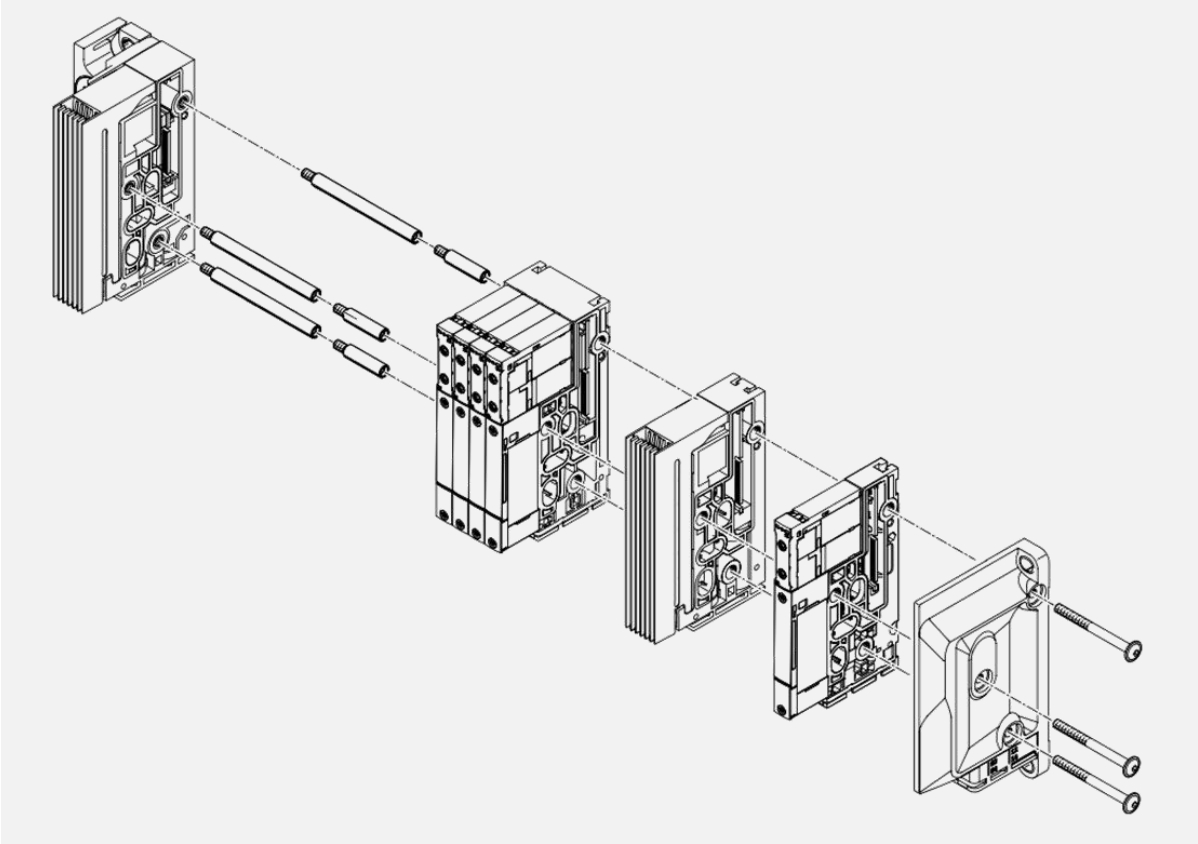
The adaptable valve terminal VTUX

Tie rods

The manifold sub-bases are connected by a tie rod system.

This comprises a tie rods and a screw set.

The combination of tie rods and screw set is selected according to the chosen number of individual sub-bases.



Note

The tie rod system for the valve terminal VTUX consists of at least two manifold sub-bases or one manifold sub-base and one power supply module.