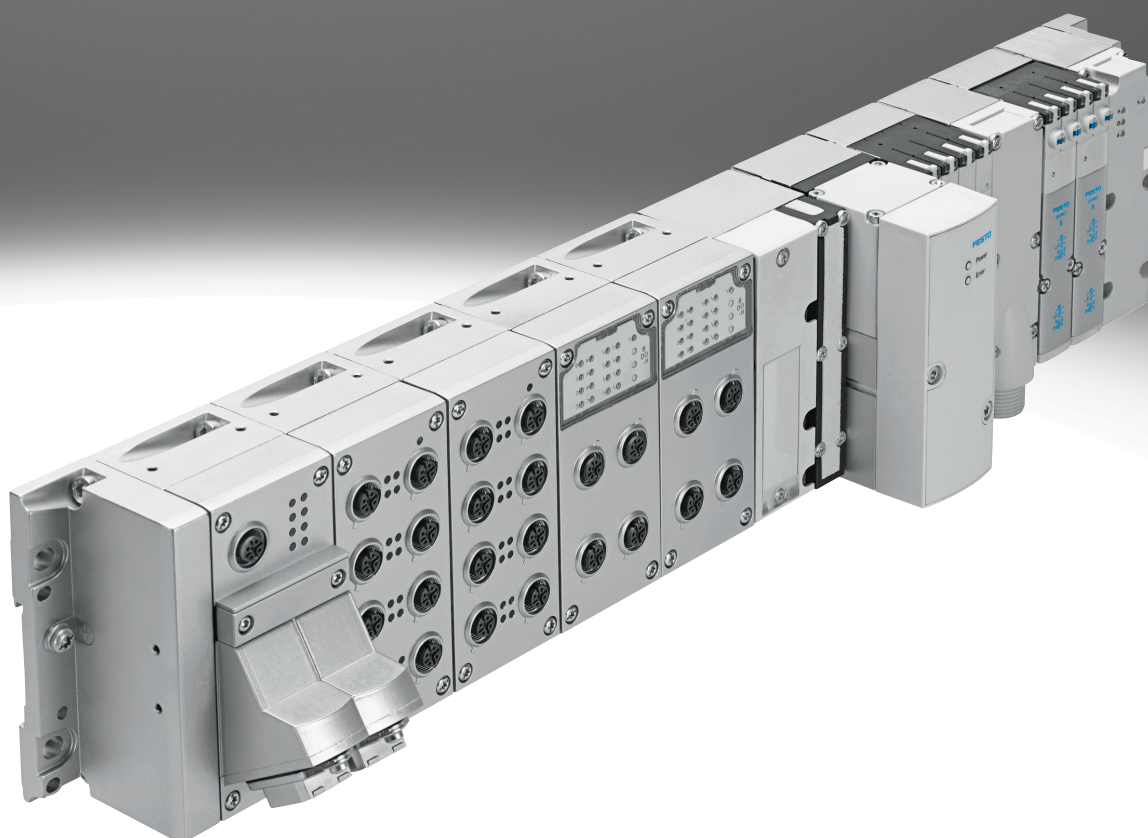
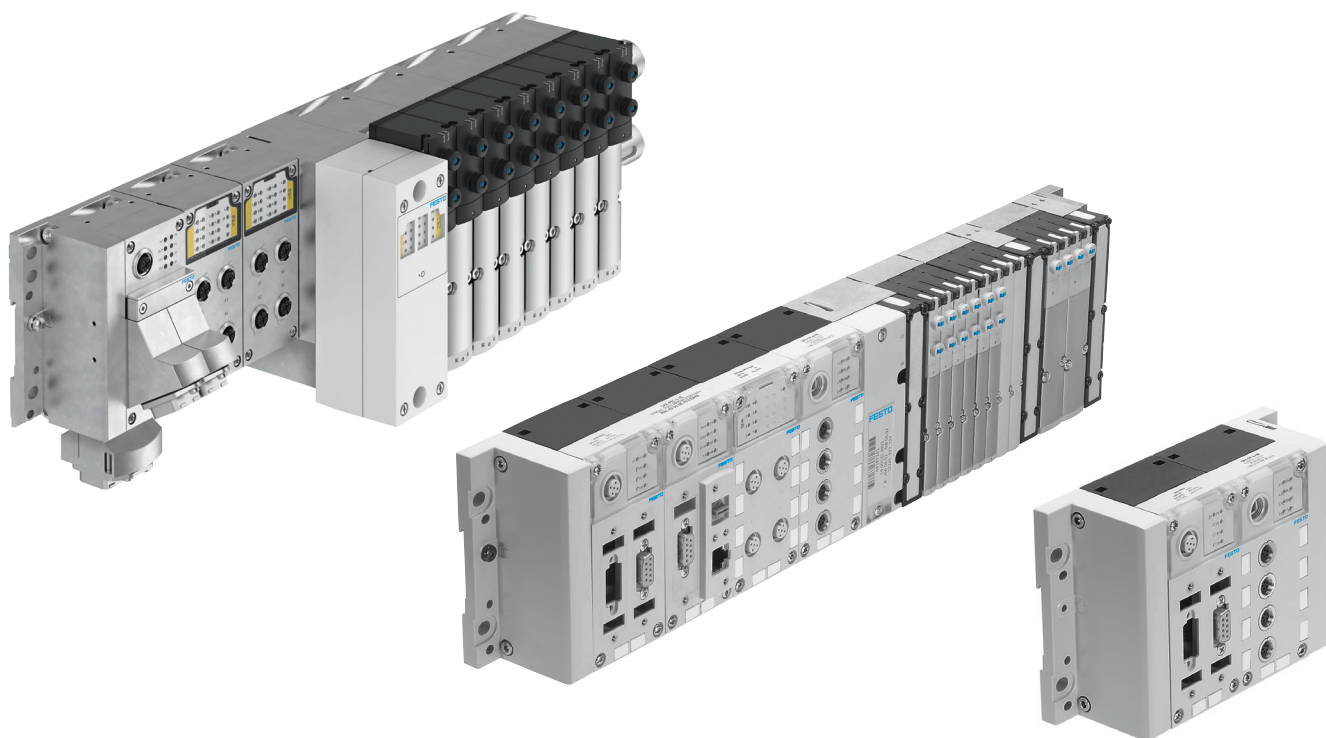


## Modular electrical terminal CPX

**FESTO**



## Key features



## Key features

| Installation concept                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Electric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Assembly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Choice of several valve terminal types for different applications: <ul style="list-style-type: none"> <li>MPA-S</li> <li>MPA-L</li> <li>VTSA/VTSA-F/VTSA-F-CB</li> </ul> </li> <li>Economical from the smallest configuration up to the maximum number of modules</li> <li>Up to 9 electrical input/output modules plus bus node and pneumatic interface/electronics modules for valves</li> <li>Extensive range of functions and connection options for the electrical modules</li> <li>Choice of connection technology for technically and economically optimised connections</li> <li>Can be used as a dedicated remote I/O module</li> </ul> | <ul style="list-style-type: none"> <li>High operating voltage tolerance (<math>\pm 25\%</math>)</li> <li>Choice of M12x1, M18, 7/8" or AIDA push-pull connection for power supply</li> <li>Open to all fieldbus protocols and Ethernet</li> <li>Optional function and technology modules for pre-processing</li> <li>IT services and TCP/IP such as remote maintenance, remote diagnostics, web server, SMS and email alert</li> <li>Digital inputs and outputs, 4-way/8-way/16-way, optionally available with individual channel diagnostics</li> <li>Analogue inputs and outputs, 2-way/4-way</li> <li>Pressure inputs</li> <li>Temperature inputs</li> <li>Controller for electric axes</li> <li>IP65 and IP67 or IP20</li> </ul> | <ul style="list-style-type: none"> <li>Wall or DIN rail mounting, also on mobile units</li> <li>Conversions/extensions are possible at any time, individual linking with CPX metal design</li> <li>Modular system offering a range of configuration options</li> <li>Fully assembled and tested unit</li> <li>Reduced costs for selection, ordering, mounting and commissioning thanks to the central CPX terminal</li> <li>Choice of pneumatic components for optimised control chain</li> <li>Decentralised, subordinate CPI installation system improves cycle times by up to 30%</li> <li>Safe and convenient earthing thanks to earthing plate</li> </ul> | <ul style="list-style-type: none"> <li>Fast troubleshooting thanks to an extensive selection of LEDs (some of which are multi-coloured) on the bus node and on all I/O modules</li> <li>Supports module and channel-related diagnostics</li> <li>Fieldbus/Ethernet remote diagnostics</li> <li>Innovative diagnostic support with integrated web server/web monitor or maintenance tool with USB adapter for PC</li> <li>Optimised commissioning thanks to parameterisable functions</li> <li>Reliable servicing with connection blocks and modules that are quick to replace without changing the wiring</li> </ul> |

## Key features

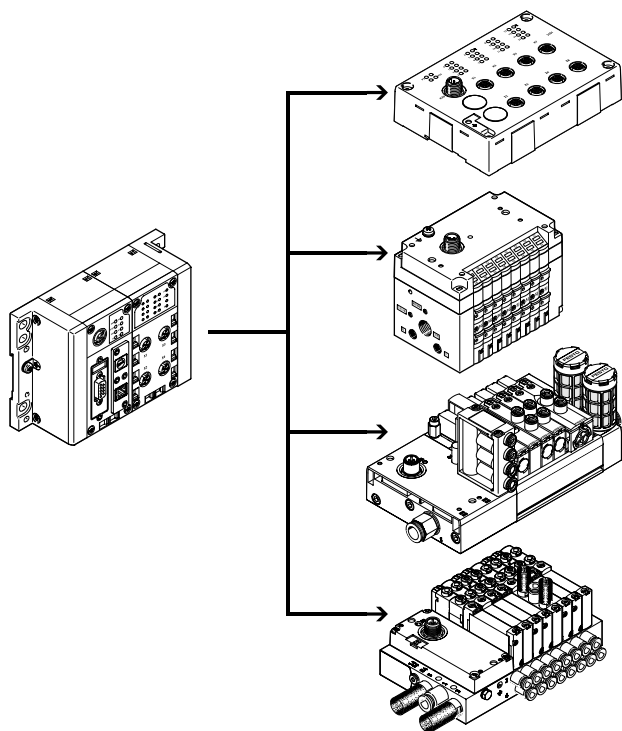
### Pneumatic variants of the CPX terminal

The electrical terminal CPX is a modular peripheral system for valve terminals.

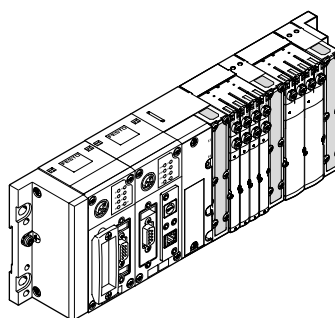
The system is specifically designed so that the valve terminal can be adapted to suit a wide range of different applications.

The modular system design lets you configure the number of valves, inputs and additional outputs to suit the application.

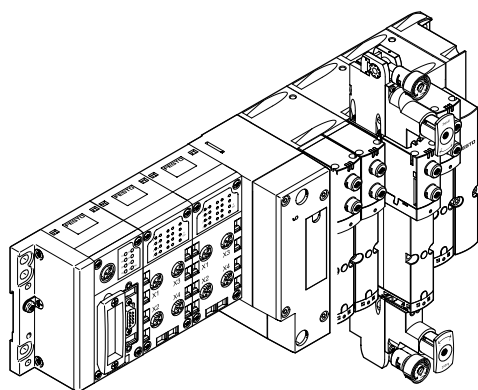
#### With valve terminal – decentralised



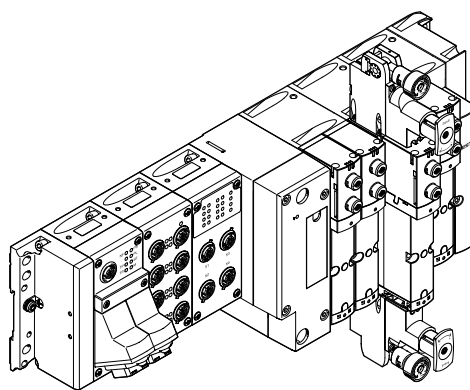
#### With valve terminal MPA-S – centralised



#### With valve terminal VTSA – centralised



#### In metal design with valve terminal VTSA – centralised



## Key features

### Variants of the CPX terminal controller (with bus node, without preprocessing)

#### Bus node

Different bus nodes are used for integration in the control systems of various manufacturers.

The CPX terminal can therefore be operated on over 90% of the most commonly used fieldbus systems:

- PROFIBUS DP
- PROFINET
- DeviceNet®
- CANopen
- CC-Link®

Integration in universal networks based on Ethernet opens up new possibilities. Faster data transmission, real-time capability and above all additional IT services such as file transfer, web server, web monitor as integrated website in the CPX terminal, text message/email alerts, etc. open up a wide range of synergies.

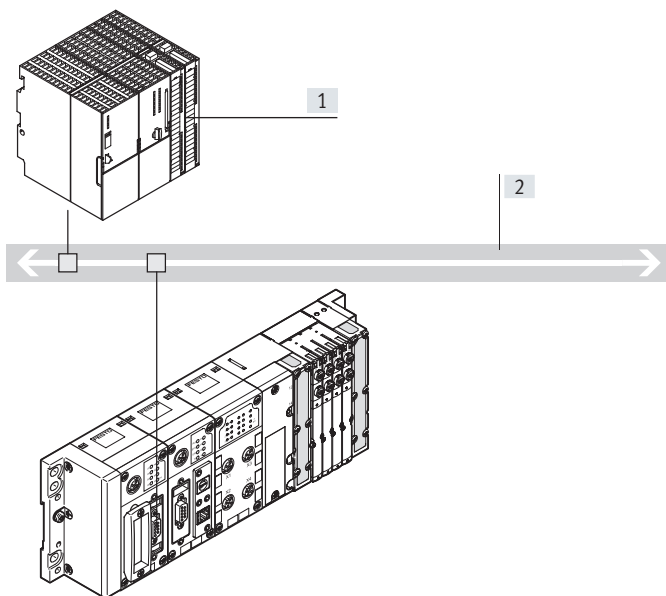
Mail alarms, etc. open up a wide range of synergies.

These include standardised and universal communication technology across all areas, including operating level, management level and field level in the production environment, with protection to IP65, IP67.

The following protocols are supported:

- EtherNet/IP
- Modbus/TCP
- PROFINET
- POWERLINK
- EtherCAT®
- Sercos III

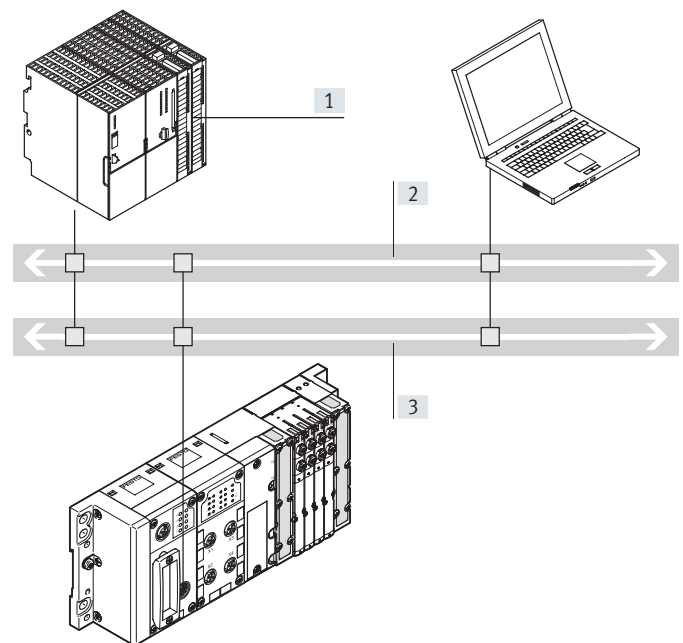
#### Bus node



- [1] Higher-order controller (PLC)  
[2] Fieldbus

- Communication with the higher-order controller via fieldbus
- No preprocessing
- Fieldbus protocol dependent on CPX bus node used
- More than 90 I/Os, depending on bus node used

#### Industrial Ethernet bus node



- [1] Higher-order controller (PLC)  
[2] Fieldbus  
[3] IT services:

- Web
- Email
- Data transmission

- Connection to a higher-order controller directly via EtherNet/IP, Modbus/TCP, POWERLINK, EtherCAT® or PROFINET
- No preprocessing
- Monitoring via Ethernet and web applications
- More than 300 I/Os

#### Note

Every electrical interface can be combined with an appropriate number of I/O modules and/or pneumatic components, depending on its address capacity.

Likewise, every pneumatic variant of the CPX terminal can be operated with every electrical interface variant.



## Key features

### Variants of the CPX terminal controller (with preprocessing in the control block)

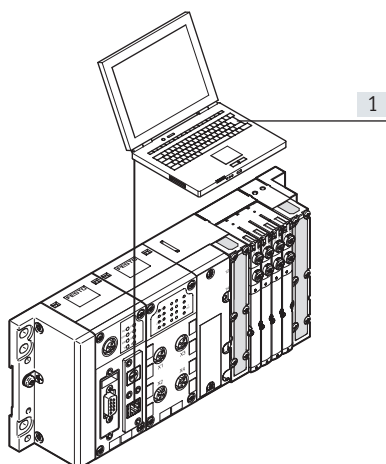
#### Control block

The optional front end controllers CPX-CEC enable simultaneous access via Ethernet, in parallel with a bus node, as well as stand-alone preprocessing.

Access via Modbus/TCP and EasyIP is also possible.

Commissioning, programming, and diagnostics using the Festo software tool FST with hardware configurator.

#### With control block in stand-alone mode



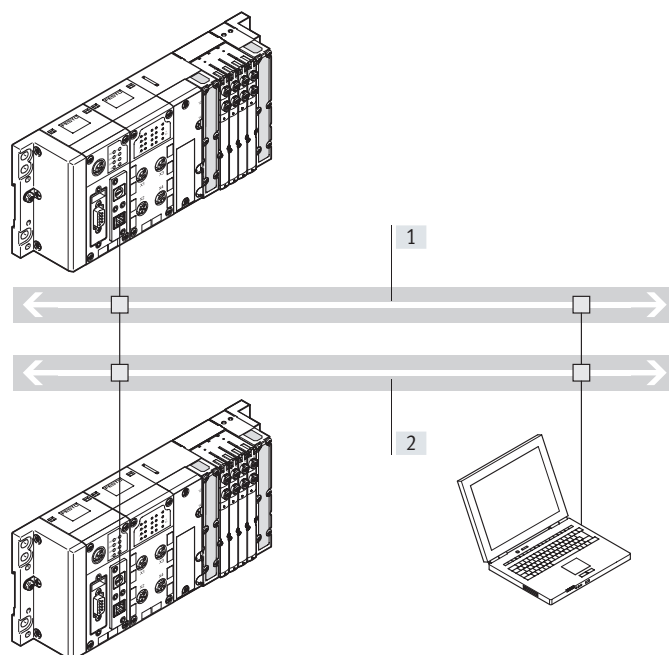
[1] CODESYS/FST

- Decentralised controller with direct machine mounting
- Downloading programs via Ethernet (or via the programming interface)
- Supports full expansion of all CPX peripherals
- More than 300 I/Os

Can be successfully used in the follow applications:

- Stand-alone individual workstations
- Interlinked, stand-alone sub-systems
- Automation using IT technology

#### With control block in Festo EasyIP mode



[1] Industrial Ethernet

- [2] IT services:
- Web
  - Email
  - Data transmission

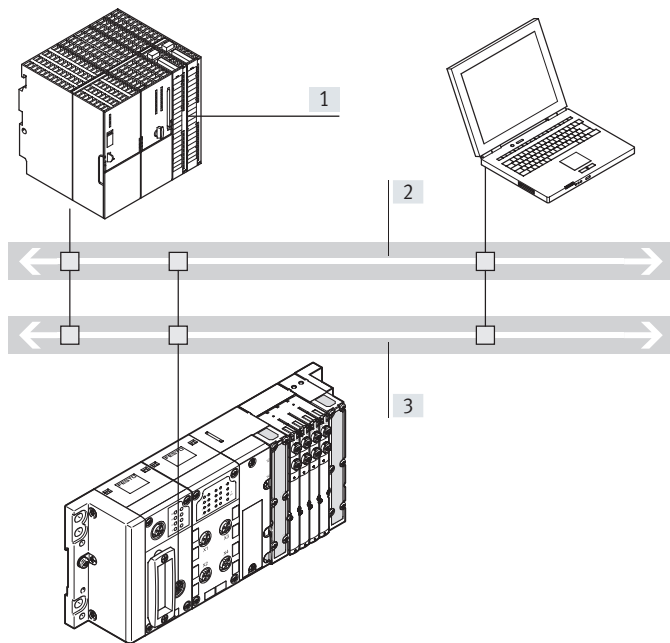
- Fast preprocessing of the CPX peripherals in the control block
- Exchange of any data between the control blocks via EasyIP
- Remote diagnostics
- No higher-order controller is required
- More than 300 I/Os per CPX control block

## Key features

### Variants of the CPX terminal controller (with preprocessing in the control block)

#### With control block as remote controller on Ethernet

Remote controller via Ethernet as the preprocessing unit for decentralised, stand-alone sub-systems using IT technology.

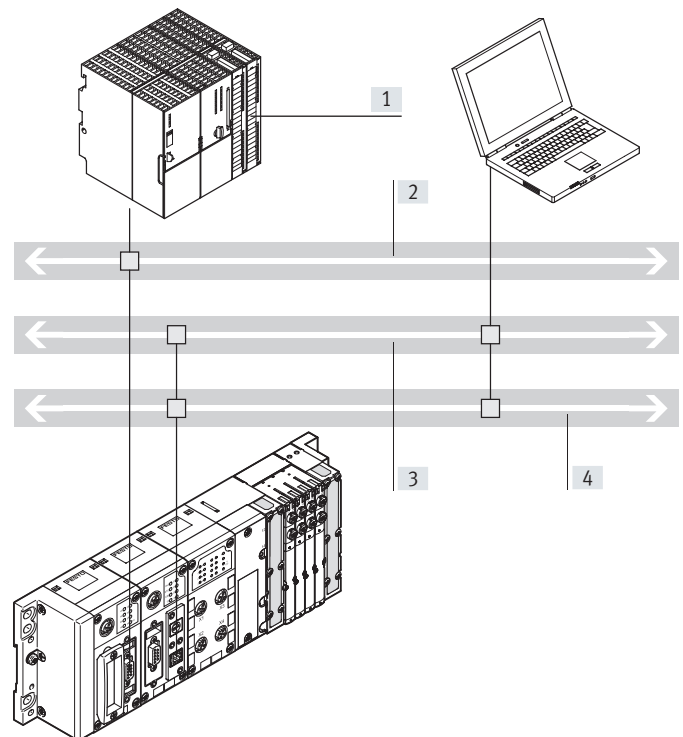


- [1] Higher-order controller (PLC)  
[2] Industrial Ethernet  
[3] IT services:  
– Web  
– Email  
– Data transmission

- Connection to a higher-order controller via Ethernet, no further bus node is required
- Monitoring via Ethernet and web applications
- Preprocessing of the CPX peripherals by CPX control block
- More than 300 I/Os

#### With control block as remote controller on the fieldbus

Fieldbus remote controller (combination with bus nodes for PROFIBUS DP, PROFINET, CANopen, DeviceNet®, CC-Link®, POWERLINK, Sercos III or EtherCAT) as the preprocessing unit for decentralised, stand-alone subsystems.



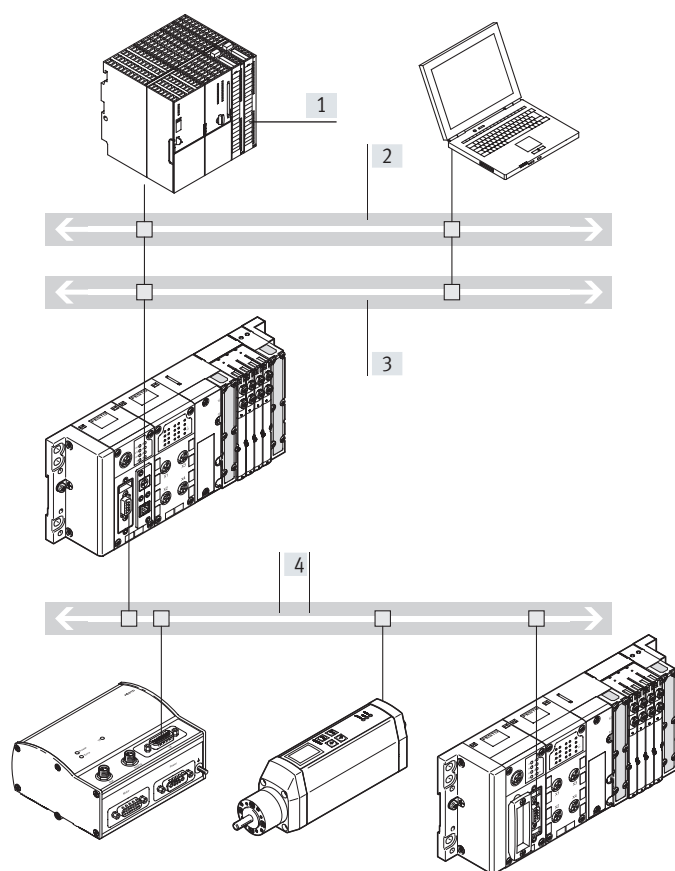
- [1] Higher-order controller (PLC)  
[2] Fieldbus  
[3] Industrial Ethernet  
[4] IT services:  
– Web  
– Email  
– Data transmission

- Fast preprocessing of the CPX peripherals in the control block
- Communication with the higher-order controller via fieldbus
- Optional additional monitoring via Ethernet and web applications
- Downloading programs via programming interface
- More than 300 I/Os, bus node is only used for communication with the higher-order PLC
- Option of two bus nodes for redundant communication configuration

## Key features

### Variants of the CPX terminal controller (with preprocessing in the control block)

With control block as CANopen fieldbus master



- [1] Higher-order controller (PLC)
- [2] Industrial Ethernet
- [3] IT services:
  - Web
  - Email
  - Data transmission
- [4] Fieldbus (CANopen)

#### Characteristics:

- Connection to a higher-order controller via Ethernet, no further bus node is required
- Monitoring via Ethernet
- Preprocessing of the CPX peripherals by CPX control block
- More than 300 I/Os
- Up to 128 stations with repeater technology on CANopen

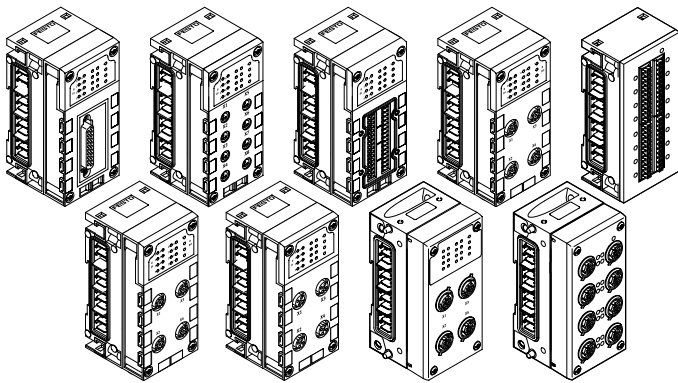
#### Operating modes:

- Remote controller on Ethernet
- Control block in Festo EasyIP mode

## Key features

## Connection of inputs and outputs to the CPX terminal

Digital and analogue CPX I/O modules

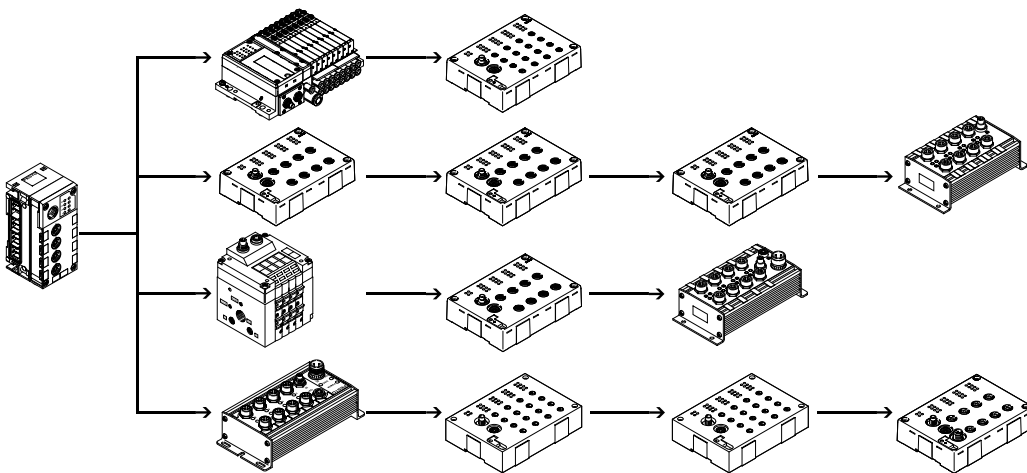


## Electrical connection

The connection technology for sensors and additional actuators offers a wide range of digital and analogue input and output modules and is freely selectable, as appropriate to your standard or application. Polymer or metal connection blocks can be combined as required:

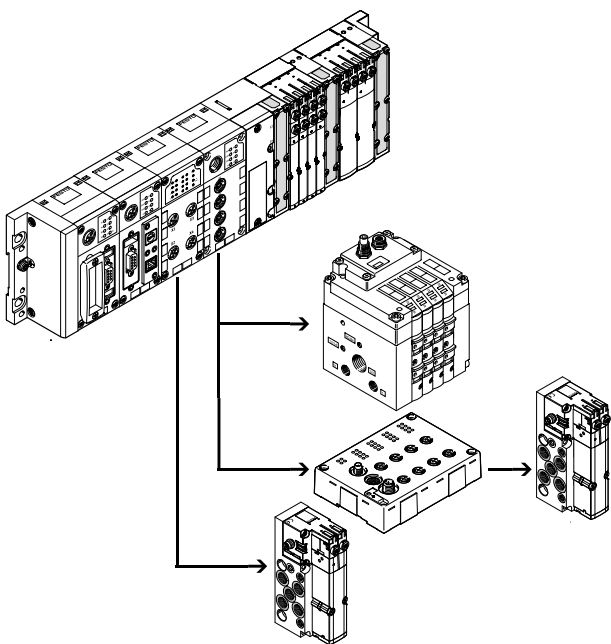
- metal design
  - M12-5POL
- Polymer version:
  - M12-5POL
  - M12-5-PIN with quick lock and metal thread
  - M12-8POL
  - M8-3POL
  - M8-4POL
  - Sub-D
  - CageClamp® (with covering hood also to IP65, IP67)
  - Screw/spring-loaded terminal

## With CPX-CP interface



- Up to 4 strings per CP interface possible.
- Up to 4 subordinate CP modules can be combined in one string.
- Up to 32 I/Os can be connected per string.
- Modules with M8 and M12
- Several CP interface modules can be combined on one CPX terminal (depending on the controller used).
- Combination of centralised CPX I/O modules and decentrally mounted I/O modules of the installation system CPI.

## Combined centralised and decentralised electrical connection (valve terminal with CP interface/output module)

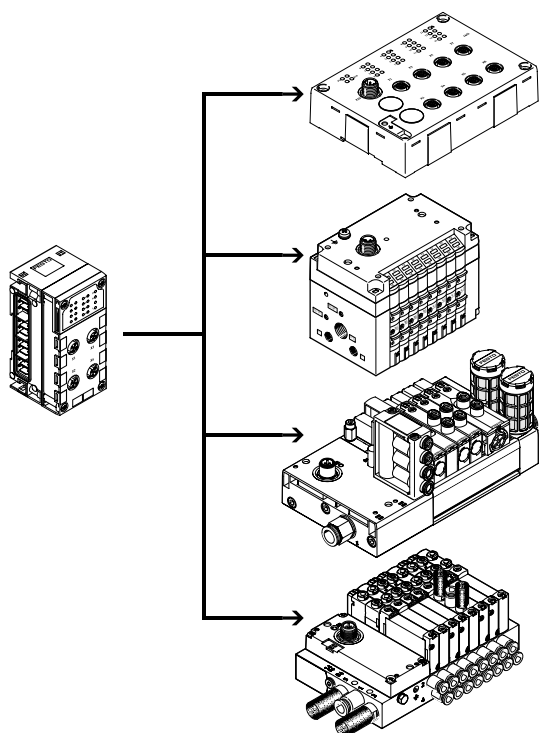


- Scalable to different requirements within a system
- One control interface in the system, reduces installation complexity with closely and widely spaced actuators
- Enables an optimum electrical and pneumatic control chain

## Key features

### Connection of inputs and outputs to the CPX terminal

With CPX-CTEL interface

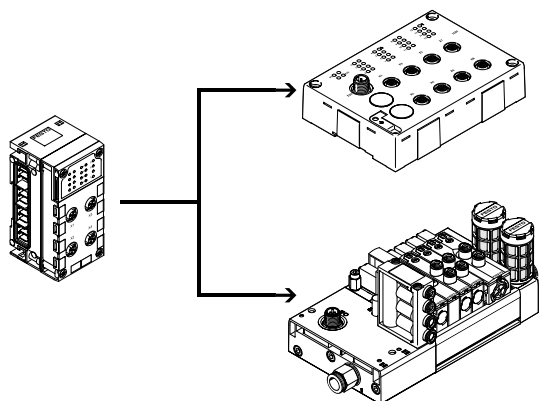


- Up to 4 devices with individual electronic protection per CPX CTET master
- Max. 64 inputs/64 outputs per I-Port interface
- The maximum length of a string is 20 m.
- Input modules with 16 digital inputs (connection technology M8 3-pin and M12 5-pin)
- Valve terminals with I-Port interface (up to 48 solenoid coils, different valve functions)

Several CPX CTET masters can be combined on one CPX terminal (depending on the controller used).

Combination of central CPX I/O modules and decentrally mounted I/O modules with I-Port interface.

With CPX-CTEL-2 interface



- Up to 2 IO-Link® devices with individual electronic protection per CPX-CTEL-2 interface
- Max. 16-byte inputs/16-byte outputs per IO-Link® device
- The maximum length of a string is 20 m.

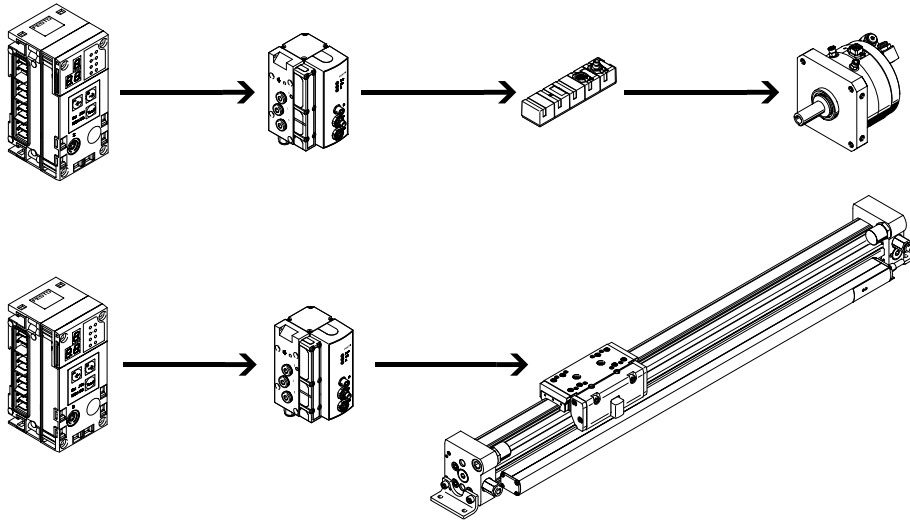
Several CPX-CTEL-2 interfaces can be combined on one CPX terminal (depending on the controller used).

Combination of central CPX I/O modules and decentrally mounted I/O modules with IO-Link® interface.

### Key features

#### Connection of inputs and outputs to the CPX terminal

##### Pneumatic drives with CPX-CMAX/CMPX



- Position and force control, directly actuated or selected from one of 64 configurable positioning sets
- The configurable record sequencing function enables simple functional sequences to be realised
- Auto identification detects every station with its device data on the controller
- Control of a brake or clamping unit via the proportional directional control valve VPWP
- Up to 7 modules (max. 7 axes) can be operated in parallel and independently of each other
- Commissioning via the Festo configuration software FCT or via fieldbus



## Key features

### Ordering

The CPX terminal with valve terminal is fully assembled according to your order specifications and individually tested. The finished valve terminal consists of the electrical peripherals including the required actuation and the selected components of the VTSA (ISO), VTSA-F, VTSA-F-CB, MPA-S or MPA-L modules. The CPX terminal with valve terminal is ordered using two separate order codes.

One order code defines the electrical peripherals type CPX, while the other specifies the pneumatic components of the valve terminal.

The electrical peripherals type CPX can also be configured without a valve terminal and can be used on a fieldbus. To order this, only the order code for the electrical peripherals is required.

The order lists for the pneumatic components can be found at

→ Internet: vtsa  
(Valve terminal VTSA)  
→ Internet: vtsa-f  
(Valve terminal VTSA-F)  
→ Internet: vtsa-f-cb  
(Valve terminal VTSA-F-CB)  
→ Internet: mpa-s  
(Valve terminal MPA-S)  
→ Internet: mpa-l  
(Valve terminal MPA-L)

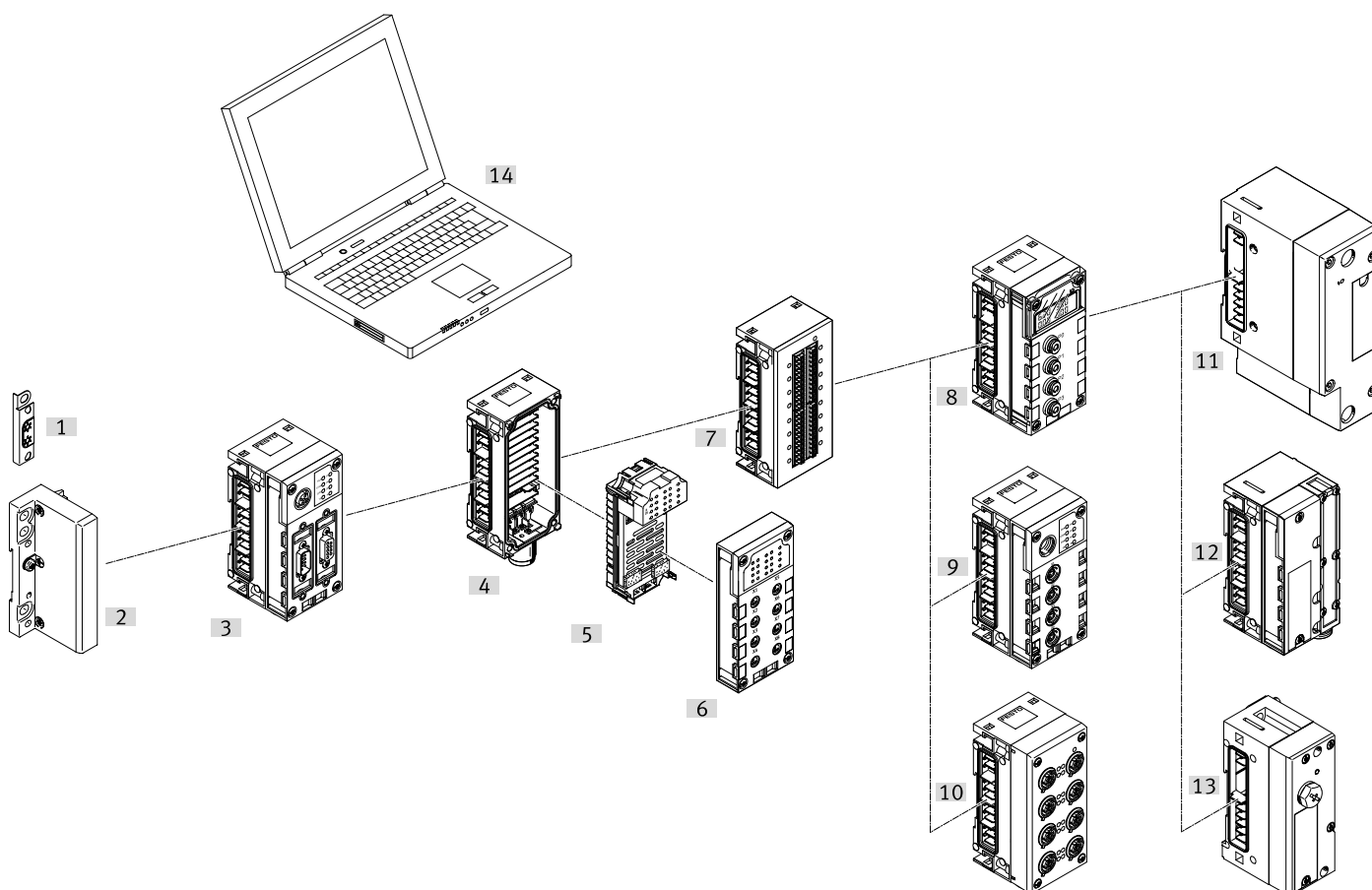
The order lists for the CP/CPI components can be found at

→ Internet: cpi  
(Installation system CPI)

The order lists for the CTEU/CTEL components can be found at

→ Internet: cteu  
(I-Port interface/IO-Link®)

## Peripherals overview



| Designation                    | Type               | Description                                                                                                                                                                                                                                                                                                                                                                   | → Page/Internet |
|--------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| [1] Earthing component         | CPX-EPFE-EV        | For right/left end plate                                                                                                                                                                                                                                                                                                                                                      | 51              |
| [2] End plate                  | CPX-EP             | <ul style="list-style-type: none"> <li>• Mounting holes for wall mounting</li> <li>• Functional earth connection</li> <li>• Special earthing plate for safe and easy connection to the machine bed or DIN rail</li> <li>• External power supply for the entire system</li> </ul>                                                                                              | 51              |
| [3] Bus node                   | CPX-FB<br>CPX-M-FB | <ul style="list-style-type: none"> <li>• Fieldbus/Industrial Ethernet connection using various types of connection technology</li> <li>• Setting fieldbus parameters via DIL switch</li> <li>• Display of fieldbus and peripheral equipment status via LED</li> <li>• PROFINET to AIDA standard in metal housing, fast start-up</li> </ul>                                    | 64              |
| Control block                  | CPX-CEC            | <ul style="list-style-type: none"> <li>• Preprocessing, stand-alone controller or remote unit CPX-CEC</li> <li>• Connection via Ethernet TCP/IP or Sub-D programming interface</li> <li>• Setting operating modes via DIL switch and program selection via rotary switch</li> <li>• CPX-CMX products for controlling axes</li> </ul>                                          | 57              |
| [4] Polymer interlinking block | CPX-GE             | <ul style="list-style-type: none"> <li>• Internal linking of the power supply and serial communication</li> <li>• External power supply for the entire system or for outputs or valves</li> <li>• Connection accessories for M18, 7/8"</li> <li>• Linking with tie rods</li> </ul>                                                                                            | 50              |
| Interlinking block, metal      | CPX-M-GE           | <ul style="list-style-type: none"> <li>• Internal linking of the power supply and serial communication</li> <li>• External power supply for the entire system or for outputs</li> <li>• Transmission of the power supply</li> <li>• Connection accessories for M12x1, 7/8" or AIDA push-pull</li> <li>• Individual linking with M6 screws, individually expandable</li> </ul> | 50              |

## Peripherals overview

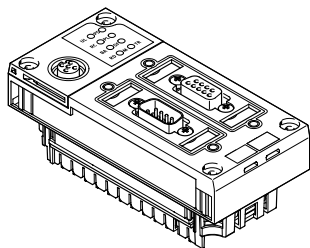
| Designation                                                              | Type          | Description                                                                                                                                                                                                                                                                                                                                             | → Page/Internet |
|--------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| [5] Electronics module                                                   | CPX-4DE       | Input module with 4 digital inputs, positive logic (PNP)                                                                                                                                                                                                                                                                                                | 124             |
|                                                                          | CPX-8DE       | Input module with 8 digital inputs, positive logic (PNP)                                                                                                                                                                                                                                                                                                |                 |
|                                                                          | CPX-8DE-D     | Input module with 8 digital inputs, positive logic (PNP), enhanced diagnostic function                                                                                                                                                                                                                                                                  |                 |
|                                                                          | CPX-8NDE      | Input module with 8 digital inputs, negative logic (NPN)                                                                                                                                                                                                                                                                                                |                 |
|                                                                          | CPX-F8DE-P    | PROFIsafe input module with 8 digital inputs                                                                                                                                                                                                                                                                                                            | 129             |
|                                                                          | CPX-16DE      | Input module with 16 digital inputs, internal electronic fuse per module                                                                                                                                                                                                                                                                                | 135             |
|                                                                          | CPX-M-16DE-D  | Input module with 16 digital inputs, internal electronic fuse per channel pair, for CPX in metal                                                                                                                                                                                                                                                        |                 |
|                                                                          | CPX-4DA       | Output module with 4 digital outputs, 1 A per channel                                                                                                                                                                                                                                                                                                   | 141             |
|                                                                          | CPX-8DA       | Output module with 8 digital outputs, 0.5 A per channel                                                                                                                                                                                                                                                                                                 |                 |
|                                                                          | CPX-8DA-H     | Output module with 8 digital outputs, 2.1 A per channel pair                                                                                                                                                                                                                                                                                            |                 |
|                                                                          | CPX-8DE-8DA   | Input/output module with 8 digital inputs and 8 digital outputs                                                                                                                                                                                                                                                                                         | 147             |
|                                                                          | CPX-2ZE2DA    | Counter module with 2 digital inputs and 2 digital outputs                                                                                                                                                                                                                                                                                              | 152             |
|                                                                          | CPX-2AE-U-I   | Input module with 2 analogue current or voltage inputs                                                                                                                                                                                                                                                                                                  | 156             |
|                                                                          | CPX-4AE-U-I   | Input module with 4 analogue current or voltage inputs                                                                                                                                                                                                                                                                                                  |                 |
|                                                                          | CPX-4AE-I     | Input module with 4 analogue current inputs                                                                                                                                                                                                                                                                                                             |                 |
|                                                                          | CPX-4AE-T     | Input module for temperature inputs                                                                                                                                                                                                                                                                                                                     | 163             |
|                                                                          | CPX-4AE-TC    | Input module for temperature inputs with cold junction compensation                                                                                                                                                                                                                                                                                     | 167             |
|                                                                          | CPX-2AA-U-I   | Output module with 2 analogue current or voltage outputs                                                                                                                                                                                                                                                                                                | 171             |
|                                                                          | CPX-FVDA-P2   | PROFIsafe shut-off module for shutting off the supply voltage for valves, with two digital outputs                                                                                                                                                                                                                                                      | 175             |
| [6] Polymer connection block                                             | CPX-AB        | <ul style="list-style-type: none"> <li>Choice of 8 connection technology variants</li> <li>Degree of protection IP65, IP67 or IP20</li> <li>Can be combined with the electronics modules</li> <li>Connection accessories for M8/M12/Sub-D</li> <li>Connecting cables M8/M12/Sub-D, etc.</li> <li>Modular system for M8/M12 connecting cables</li> </ul> | –               |
| [7] Connection block including electronics module and interlinking block | CPX-L         | <ul style="list-style-type: none"> <li>Spring-loaded terminal</li> <li>Degree of protection IP20</li> <li>Digital input module with 16 inputs</li> <li>Digital I/O module with 8 inputs and 8 outputs</li> <li>Polymer connection block</li> </ul>                                                                                                      | –               |
| [8] Analogue electronics module for pressure inputs                      | CPX-4AE-P     | <ul style="list-style-type: none"> <li>Pneumatic connection QS-4</li> <li>Degree of protection IP 65, IP67</li> <li>4 analogue pressure inputs (0 ... 10 bar, –1 ... +1 bar)</li> </ul>                                                                                                                                                                 | 161             |
| [9] CP interface<br>CTEL interface                                       | CPX-CP        | <ul style="list-style-type: none"> <li>Interfaces for decentralised installation systems, thus optimising the pneumatic control chains (short tubes/short cycle times)</li> </ul>                                                                                                                                                                       | 105             |
|                                                                          | CPX-CTEL      | <ul style="list-style-type: none"> <li>Actuation for I/O modules and valve terminals</li> <li>Power supply and bus interface via the same cable</li> <li>Connection technology M9, M12</li> <li>Degree of protection IP 65, IP67</li> </ul>                                                                                                             | 110             |
| [10] Metal connection block                                              | CPX-M-AB      | <ul style="list-style-type: none"> <li>Can be combined with the electronics modules</li> <li>Connection technology M12x1, 5-pin</li> <li>Degree of protection IP 65, IP67</li> <li>Connection accessories for M12</li> <li>Connecting cables M12</li> <li>Modular system for choice of connecting cables M12</li> </ul>                                 | –               |
| [11] Pneumatic interface VTSA                                            | VABA-S6       | <ul style="list-style-type: none"> <li>Control of valve terminal VTSA/VTSA-F/VTSA-F-CB</li> <li>Control of pressure sensors</li> </ul>                                                                                                                                                                                                                  | 206             |
| [12] Pneumatic interface MPA-S                                           | VMPA-FB       | <ul style="list-style-type: none"> <li>Control of valve terminal MPA-S</li> <li>Control of pressure sensors</li> <li>Control of proportional pressure regulators</li> </ul>                                                                                                                                                                             | 201             |
| [13] Pneumatic interface MPA-L                                           | VMPAL-EPL-CPX | Control of valve terminal MPA-L                                                                                                                                                                                                                                                                                                                         | 204             |
| [14] Web monitor                                                         | –             | <ul style="list-style-type: none"> <li>Website integrated in the CPX terminal</li> <li>Dynamic status indication</li> <li>Online diagnostics and SMS/email alert</li> </ul>                                                                                                                                                                             | –               |

## Peripherals overview

### Individual overview of modules

#### Bus node

→ Page 64



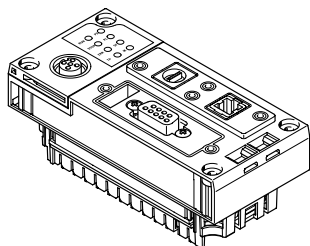
Bus node for

- PROFIBUS DP
- DeviceNet®
- CANopen
- CC-Link®
- EtherNet/IP

- PROFINET
- POWERLINK
- EtherCAT®
- Sercos III

#### Control block

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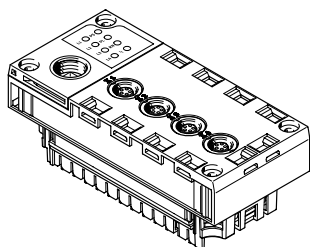


CPX-CEC

- Programming with CODESYS
- Ethernet interface
- Modbus/TCP
- EasyIP
- CANopen master

#### CP interface

→ Page 105

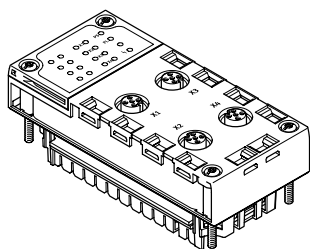


Interface CPX-CP

- 4 CP strings
- Max. 4 modules per string
- 32 inputs/32 outputs per string
- CPI functionality

#### CTEL interface

→ Page 110

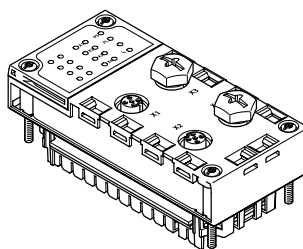


Interface CPX-CTEL

- CTEL master
- Max. 4 devices with individual electronic protection
- Max. 64 inputs/64 outputs per I-Port interface
- The maximum length of a string is 20 m

#### Electrical interface CPX-CTEL-2

→ Page 116



Interface CPX-CTEL-2

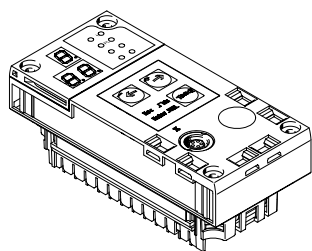
- Master for IO-Link®
- Max. 2 devices with individual electronic protection
- The process data length of the inputs and outputs is limited to 16 bytes for inputs and 16 bytes for outputs per port
- The maximum length of a string is 20 m

## Peripherals overview

### Individual overview of modules

Modules for actuating pneumatic drive units

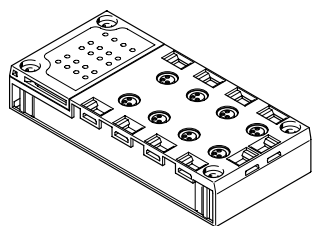
→ Page 121



#### CPX-CMAX

- Axis controller
- Position and force control
- 64 configurable positioning records
- Auto-identification
- Control of a brake or clamping unit via the proportional directional control valve VPWP

### Polymer connection block



#### Direct machine mounting (degree of protection IP65, IP67)

- M8-3POL
- M8-4POL
- M12-5POL
- M12-5POL quick lock, shielded with metal thread
- M12-8POL
- Sub-D
- Spring-loaded terminal with cover

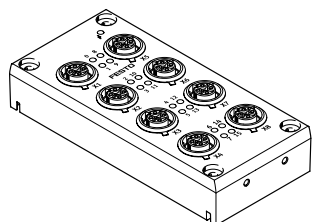
#### Protected fitting space (degree of protection IP20)

- Spring-loaded terminal

#### Shielding concept

- Optional screening plate for connection blocks with M12 connection technology

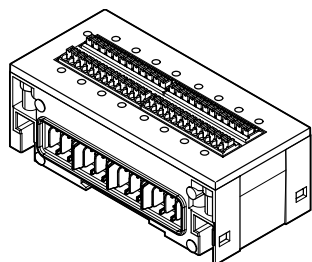
### Metal connection block



#### Direct machine mounting (degree of protection IP65, IP67)

- M12-5POL

### Connection block including electronics module and interlinking block



#### Mounting in the control cabinet (degree of protection IP20)

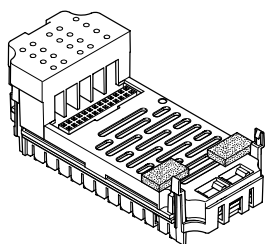
- Polymer connection block
- Spring-loaded terminal
- Digital input module with 16 inputs
- Digital I/O module with 8 inputs and 8 outputs

## Peripherals overview

## Individual overview of modules

## Digital electronics module for inputs/outputs

→ Page 124



## Digital inputs

- 4 digital inputs
- 8 digital inputs NPN
- 8 digital inputs PNP
- 8 digital inputs PNP with individual channel diagnostics
- 16 digital inputs
- 16 digital inputs with individual channel diagnostics

## Digital outputs

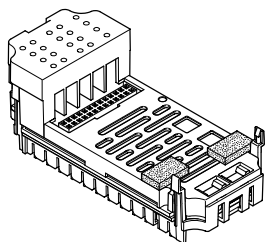
- 4 digital outputs (1 A per channel, individual channel diagnostics)
- 8 digital outputs (0.5 A per channel, individual channel diagnostics)
- 8 digital outputs (2.1 A/50 W lamp load per channel pair, individual channel diagnostics)

## Multi I/O modules

- 8 digital inputs and 8 digital outputs
- 2 digital inputs (counter channels, connection to various encoders) and 2 digital outputs (directly controlled by the input values)

## Analogue electronics module for inputs/outputs

→ Page 156



## Analogue inputs

- 2 analogue inputs (0 ... 10 V DC, 0 ... 20 mA, 4 ... 20 mA)
- 4 analogue inputs (1 ... 5 V, 0 ... 10 V, -5 ... +5 V, -10 ... +10 V, 0 ... 20 mA, 4 ... 20 mA, -20 ... +20 mA)

## Analogue temperature inputs

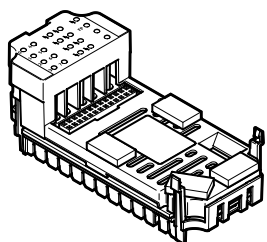
- 4 analogue inputs for temperature measurement (Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni500, Ni1000)
- 4 analogue inputs for temperature measurement (thermocouple and PT1000 sensor for cold junction compensation)

## Analogue outputs

- 2 analogue outputs (0 ... 10 V DC, 0 ... 20 mA, 4 ... 20 mA)

## PROFIsafe input module

→ Page 129

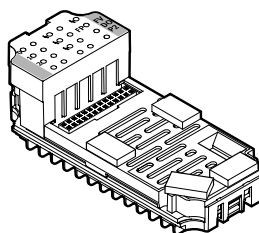


## Digital inputs

- 8 digital inputs
- 11 function modes
- 5 independent pulse outputs

## PROFIsafe shut-off module

→ Page 175



## Digital outputs

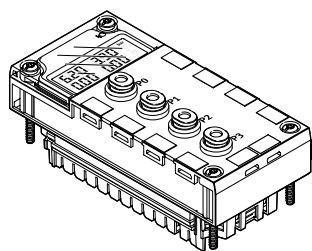
- 2 digital outputs
- Supply voltage for valves can be shut off

## Peripherals overview

### Individual overview of modules

Analogue electronics module for pressure inputs

→ Page 161

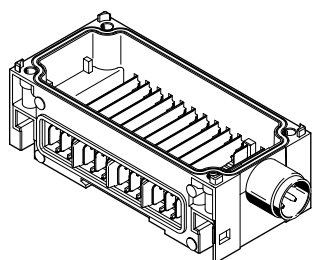


Analogue inputs

- 4 analogue pressure inputs  
(0 ... 10 bar, -1 ... +1 bar)

Polymer interlinking block – Interlinking using tie rods

→ Page 184



System linking

- Different voltages for supplying the modules
- Serial communication between the modules

System supply

- M18, 4 pin
- 7/8" 4-pin or 5-pin

In addition to system linking, power supply for the

- Electronics plus sensors (16 A)
- Valves plus actuators (16 A)

Additional supply

In addition to system linking, power supply for the

- Actuators (16 A per supply)

Power supply for the

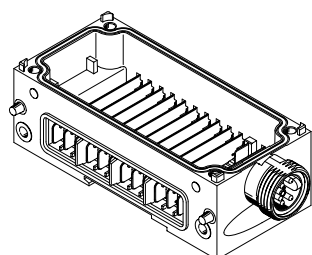
- Valves (16 A per supply)

Extendibility

- Can be extended by an interlinking block with tie rod extension CPX-ZA-1-E

Metal interlinking block – Individual linking

→ Page 185



System linking

- Different voltages for supplying the modules
- Serial communication between the modules

System supply

- 7/8" 4-pin or 5-pin
- M12x1, L-coded, 5-pin
- AIDA push-pull

In addition to system linking, power supply for the

- Electronics plus sensors (16 A)
- Valves plus actuators (16 A)

Additional supply

In addition to system linking, power supply for the

- Actuators (16 A per supply)

Power supply for the

- Valves (16 A per supply)

System forwarding

In addition to system linking, transmission of power supply from the

- Electronics plus sensors (16 A)
- Valves plus actuators (16 A)

to a further CPX terminal or another consuming device.

Extendibility

- Can be expanded as required by up to 10 interlinking blocks

#### Note

Polymer interlinking blocks (tie rods) and metal interlinking blocks (individual linked) cannot be combined due to their different interlinking systems.

#### Note

The 7/8" supply is subject to the following restrictions due to the available accessories:

- 5-pin 8 A
- 4-pin 10 A

#### Note

Appropriate interlinking blocks (CPX...-VL) must be used in ATEX environments as per the certification (→ page 48). The maximum supply is limited to 8 A for these modules.

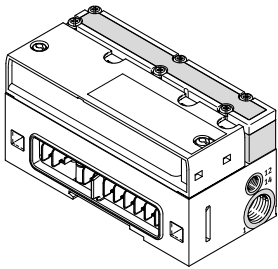


## Peripherals overview

## Individual overview of modules

## Pneumatic interface MPA-S

→ Page 201

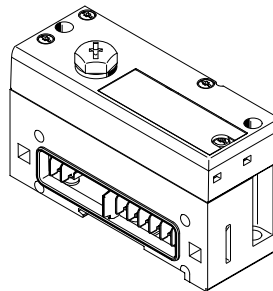


## Valve terminal

- MPA1 (360 l/min)
- MPA14 (550 l/min)
- MPA2 (700 l/min)
- Up to 128 solenoid coils
- Up to 16 modules can be configured
- For CPX polymer design
- For CPX metal design
- Control of pressure sensors
- Proportional pressure regulators
- Pressure sensors
- Proportional pressure regulators

## Pneumatic interface MPA-L

→ Page 204

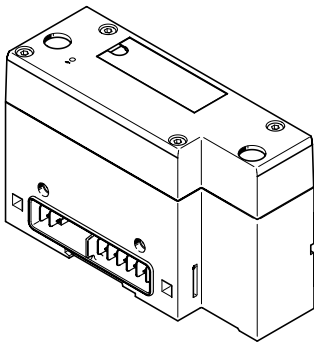


## Valve terminal

- MPA1 (360 l/min)
- MPA14 (670 l/min)
- MPA2 (870 l/min)
- Up to 32 solenoid coils
- For CPX polymer design

## Pneumatic interface VTSA/VTSA-F

→ Page 206

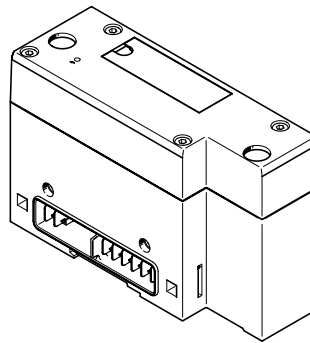


## Valve terminal (valve flow rate according to width)

- 18 mm (700 l/min)
- 26 mm (1350 l/min)
- 42 mm (1300 l/min)
- 52 mm (2900 l/min)
- 65 mm (4000 l/min)
- Max. 32 valve positions/max. 32 solenoid coils
- For CPX polymer design
- For CPX metal design

## Pneumatic interface VTSA-F-CB

→ Page 208

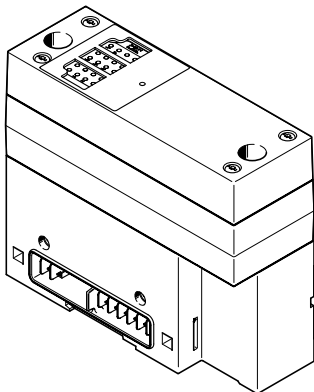


## Valve terminal (valve flow rate according to width)

- 18 mm (700 l/min)
- 26 mm (1350 l/min)
- 42 mm (1300 l/min)
- 52 mm (2900 l/min)
- Max. 24 valve positions/max. 24 solenoid coils
- For CPX polymer design
- For CPX metal design

## Pneumatic interface VTSA-F-CB

→ Page 208

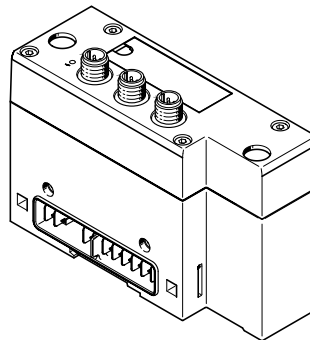


## Valve terminal (valve flow rate according to width)

- 18 mm (700 l/min)
- 26 mm (1350 l/min)
- 42 mm (1300 l/min)
- 52 mm (2900 l/min)
- Max. 24 valve positions/max. 24 solenoid coils
- For CPX metal design
- With 3 voltage zones within the valve terminal that can be securely shut down via fieldbus
- With 2 voltage zones within the valve terminal that can be securely shut down via fieldbus and one power supply for external consuming devices that can be securely shut down via fieldbus

## Pneumatic interface VTSA-F-CB

→ Page 208



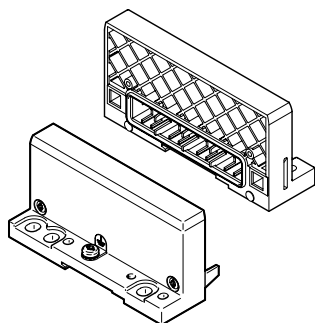
## Valve terminal (valve flow rate according to width)

- 18 mm (700 l/min)
- 26 mm (1350 l/min)
- 42 mm (1300 l/min)
- 52 mm (2900 l/min)
- Max. 24 valve positions/max. 24 solenoid coils
- For CPX polymer design
- For CPX metal design
- 3 external voltage supplies for voltage zones within the valve terminal that can be shut down individually

## Peripherals overview

### Individual overview of modules

#### End plate for polymer/metal design

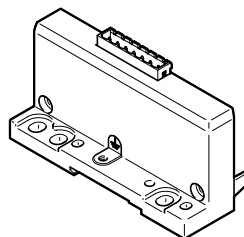


##### End plate

- Left
- Right (for using the CPX terminal without valves)

#### End plate with system supply

→ Page 180

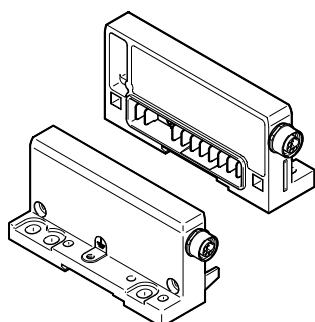


##### End plate

- Left
- For polymer design
- Different voltages for supplying the CPX terminal

#### End plate with extension

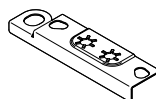
→ Page 182



##### End plate

- Left
- Right
- Enables the CPX terminal to be separated into two interconnected units (series)
- Simplifies control cabinet installation
- For polymer or metal design

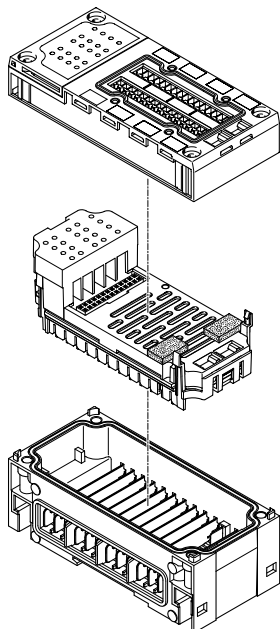
#### Earthing plate (for end plate for polymer design)



##### Earthing plate

- For safe and easy connection to the machine bed or DIN rail, suitable for right-hand and left-hand end plate
- Mounting and earthing in a single processing step, which means:
  - Time saving of 50%
  - No additional material required

### General basic data and guidelines



##### Max. 11 modules in total:

- One bus node and/or one control block, freely positionable
- Up to 9 additional input/output modules, freely positionable
- An additional pneumatic interface always positioned as the last module on the right-hand side
  - For VTSA, VTSA-F: Fixed operating range, set using DIL switch
  - For VTSA-F-CB: Fixed operating range
  - For MPA-S: 16 MPA modules can be configured
  - For MPA-L: Fixed operating range, set using rotary switch
- Address capacity max. 512 inputs and 512 outputs, depending on bus node or control block
- One interlinking block with system supply
- Several interlinking blocks with additional supplies
  - Always positioned to the right of the interlinking block with system supply
- With just a few exceptions, the connection blocks can be freely combined with the electronics modules for inputs/outputs, either in metal or polymer version (→ table below)
- The electronics modules for inputs/outputs can be combined with various interlinking blocks

- Polymer interlinking blocks (tie rods) and metal interlinking blocks (individual linked) cannot be combined due to their different interlinking systems.

## Peripherals overview

| Combinations of connection blocks and digital input modules |                             |         |           |          |            |
|-------------------------------------------------------------|-----------------------------|---------|-----------|----------|------------|
|                                                             | Digital electronics modules |         |           |          |            |
|                                                             | CPX-4DE                     | CPX-8DE | CPX-8DE-D | CPX-8NDE | CPX-F8DE-P |
| <b>Connection blocks, polymer design</b>                    |                             |         |           |          |            |
| CPX-AB-8-M8-3POL                                            | ■                           | ■       | ■         | ■        | –          |
| CPX-AB-8-M8X2-4POL                                          | –                           | –       | –         | –        | –          |
| CPX-AB-4-M12x2-5POL                                         | ■                           | ■       | ■         | ■        | –          |
| CPX-AB-4-M12x2-5POL-R                                       | ■                           | ■       | ■         | ■        | –          |
| CPX-AB-8-M12X2-5POL                                         | –                           | –       | –         | –        | –          |
| CPX-AB-4-M12-8POL                                           | –                           | –       | –         | –        | –          |
| CPX-AB-8-KL-4POL                                            | ■                           | ■       | ■         | ■        | ■          |
| CPX-AB-1-SUB-BU-25POL                                       | ■                           | ■       | ■         | ■        | –          |
| CPX-AB-ID-P                                                 | –                           | –       | –         | –        | ■          |
| <b>Connection blocks, metal design</b>                      |                             |         |           |          |            |
| CPX-M-AB-4-M12X2-5POL                                       | ■                           | ■       | ■         | ■        | ■          |
| CPX-M-AB-4-M12X2-5POL-T                                     | –                           | –       | –         | –        | ■          |
| CPX-M-AB-8-M12X2-5POL                                       | –                           | –       | –         | –        | –          |

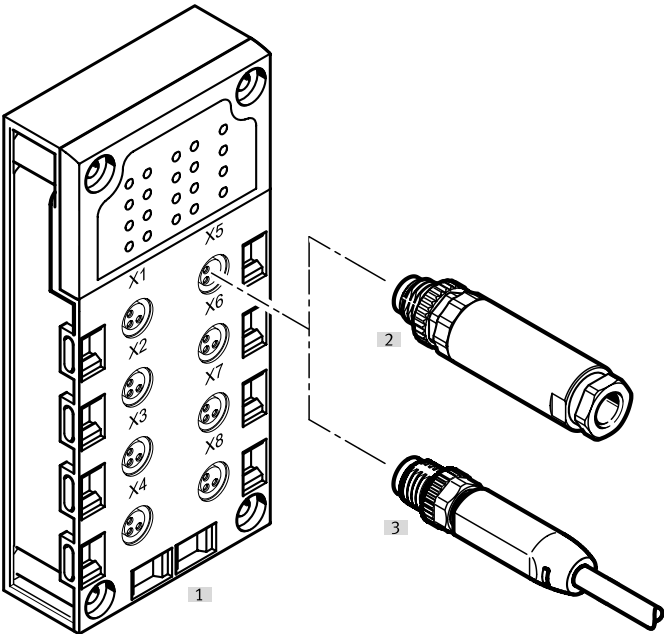
| Combinations of connection blocks and digital input modules |                             |            |              |
|-------------------------------------------------------------|-----------------------------|------------|--------------|
|                                                             | Digital electronics modules |            |              |
|                                                             | CPX-16DE                    | CPX-L-16DE | CPX-M-16DE-D |
| <b>Connection blocks, polymer design</b>                    |                             |            |              |
| CPX-AB-8-M8-3POL                                            | –                           | –          | –            |
| CPX-AB-8-M8X2-4POL                                          | ■                           | –          | –            |
| CPX-AB-4-M12x2-5POL                                         | –                           | –          | –            |
| CPX-AB-4-M12x2-5POL-R                                       | –                           | –          | –            |
| CPX-AB-8-M12X2-5POL                                         | –                           | –          | ■            |
| CPX-AB-4-M12-8POL                                           | –                           | –          | –            |
| CPX-AB-8-KL-4POL                                            | ■                           | –          | –            |
| CPX-AB-1-SUB-BU-25POL                                       | ■                           | –          | –            |
| CPX-AB-ID-P                                                 | –                           | –          | –            |
| <b>Connection blocks, metal design</b>                      |                             |            |              |
| CPX-M-AB-4-M12X2-5POL                                       | –                           | –          | –            |
| CPX-M-AB-4-M12X2-5POL-T                                     | –                           | –          | –            |
| CPX-M-AB-8-M12X2-5POL                                       | –                           | –          | ■            |

## Peripherals overview

| Combination of connection blocks with digital output modules and multi I/O modules           |                             |             |           |             |               |            |             |
|----------------------------------------------------------------------------------------------|-----------------------------|-------------|-----------|-------------|---------------|------------|-------------|
|                                                                                              | Digital electronics modules |             |           |             |               |            |             |
|                                                                                              | CPX-4DA                     | CPX-8DA     | CPX-8DA-H | CPX-8DE-8DA | CPX-L-8DE-8DA | CPX-2ZE2DA | CPX-FVDA-P2 |
| <b>Connection blocks, polymer design</b>                                                     |                             |             |           |             |               |            |             |
| CPX-AB-8-M8-3POL                                                                             | ■                           | ■           | —         | —           | —             | —          | —           |
| CPX-AB-8-M8X2-4POL                                                                           | ■                           | ■           | ■         | —           | —             | —          | —           |
| CPX-AB-4-M12x2-5POL                                                                          | ■                           | ■           | —         | —           | —             | —          | —           |
| CPX-AB-4-M12x2-5POL-R                                                                        | ■                           | ■           | ■         | —           | —             | —          | —           |
| CPX-AB-8-M12X2-5POL                                                                          | —                           | —           | —         | —           | —             | —          | —           |
| CPX-AB-4-M12-8POL                                                                            | —                           | —           | —         | ■           | —             | —          | —           |
| CPX-AB-8-KL-4POL                                                                             | ■                           | ■           | ■         | ■           | —             | —          | ■           |
| CPX-AB-1-SUB-BU-25POL                                                                        | ■                           | ■           | ■         | ■           | —             | —          | —           |
| CPX-AB-ID-P                                                                                  | —                           | —           | —         | —           | —             | —          | —           |
| <b>Connection blocks, metal design</b>                                                       |                             |             |           |             |               |            |             |
| CPX-M-AB-4-M12X2-5POL                                                                        | ■                           | ■           | ■         | —           | —             | —          | ■           |
| CPX-M-AB-4-M12X2-5POL-T                                                                      | —                           | —           | —         | —           | —             | —          | —           |
| CPX-M-AB-8-M12X2-5POL                                                                        | —                           | —           | —         | —           | —             | —          | —           |
| <b>Combinations of connection blocks and analogue electronics modules for inputs/outputs</b> |                             |             |           |             |               |            |             |
|                                                                                              |                             |             |           |             |               |            |             |
|                                                                                              | CPX-2AE-U-I                 | CPX-4AE-U-I | CPX-4AE-I | CPX-2AA-U-I | CPX-4AE-P     | CPX-4AE-T  | CPX-4AE-TC  |
| <b>Connection blocks, polymer design</b>                                                     |                             |             |           |             |               |            |             |
| CPX-AB-8-M8-3POL                                                                             | —                           | —           | —         | —           | —             | —          | —           |
| CPX-AB-8-M8X2-4POL                                                                           | —                           | —           | —         | —           | —             | —          | —           |
| CPX-AB-4-M12x2-5POL                                                                          | ■                           | ■           | ■         | ■           | —             | ■          | ■           |
| CPX-AB-4-M12x2-5POL-R                                                                        | ■                           | ■           | ■         | ■           | —             | ■          | ■           |
| CPX-AB-8-M12X2-5POL                                                                          | —                           | —           | —         | —           | —             | —          | —           |
| CPX-AB-4-M12-8POL                                                                            | —                           | —           | —         | —           | —             | —          | —           |
| CPX-AB-8-KL-4POL                                                                             | ■                           | ■           | ■         | ■           | —             | ■          | ■           |
| CPX-AB-1-SUB-BU-25POL                                                                        | ■                           | ■           | ■         | ■           | —             | —          | —           |
| CPX-AB-ID-P                                                                                  | —                           | —           | —         | —           | —             | —          | —           |
| <b>Connection blocks, metal design</b>                                                       |                             |             |           |             |               |            |             |
| CPX-M-AB-4-M12X2-5POL                                                                        | ■                           | ■           | ■         | ■           | —             | ■          | ■           |
| CPX-M-AB-4-M12X2-5POL-T                                                                      | —                           | —           | —         | —           | —             | —          | —           |
| CPX-M-AB-8-M12X2-5POL                                                                        | —                           | —           | —         | —           | —             | —          | —           |

Key features – Electrical components

Electrical connection – Connection block  
CPX-AB-8-M8-3POL with connection socket M8, 3-pin



- Compact for pre-assembled individual connection
- 8 sockets
- 3-pin design for connecting one channel per socket

 **Note**

Festo delivers pre-assembled connecting cables M8/M12 (modular system NEBA) on request:

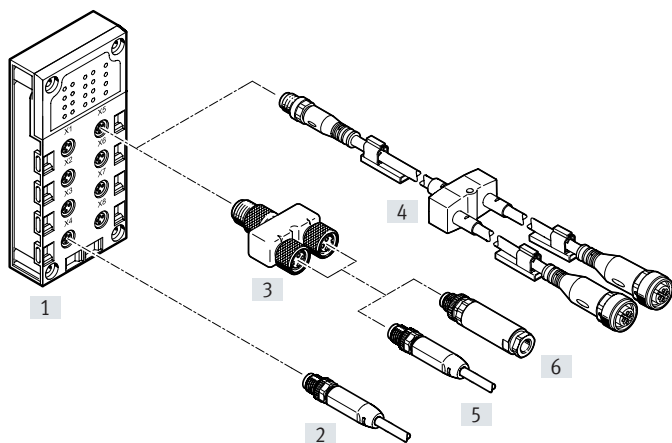
- Tailored to the application
- Perfect fit
- Easy to install

| Combination of connection block and electrical connection technology |                       |                                                                       |                       |
|----------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------|-----------------------|
| Manifold block                                                       | Connection technology | Plug connector/connecting cable                                       | Connection technology |
| [1] CPX-AB-8-M8-3POL                                                 | Socket, M8, 3-pin     | [2] NECB-S-M8G3-C2                                                    | Screw terminals       |
|                                                                      |                       | [3] NEBA-...-M8G3<br>(Modular system for choice of connecting cables) | Socket, M8, 3-pin     |
|                                                                      |                       |                                                                       | Socket, M8, 4-pin     |
|                                                                      |                       |                                                                       | Socket M12, 5-pin     |
|                                                                      |                       |                                                                       | Open cable end        |

## Key features – Electrical components

## Electrical connection – Connection block

CPX-AB-8-M8X2-4POL with connection socket M8, 4-pin



- Compact for pre-assembled individual connection
- 8 sockets
- 4-pin design for connecting 2 channels per socket

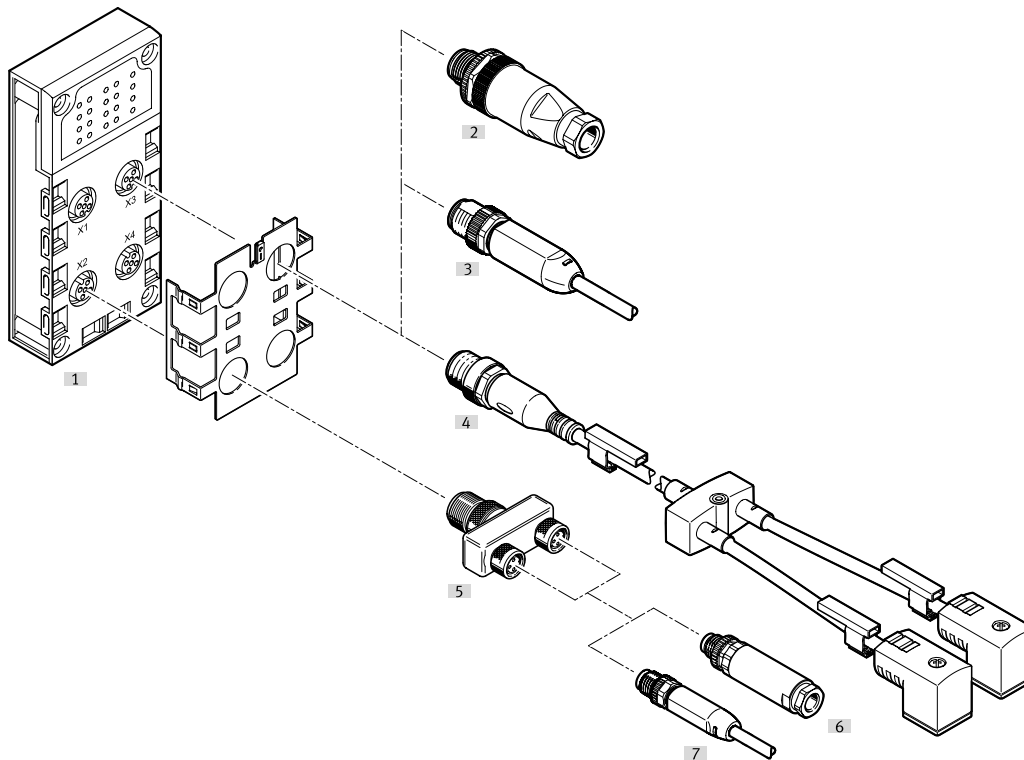
Combination of connection block and electrical connection technology

| Manifold block         | Connection technology | Plug connector/connecting cable                                                   | Connection technology                        | Plug connector/connecting cable                                       | Connection technology |
|------------------------|-----------------------|-----------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------|-----------------------|
| [1] CPX-AB-8-M8X2-4POL | Socket, M8, 4-pin     | [2] NEBA-...-M8G4<br>(Modular system for choice of connecting cables)             | Socket, M8, 3-pin                            | –                                                                     | –                     |
|                        |                       |                                                                                   | Socket, M8, 4-pin                            | –                                                                     | –                     |
|                        |                       |                                                                                   | Socket M12, 5-pin                            | –                                                                     | –                     |
|                        |                       |                                                                                   | Open cable end                               | –                                                                     | –                     |
|                        |                       | [3] NEDY-L2R1-V1-M8G3-N-M8G4<br>(T-adapter)                                       | 1x plug M8, 4-pin to<br>2x socket, M8, 3-pin | [6] NECB-S-M8G3-C2                                                    | Screw terminals       |
|                        |                       |                                                                                   |                                              | [5] NEBA-...-M8G3<br>(Modular system for choice of connecting cables) | Socket, M8, 3-pin     |
|                        |                       | [4] NEDY-...<br>(modular system for all types of sensor/<br>actuator distributor) | 2x socket, M8, 3-pin                         |                                                                       | Socket, M8, 4-pin     |
|                        |                       |                                                                                   | 2x socket, M8, 4-pin                         |                                                                       | Socket M12, 5-pin     |
|                        |                       |                                                                                   | 2x socket, M12, 5-pin                        |                                                                       | Open cable end        |
|                        |                       |                                                                                   | 2x socket, type A                            |                                                                       |                       |
|                        |                       |                                                                                   | 2x socket, type B                            |                                                                       |                       |
|                        |                       |                                                                                   | 2x socket, type C                            |                                                                       |                       |
|                        |                       |                                                                                   | 2x socket, plug pattern H                    |                                                                       |                       |
|                        |                       |                                                                                   | 2x socket, plug pattern ZB                   |                                                                       |                       |
|                        |                       |                                                                                   | 2x socket, plug pattern ZC                   |                                                                       |                       |
|                        |                       |                                                                                   | 2x open cable end                            |                                                                       |                       |

## Key features – Electrical components

### Electrical connection – Connection block

CPX-AB-4-M12x2-5POL and CPX-AB-4-M12x2-5PPOL-R with connection socket M12, 5-pin



- Suitable for self-assembly and sturdy with 2 channels per connection
- 4 sockets
- 5-pin design per connection
- Version ...-R with quick lock technology and metal thread for shielding
- With two channels per connection, the corresponding input signals can be easily connected via a T-adaptor and conventional cables with M8 connection.

## Key features – Electrical components

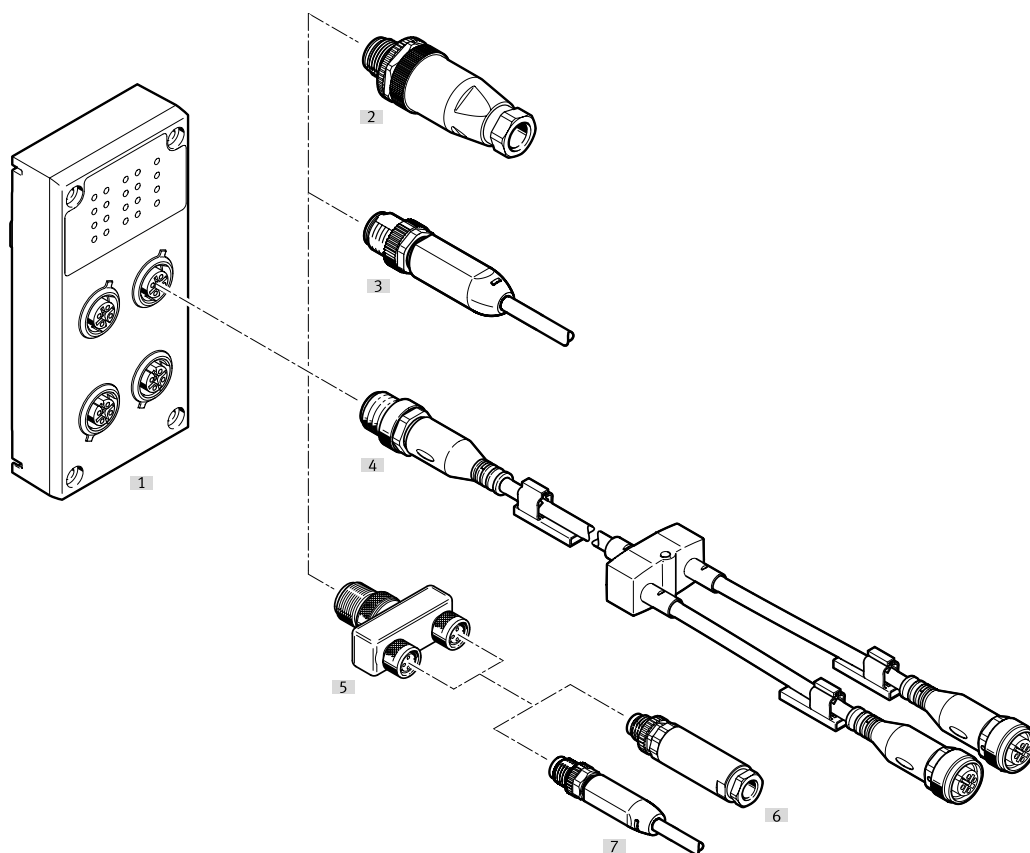
| Combination of connection block and electrical connection technology |                       |                                                                               |                                             |                                                                        |                                                                               |
|----------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Manifold block                                                       | Connection technology | Plug connector/connecting cable                                               | Connection technology                       | Plug connector/connecting cable                                        | Connection technology                                                         |
| [1]<br>CPX-AB-4-M12x2-5POL<br>CPX-AB-4-M12x2-5POL-R                  | Socket M12, 5-pin     | [2] NECB-S-M12G4-C2                                                           | Screw terminals                             | –                                                                      | –                                                                             |
|                                                                      |                       | [2] NECB-S-M12G5-C2                                                           | Screw terminals                             | –                                                                      | –                                                                             |
|                                                                      |                       | [2] NECB-S-M12G4-C2-D                                                         | Screw terminals, for two cables             | –                                                                      | –                                                                             |
|                                                                      |                       | [2] NECB-S-M12G5-C2-D                                                         | Screw terminals, for two cables             | –                                                                      | –                                                                             |
|                                                                      |                       | [3] NEBA-...-M12G5<br>(Modular system for choice of connecting cables)        | Socket, M8, 4-pin                           | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | Socket M12, 5-pin                           | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | Open cable end                              | –                                                                      | –                                                                             |
|                                                                      |                       | [4] NEDY-...<br>(modular system for all types of sensor/actuator distributor) | 2x socket, M8, 3-pin                        | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, M8, 4-pin                        | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, M12, 5-pin                       | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, type A                           | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, type B                           | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, type C                           | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, plug pattern H                   | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, plug pattern ZB                  | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x socket, plug pattern ZC                  | –                                                                      | –                                                                             |
|                                                                      |                       |                                                                               | 2x open cable end                           | –                                                                      | –                                                                             |
|                                                                      |                       | [5] NEDY-L2R1-V1-M8G3-N-M12G4<br>(T-adapter)                                  | Plug M12, 4-pin to<br>2x socket, M8, 3-pin  | [6] NECB-S-M8G3-C2                                                     | Screw terminals                                                               |
|                                                                      |                       |                                                                               |                                             | [7] NEBA-...-M8G3<br>(Modular system for choice of connecting cables)  | Socket, M8, 3-pin<br>Socket, M8, 4-pin<br>Socket M12, 5-pin<br>Open cable end |
|                                                                      |                       | [5] NEDY-L2R1-V1-M12G5-N-M12G4<br>(T-adapter)                                 | Plug M12, 4-pin to<br>2x socket, M12, 5-pin | [6] NECB-S-M12G4-C2                                                    | Screw terminals                                                               |
|                                                                      |                       |                                                                               |                                             | [6] NECB-S-M12G5-C2                                                    | Screw terminals                                                               |
|                                                                      |                       |                                                                               |                                             | [6] NECB-S-M12G4-C2-D                                                  | Screw terminals, for two cables                                               |
|                                                                      |                       |                                                                               |                                             | [6] NECB-S-M12G5-C2-D                                                  | Screw terminals, for two cables                                               |
|                                                                      |                       |                                                                               |                                             | [7] NEBA-...-M12G5<br>(Modular system for choice of connecting cables) | Socket, M8, 4-pin<br>Socket M12, 5-pin<br>Open cable end                      |
|                                                                      |                       |                                                                               |                                             |                                                                        |                                                                               |



## Key features – Electrical components

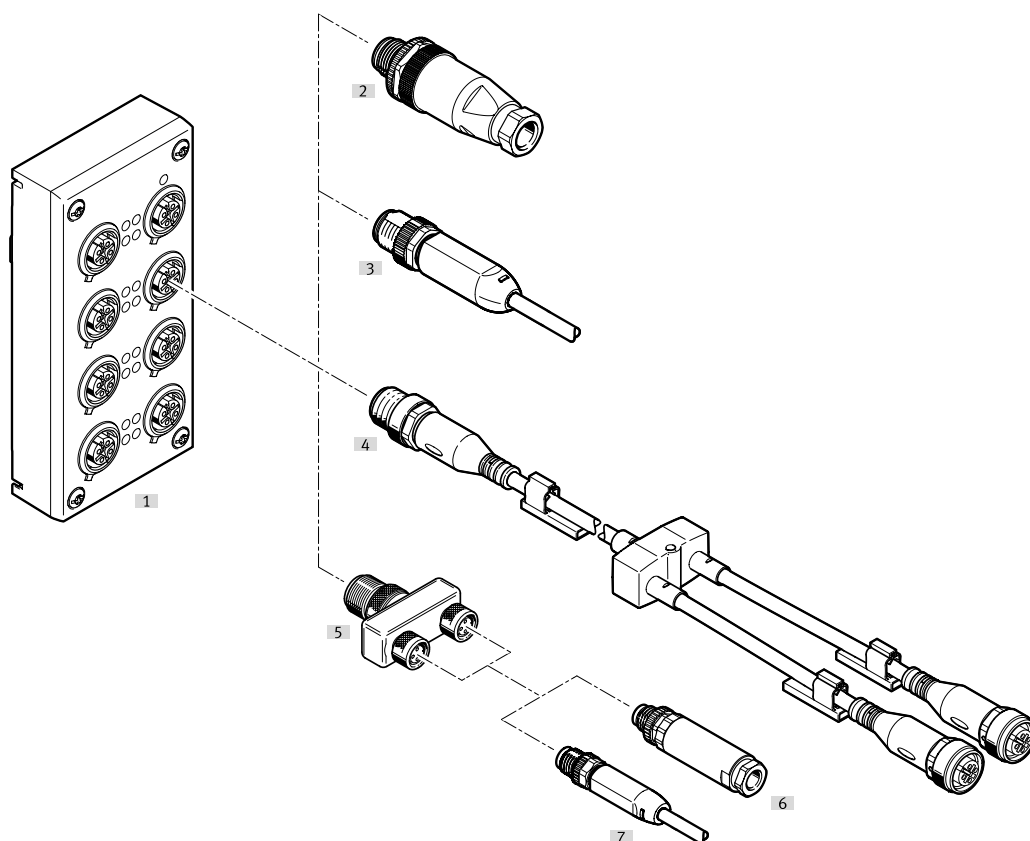
### Electrical connection – Connection block (metal design)

CPX-M-AB-4-M12X2-5POL and CPX-M-AB-4-M12X2-5POL-T with connection socket M12, 5-pin



- Suitable for self-assembly and sturdy with 2 channels per connection
- 4 sockets
- 5-pin design per connection
- With two channels per connection, the corresponding input signals can be easily connected via a T-adapter and conventional cables with M8 connection.

CPX-M-AB-8-M12X2-5POL and CPX-AB-8-M12X2-5POL with connection socket M12, 5-pin



- Suitable for self-assembly and sturdy with 2 channels per connection
- 8 sockets
- 5-pin design per socket
- With two channels per connection, the corresponding input signals can be easily connected via a T-adapter and conventional connecting cables with M8 connection.

#### Note

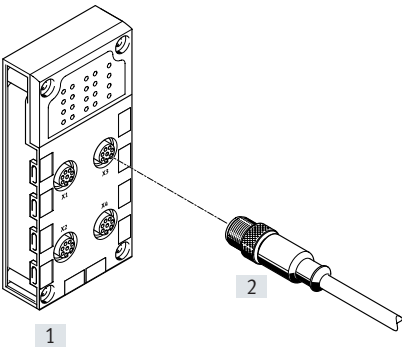
Max. 4 T-adapters (NEDY) can be mounted on a connection block.

## Key features – Electrical components

| Combination of connection block and electrical connection technology                                    |                       |                                                                               |                                             |                                                                        |                                                                               |
|---------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Manifold block                                                                                          | Connection technology | Plug connector/connecting cable                                               | Connection technology                       | Plug connector/connecting cable                                        | Connection technology                                                         |
| [1]<br>CPX-M-AB-4-M12X2-5POL<br>CPX-M-AB-4-M12X2-5POL-T<br>CPX-M-AB-8-M12X2-5POL<br>CPX-AB-8-M12X2-5POL | Socket M12, 5-pin     | [2] NECB-S-M12G4-C2                                                           | Screw terminals                             | –                                                                      | –                                                                             |
|                                                                                                         |                       | [2] NECB-S-M12G5-C2                                                           | Screw terminals                             | –                                                                      | –                                                                             |
|                                                                                                         |                       | [2] NECB-S-M12G4-C2-D                                                         | Screw terminals, for two cables             | –                                                                      | –                                                                             |
|                                                                                                         |                       | [2] NECB-S-M12G5-C2-D                                                         | Screw terminals, for two cables             | –                                                                      | –                                                                             |
|                                                                                                         |                       | [3] NEBA-...-M12G5<br>(Modular system for choice of connecting cables)        | Socket, M8, 4-pin                           | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | Socket M12, 5-pin                           | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | Open cable end                              | –                                                                      | –                                                                             |
|                                                                                                         |                       | [4] NEDY-...<br>(modular system for all types of sensor/actuator distributor) | 2x socket, M8, 3-pin                        | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, M8, 4-pin                        | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, M12, 5-pin                       | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, type A                           | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, type B                           | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, type C                           | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, plug pattern H                   | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, plug pattern ZB                  | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x socket, plug pattern ZC                  | –                                                                      | –                                                                             |
|                                                                                                         |                       |                                                                               | 2x open cable end                           | –                                                                      | –                                                                             |
|                                                                                                         |                       | [5] NEDY-L2R1-V1-M8G3-N-M12G4<br>(T-adapter)                                  | Plug M12, 4-pin to<br>2x socket, M8, 3-pin  | [6] NECB-S-M8G3-C2                                                     | Screw terminals                                                               |
|                                                                                                         |                       |                                                                               |                                             | [7] NEBA-...-M8G3<br>(Modular system for choice of connecting cables)  | Socket, M8, 3-pin<br>Socket, M8, 4-pin<br>Socket M12, 5-pin<br>Open cable end |
|                                                                                                         |                       | [5] NEDY-L2R1-V1-M12G5-N-M12G4<br>(T-adapter)                                 | Plug M12, 4-pin to<br>2x socket, M12, 5-pin | [6] NECB-S-M12G4-C2                                                    | Screw terminals                                                               |
|                                                                                                         |                       |                                                                               |                                             | [6] NECB-S-M12G5-C2                                                    | Screw terminals                                                               |
|                                                                                                         |                       |                                                                               |                                             | [6] NECB-S-M12G4-C2-D                                                  | Screw terminals, for two cables                                               |
|                                                                                                         |                       |                                                                               |                                             | [6] NECB-S-M12G5-C2-D                                                  | Screw terminals, for two cables                                               |
|                                                                                                         |                       |                                                                               |                                             | [7] NEBA-...-M12G5<br>(Modular system for choice of connecting cables) | Socket, M8, 4-pin<br>Socket M12, 5-pin<br>Open cable end                      |
|                                                                                                         |                       |                                                                               |                                             |                                                                        |                                                                               |

Key features – Electrical components

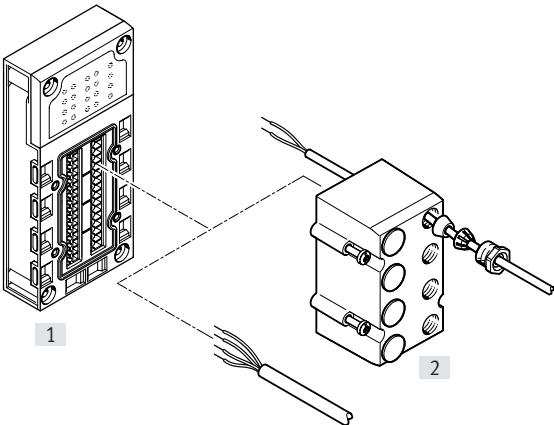
Electrical connection – Connection block  
CPX-AB-4-M12-8POL with connection socket M12, 8-pin



- Connection to cylinder/valve combinations with max. 3 inputs and 2 outputs
- 4 sockets
- 8-pin design per socket

| Combination of connection block and electrical connection technology |                       |                                                       |                       |
|----------------------------------------------------------------------|-----------------------|-------------------------------------------------------|-----------------------|
| Manifold block                                                       | Connection technology | Plug connector/connecting cable                       | Connection technology |
| [1] CPX-AB-4-M12-8POL                                                | Socket, M12, 8-pin    | [2] KM12-8GD8GS-2-PU (pre-assembled connecting cable) | Socket M12, 8-pin     |

CPX-AB-8-KL-4POL, CPX-2ZE2DA with spring-loaded terminal connection



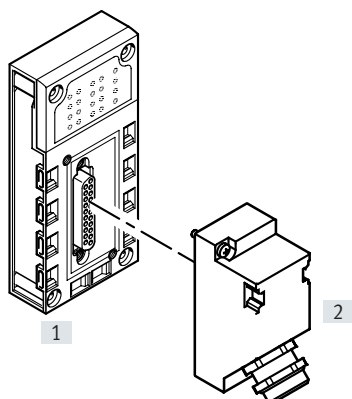
- Quick connection technology for use in control cabinets
- 32 spring-loaded terminals
- 4 spring-loaded terminals per channel
- Core cross-sections 0.05 ... 1.5 mm<sup>2</sup>
- Optional cover with fittings for IP65, IP67 connection
  - 8 through-holes M9
  - 1 through-hole M16
  - Blanking plug
  - For I/O distributors, control consoles or individual sensors/actuators

| Combination of connection block and electrical connection technology |                                 |                                 |                       |
|----------------------------------------------------------------------|---------------------------------|---------------------------------|-----------------------|
| Manifold block                                                       | Connection technology           | Plug connector/connecting cable | Connection technology |
| [1] CPX-AB-8-KL-4POL<br>CPX-2ZE2DA                                   | Spring-loaded terminals, 32-pin | [2] AK-8KL (covering hood)      | –                     |

## Key features – Electrical components

### Electrical connection – Connection block

CPX-AB-1-SUB-BU-25POL with Sub-D connection, 25-pin

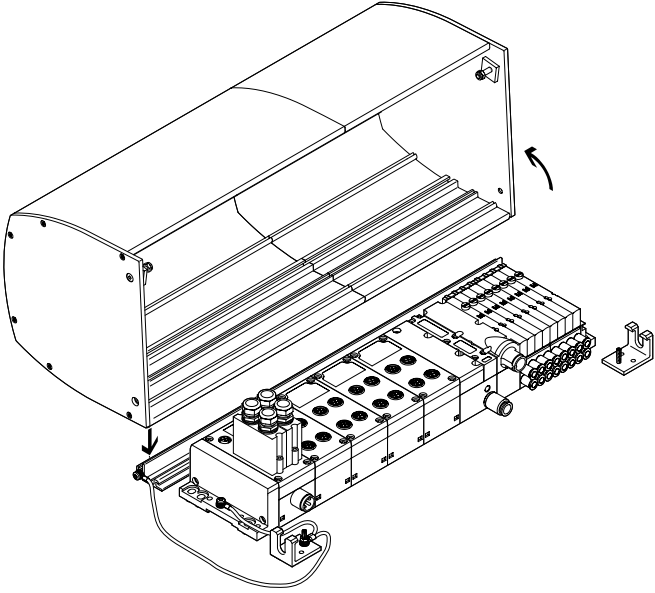


- Multi-pin connection for I/O distributors or control console
- One socket
- 25-pin design

Combination of connection block and electrical connection technology

| Manifold block            | Connection technology | Plug connector/connecting cable | Connection technology |
|---------------------------|-----------------------|---------------------------------|-----------------------|
| [1] CPX-AB-1-SUB-BU-25POL | Socket, sub-D, 25-pin | [2] SD-SUB-D-ST25               | Crimp contacts        |

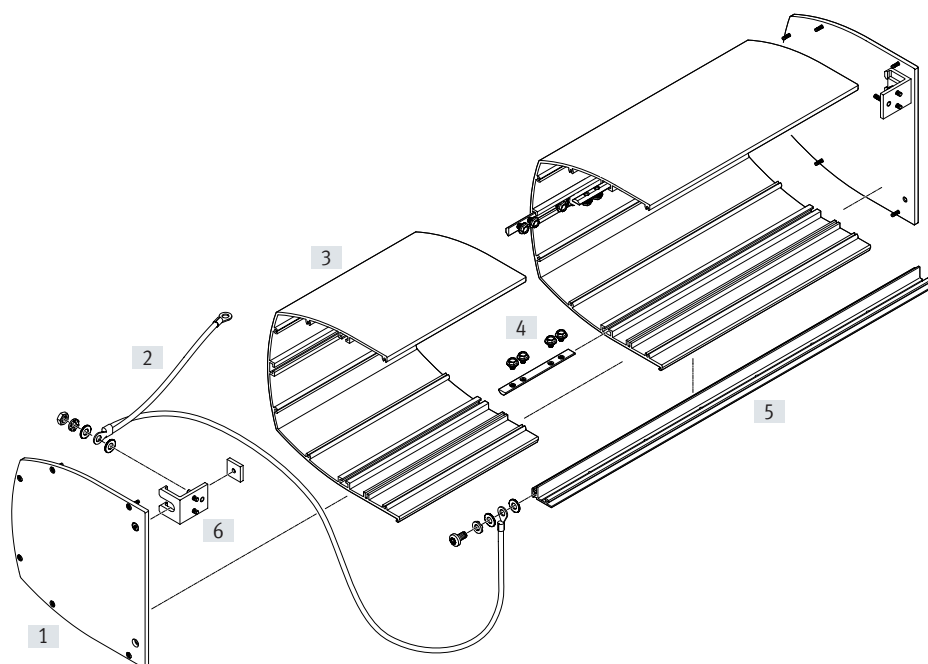
Key features – Mounting

| Hood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|
| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | → Page 218 |
| <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |            |
| <p>The CPX hood CAFC is a space- and cost-saving alternative to a control cabinet.</p> <p>It is designed as an extruded aluminium profile and is installed on a mounting plate.</p> <p>The valve terminal (CPX with MPA-S or MPA-L) is well protected and is quick to install without the need for complex cabinet through-feed for connecting cables and tubing.</p> <p>The rail and the two mounting brackets are mounted on a base plate. The hood is attached to the retaining rail and secured with two screws. There is also a stand-by position (detent of the hood in the open position).</p> <p>The hood is locked using two side screws (which meet the requirements for a special fastener in compliance with ATEX).</p> <p>The CPX hood can be ordered online using the valve terminal configurator.</p> |  |            |
| Advantages of the CPX hood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |            |
| <ul style="list-style-type: none"><li>• Impact protection (min. 7 J) for the modules underneath in combination with a suitable mounting plate provided by the user</li><li>• Protection against electrostatic discharge by using electrically conductive materials and the option of connecting an earth wire</li><li>• Protection against disconnection of live plug connectors (by securing the hood with at least one special fastener to EN 60079-0, 9.2 and 20)</li><li>• UV protection for the CPX and MPA modules underneath</li></ul>                                                                                                                                                                                                                                                                        |  |            |
| Points to note when using the CPX hood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |            |
| <ul style="list-style-type: none"><li>• Only in combination with valve terminal MPA-S and MPA-L</li><li>• No bus nodes with push-pull connection (CPX-M-FB45)</li><li>• CPX power supply via angled plugs, no T plugs, no push-pull</li><li>• Electrical supply plate/additional supply only possible with angled plug</li><li>• No MPA vertical stacking</li><li>• Larger push-in fittings (for tubing O.D. larger than 12 mm) can only be used with the angled version</li><li>• Ducted exhaust air only with elbow connector</li><li>• The permissible ambient temperature range of the valve terminal is reduced by 5 °C.</li></ul>                                                                                                                                                                              |  |            |
| <div><div></div><div><b>Note</b><br/>The CPX hood has no influence on the ATEX classification of the valve terminal or of the CPX terminal.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |            |
| <div><div></div><div>The CPX hood has no influence on the IP degree of protection of the valve terminal or of the CPX terminal.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |            |
| <div><div></div><div>The CPX hood does not protect against the effects of the weather in installations that are not in enclosed spaces.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |            |

## Key features – Mounting

## Hood

## Assembly



## Procedure:

- Assemble the rail and mounting bracket included in the mounting kit
- Attach the earthing cable
- Assemble the hood (if applicable, screw together several hood sections and attach the side covers)
- Attach and secure the hood

- [1] Side cover
- [2] Earthing cable
- [3] Hood section
- [4] Slot nut with screws, for joining the hood sections
- [5] Rail
- [6] Mounting bracket

## Technical data

## Weight:

- Hood: approx. 500 g per 100 mm of length
- Mounting rail: approx. 550 g per 1000 mm of length
- Side pieces: approx. 500 g per side

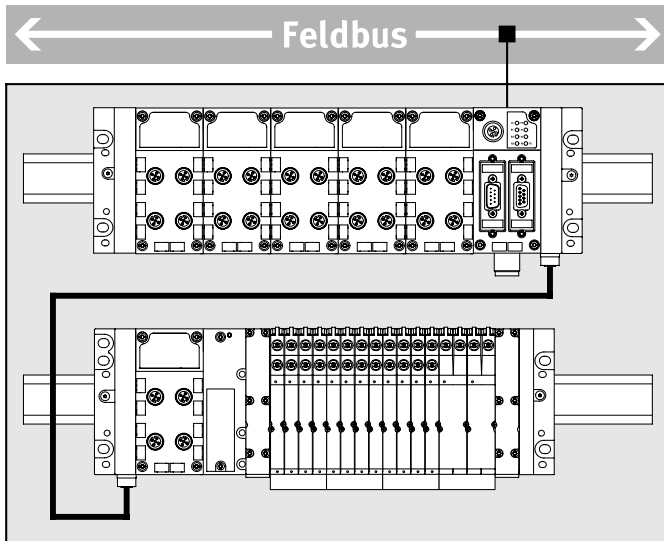
- Ambient temperature  $-5 \dots +50^{\circ}\text{C}$

- RoHS-compliant

## Key features – Mounting

### Extension

#### Operating principle



The extension enables the CPX terminal to be separated into or configured as two interconnected units (series). The two parts are controlled by a common bus node or control block. A comprehensive CPX terminal can fit into limited installation spaces more easily than two more compact units.

#### Applications:

- Installation in a control cabinet on two levels, one beneath the other
- Installation in two separate control cabinets
- Installation of part of the CPX terminal inside and part outside the control cabinet
- Spatial separation of electrics and pneumatics

### Performance limits

- A maximum of 10 CPX modules can be installed in the first row
  - A maximum of 8 CPX modules and a pneumatic interface can be installed in the second row
- The number of CPX modules and solenoid coils is also limited by:
- the address space made available by the control block/bus node
  - their address requirement
  - their current consumption

### Optimisation

The maximum possible performance or maximum number of modules can only be achieved if the following conditions are observed:

- The control block/bus node is installed in the first row, on the far right, on an interlinking block with system supply
- The connecting cable between the first and second row is max. 2 m long
- An interlinking block with additional supply for valves is situated in the second row

### Configuration rules

The extension limits the power supply for the sensors and electronics for the CPX terminal as a whole as follows:

- First row max. 6 A
- Second row max. 2 A
- First and second row together, max. 6 A

When using the 3 m connecting cable, the following restrictions apply:

- There can only be one CPX module in the second row
- An additional supply for valves is required in order to connect a valve terminal

When positioning output modules in the second row, a corresponding power supply in the second row is required:

- Install an interlinking block with additional supply for outputs in the second row to the left of the first output module

## Key features – Mounting

| Extension – Permissible CPX modules             |                                              |                                                                                    |                 |
|-------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------|-----------------|
|                                                 | Type                                         | First row                                                                          | Second row      |
| Control blocks                                  | CPX-CEC                                      | Permissible, at least one control block or bus node required                       | Not permissible |
| Bus node                                        | CPX-FB<br>CPX-M-FB                           | Permissible, at least one control block or bus node required                       | Not permissible |
| Technology modules                              | CPX-CP<br>CPX-CTEL<br>CPX-CTEL-2<br>CPX-CMAX | Permissible                                                                        | Not permissible |
| Input/output modules                            | CPX                                          | Permissible                                                                        | Permissible     |
| PROFIsafe shut-off module                       | CPX-FVDA-P2                                  | Not permissible                                                                    | Not permissible |
| Interlinking block/end plate with system supply | CPX-EPL-EV-S<br>CPX-GE-EV-S<br>CPX-M-GE-EV-S | Permissible, at least one interlinking block/end plate with system supply required | Not permissible |
| Interlinking block with additional supply       | CPX-GE-EV-Z<br>CPX-M-GE-EV-Z<br>CPX-GE-EV-V  | Permissible                                                                        | Permissible     |
| Interlinking block without power supply         | CPX-GE-EV<br>CPX-M-GE-EV                     | Permissible                                                                        | Permissible     |
| Interlinking block with forwarding supply       | CPX-M-GE-EV-W                                | Not permissible                                                                    | Not permissible |
| Pneumatic interface                             | VMPA-FB                                      | Not permissible                                                                    | Permissible     |
|                                                 | VMPAL-EPL-CPX                                | Not permissible                                                                    | Permissible     |
|                                                 | VABA-S6-1                                    | Not permissible                                                                    | Permissible     |
|                                                 | VABA-S6-1...CB                               | Not permissible                                                                    | Not permissible |



## Key features – Mounting

| Extension – Maximum number of CPX modules/solenoid coils                                                                                                                                                                                                           |                |                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special features of the design                                                                                                                                                                                                                                     | First row      | Second row                                                                                                                                                                                                                                                                                                                     |
| CPX terminal with valve terminal                                                                                                                                                                                                                                   |                |                                                                                                                                                                                                                                                                                                                                |
| Connecting cable 3 m                                                                                                                                                                                                                                               | 10 CPX modules | Valve terminal MPA-S with: <ul style="list-style-type: none"><li>• Pneumatic interface for CPX metal interlinking module</li><li>• Electrical supply plate VMPA-FB-SP directly after the pneumatic interface</li><li>• Electronics modules with galvanic isolation</li><li>• 128 solenoid coils (64 valve positions)</li></ul> |
|                                                                                                                                                                                                                                                                    |                | Valve terminal VTSA/VTSA-F with: <ul style="list-style-type: none"><li>• 1 CPX module with interlinking block with additional supply for valves</li><li>• 32 solenoid coils (32 valve positions)</li></ul>                                                                                                                     |
| CPX terminal without valve terminal                                                                                                                                                                                                                                |                |                                                                                                                                                                                                                                                                                                                                |
| • Control block/bus node not in position on the far right of the first row                                                                                                                                                                                         | 10 CPX modules | • 2 ... 5 CPX modules, depending on the control block/bus node used                                                                                                                                                                                                                                                            |
| • Control block/bus node in position on the far right of the first row                                                                                                                                                                                             | 10 CPX modules | • 4 ... 8 CPX modules, depending on the control block/bus node used                                                                                                                                                                                                                                                            |
| CPX terminal with valve terminal MPA-S                                                                                                                                                                                                                             |                |                                                                                                                                                                                                                                                                                                                                |
| –                                                                                                                                                                                                                                                                  | 10 CPX modules | • 2 ... 5 CPX modules and connection blocks MPA-S, depending on the control block/bus node used                                                                                                                                                                                                                                |
| <ul style="list-style-type: none"><li>• Electrical supply plates VMPA-FB-SP</li><li>• Electronics modules with galvanic isolation</li></ul>                                                                                                                        | 10 CPX modules | <ul style="list-style-type: none"><li>• 2 ... 5 CPX modules, depending on the control block/bus node used</li><li>• Up to 128 solenoid coils (64 valve positions)</li></ul>                                                                                                                                                    |
| <ul style="list-style-type: none"><li>• Control block/bus node in position on the far right of the first row</li><li>• CPX-FB11 or CPX-CEC not possible</li></ul>                                                                                                  | 10 CPX modules | • 4 ... 5 CPX modules and connection blocks MPA-S, depending on the control block/bus node used                                                                                                                                                                                                                                |
| <ul style="list-style-type: none"><li>• CPX-FB13 or CPX-FB36</li><li>• Control block/bus node in position on the far right of the first row</li><li>• Interlinking block with system supply in position on the far right of the first row</li></ul>                | 10 CPX modules | • 8 CPX modules and connection blocks MPA-S                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"><li>• CPX-FB13 or CPX-FB36</li><li>• Control block/bus node in position on the far right of the first row</li><li>• Interlinking block with additional supply for valves in position on the far right of the first row</li></ul> | 10 CPX modules | • 8 CPX modules and connection blocks MPA-S                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"><li>• CPX-FB13 or CPX-FB36</li><li>• Control block/bus node in position on the far right of the first row</li><li>• Interlinking block with additional supply for valves in second row</li></ul>                                 | 10 CPX modules | • 8 CPX modules and connection blocks MPA-S                                                                                                                                                                                                                                                                                    |

## Key features – Mounting

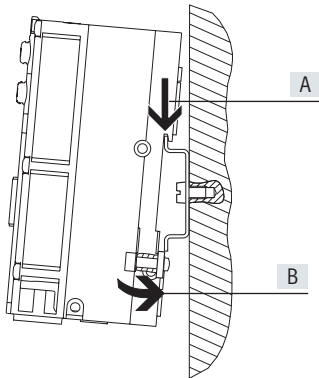
| Extension – Maximum number of CPX modules/solenoid coils             |                |                                                                                                                                                                                                          |
|----------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special features of the design                                       | First row      | Second row                                                                                                                                                                                               |
| <b>CPX terminal with valve terminal MPA-L</b>                        |                |                                                                                                                                                                                                          |
| –                                                                    | 10 CPX modules | <ul style="list-style-type: none"> <li>• 2 CPX modules (at least one CPX module required)</li> <li>• 16 solenoid coils (valve widths 10 mm and 14 mm) or 8 solenoid coils (valve width 20 mm)</li> </ul> |
| • Interlinking block with additional supply for valves in second row | 10 CPX modules | <ul style="list-style-type: none"> <li>• 2 CPX modules (at least one CPX module required)</li> <li>• 32 solenoid coils (32 valve positions)</li> </ul>                                                   |
| <b>CPX terminal with valve terminal VTSA/VTSA-F</b>                  |                |                                                                                                                                                                                                          |
| –                                                                    | 10 CPX modules | <ul style="list-style-type: none"> <li>• 2 CPX modules</li> <li>• 12 solenoid coils (valve widths 18 mm, 26 mm and 42 mm) or 6 solenoid coils (valve widths 52 mm and 65 mm)</li> </ul>                  |
| • Interlinking block with additional supply for valves in second row | 10 CPX modules | <ul style="list-style-type: none"> <li>• 2 CPX modules</li> <li>• 32 solenoid coils (32 valve positions)</li> </ul>                                                                                      |

## Key features – Mounting

### Mounting options

The valve terminals with CPX terminal support different mounting types for direct machine mounting with a high degree of protection and control cabinet installation.

#### DIN rail mounting



The DIN rail mounting is part of the rear profile of the CPX interlinking blocks. The CPX terminal can be attached to the DIN rail using the DIN rail mounting kit. The CPX terminal is first hooked onto the DIN rail (see arrow [A]),

then swivelled onto the DIN rail and secured in place with the clamping element (see arrow [B]). The optional earthing plate enables a connection to be established to the machine potential/earth in one easy step.

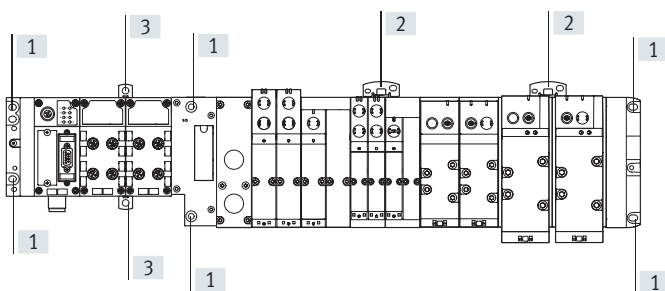
The following mounting kit is needed for DIN rail mounting:

- CPX-CPA-BG-NRH

This enables the CPX terminal to be mounted on DIN rails in accordance with EN 60715.

An additional mounting kit may be required for combination with valve terminals.

#### Wall mounting



The end plates of the CPX terminal, the valve terminal and the pneumatic interface include mounting holes [1] for wall mounting. Additional mounting components [2] for the CPX terminal are available for longer valve terminals.

These mountings differ depending on the design of the CPX terminal (polymer or metal).

In the case of 4 and more interlinking blocks, additional wall mountings must be used every 100 ...150 mm:

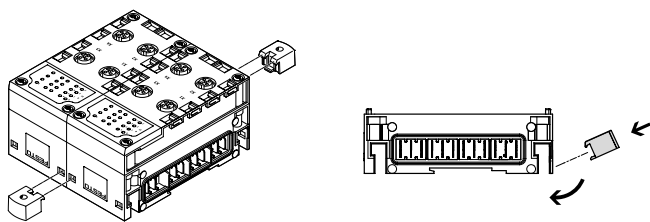
- Type CPX-M-BG-RW (metal design). These wall mountings are screwed in at the top on the CPX module.

- Type CPX-BG-RW (polymer design). These wall mountings are hooked in at the top and bottom between the CPX modules.

## Key features – Mounting

### CPX terminal in polymer design

#### Additional mountings



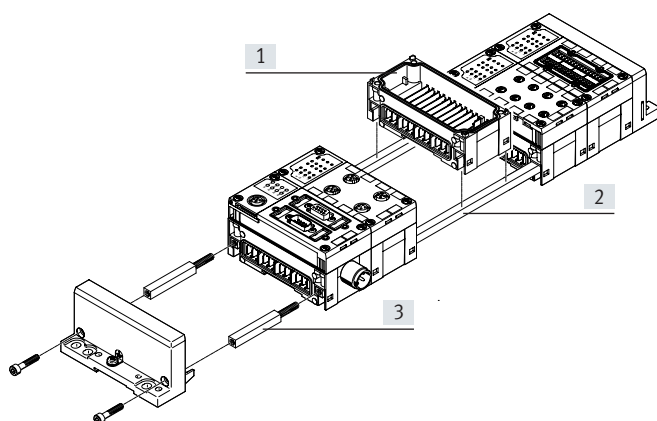
Additional mounting components for the CPX terminal that can be fitted between two modules are available for longer valve terminals.



#### Note

For CPX terminals with 4 or more interlinking blocks: you need additional mounting components of type CPX-BG-RW every 100 or 150 mm. These are supplied pre-assembled.

#### Interlinking with tie rods



The mechanical connection between the CPX modules is created using special tie rods [2]. The entire unit can be assembled using two screws in the end plates.

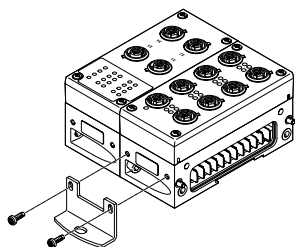
The tie rod ensures that the unit has a high mechanical load-bearing capacity and is therefore the mechanical “back-bone” of the CPX terminal.

The open design allows interlinking blocks [1] to be replaced when already mounted.

With the tie rod extension kit [3] an extra module can be added to the CPX terminal.

### CPX terminal in metal design

#### Additional mountings



Additional mounting brackets for the CPX terminal that can be screwed onto the interlinking blocks are available for longer valve terminals.

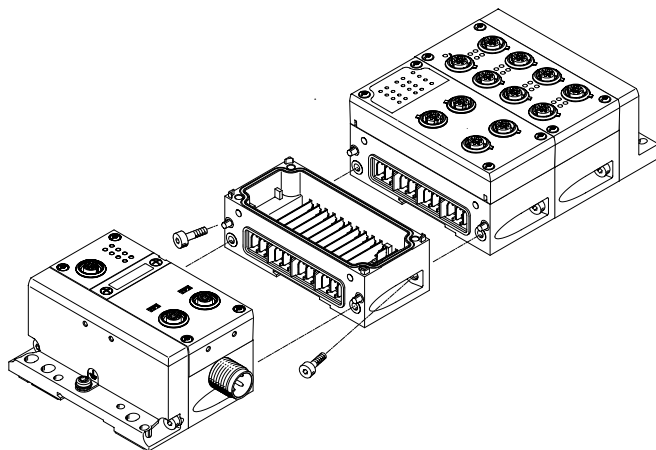
The mounting bracket CPX-M-BG-VT-2X enables a CPX terminal with valve terminal VTSA/VTSA-F/VTSA-F-CB to be mounted on a support system.



#### Note

For CPX terminals with 4 or more interlinking blocks, additional mounting brackets of the type CPX-M-BG-RW must be used every 100 or 150 mm. These are supplied pre-assembled.

#### Linking with screws

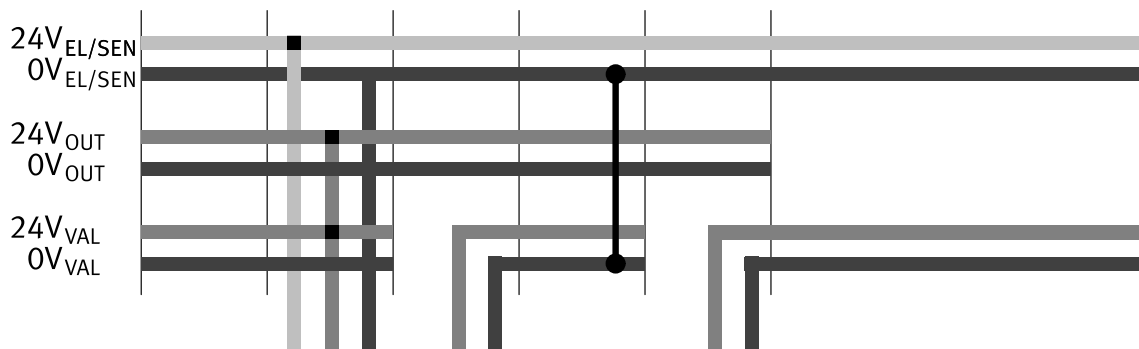
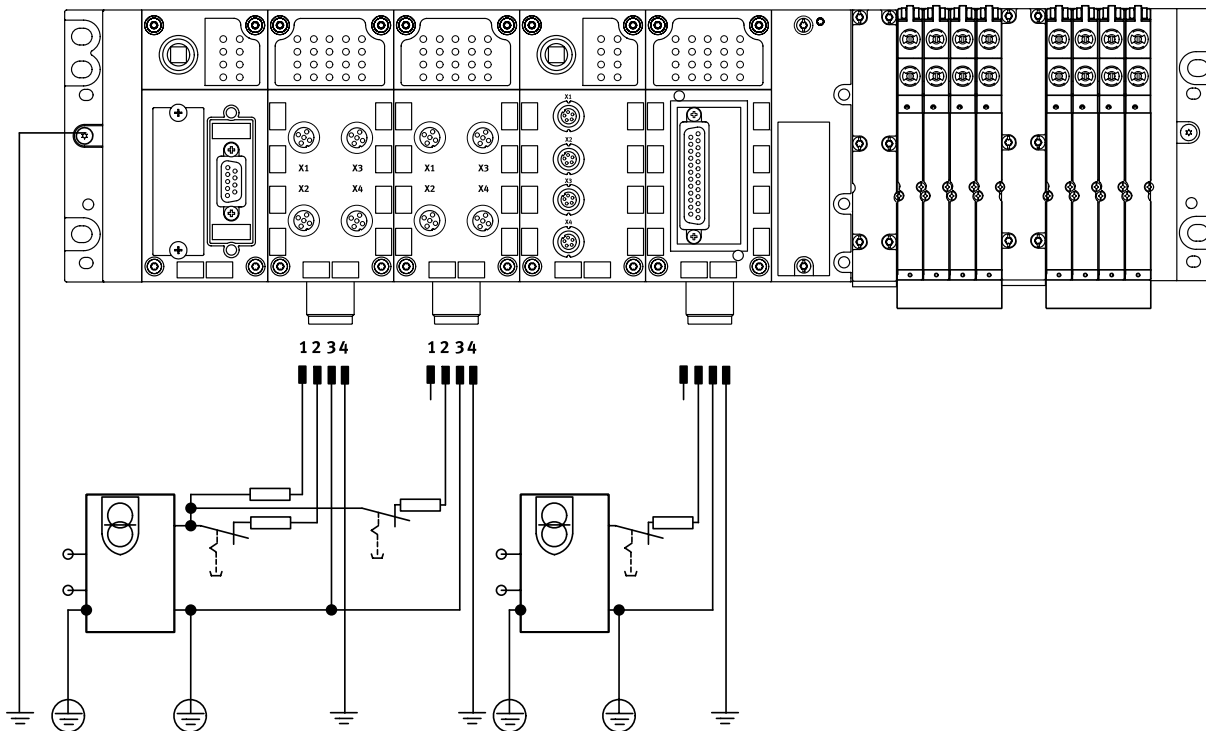


The CPX modules are mechanically connected using an angled fitting. The CPX terminal can thus be expanded at any time.

## Key features – Power supply

### Power supply concept

General



The use of decentralised devices on the fieldbus – particularly with a high degree of protection for direct mounting on the machine – requires a flexible power supply concept.

A valve terminal with CPX is, in principle, supplied with all voltages via a single connection.

A distinction is made between the supply for

- Electronics plus sensors
- Valves plus actuators

in this case.

Choice of connection technology:

- M18
- 7/8"
- M12x1
- AIDA push-pull

### Interlinking blocks

Interlinking blocks represent the backbone of the CPX terminal with all supply lines. They provide the power supply for the modules used on them as well as their bus connections.

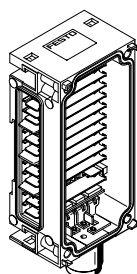
Many applications require the CPX terminal to be separated into voltage zones. This applies in particular to the separate disconnection of solenoid coils and outputs.

The interlinking blocks provide either an easy-to-install central power supply for the entire CPX terminal or galvanically isolated, all-pin disconnectable potential groups/voltage segments.

## Key features – Power supply

## Interlinking blocks

## With system supply



## Polymer design

- CPX-GE-EV-S
- CPX-GE-EV-S-7/8-4POL
- CPX-GE-EV-S-7/8-5POL

## Metal design

- CPX-M-GE-EV-S-7/8-CIP-4P
- CPX-M-GE-EV-S-7/8-5POL
- CPX-M-GE-EV-S-M12-5POL
- CPX-M-GE-EV-S-PP-5POL

## Connection technology

- M18, 4 pin
- 7/8" 4-pin
- 7/8" 5-pin

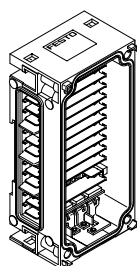
## Connection technology

- 7/8" 4-pin
- 7/8" 5-pin
- M12x1, L-coded, 5-pin
- AIDA push-pull, 5-pin

## Power supply

- For CPX terminal modules and connected sensors
- For valves that are connected to the CPX terminal via a pneumatic interface
- For actuators that are connected to the output modules of the CPX terminal

## Without power supply



## Polymer design

- CPX-GE-EV

## Metal design

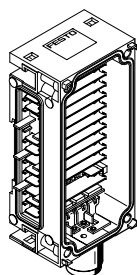
- CPX-M-GE-EV
- CPX-M-GE-EV-FVO

–

–

–

## With additional supply for outputs



## Polymer design

- CPX-GE-EV-Z
- CPX-GE-EV-Z-7/8-4POL
- CPX-GE-EV-Z-7/8-5POL

## Metal design

- CPX-M-GE-EV-Z-7/8-5POL
- CPX-M-GE-EV-Z-PP-5POL

## Connection technology

- M18, 4 pin
- 7/8" 4-pin
- 7/8" 5-pin

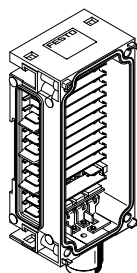
## Connection technology

- 7/8" 5-pin
- AIDA push-pull, 5-pin

## Power supply

- For actuators that are connected to output modules of the CPX terminal

## With additional supply for valves



## Polymer design

- CPX-GE-EV-V

## Connection technology

- M18, 4 pin

## Power supply

- For valves that are connected to the CPX terminal via a pneumatic interface

## Note

For 7/8":

- Commercially available accessories are often limited to max. 8 A

## Note

The valve terminal MPA-S has either a 7/8" 5-pin, 7/8" 4-pin, 3-pin M18 or 5-pin AIDA push-pull power supply for one or more valve voltage zones. Galvanically isolated, all-pin disconnectable with voltage monitoring in the following MPA module.

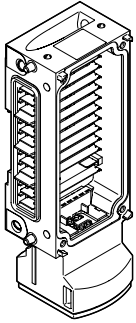
## Note

Suitable versions of the interlinking blocks with M18 and 7/8", 5-pin connection are available (CPX-GE-EV-...-VL and CPX-M-GE-EV-...-VL) for use in ATEX environments as per certification (→ page 48). The maximum current supply for these interlinking blocks is 8 A.

## Key features – Power supply

### Interlinking blocks

With system forwarding



#### Metal design

- CPX-M-GE-EV-W-M12-5POL

#### Connection technology

- M12x1, L-coded, 5-pin

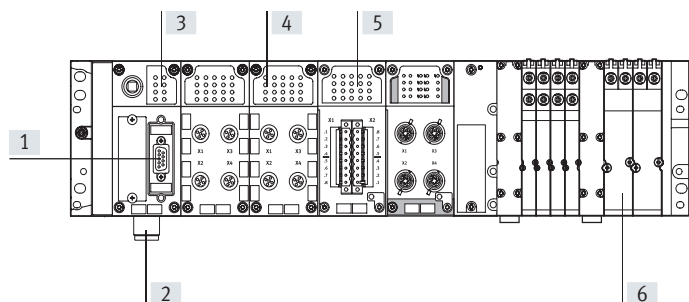
#### Power transmission

- For a further CPX terminal

## Key features – Diagnostics

### Diagnostics

#### System performance



- [1] Diagnostics via bus interface
- [2] Undervoltage monitoring
- [3] Diagnostic overview LED
  - Fieldbus status
  - CPX status
- [4] Status and diagnostic LED for module and I/O channels
- [5] Module and channel-specific diagnostics
- [6] Valve-specific diagnostic module and solenoid coils
- [7] MPA pressure sensor – integrated solution on the fieldbus
  - Pre-assembled for channels 1, 3, 5 and external pressures

Detailed diagnostic functions are needed in order to quickly locate the causes of errors in the electrical installation and therefore reduce downtimes in production plants.

A basic distinction is made between on-the-spot diagnostics using LEDs or a diagnostic interface and diagnostics using a bus interface.

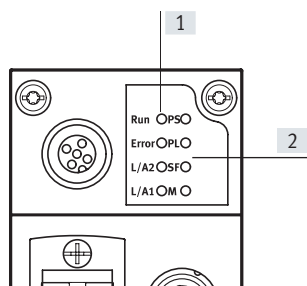
The CPX terminal supports on-the-spot diagnostics via a row of LEDs. This is separate from the connection area and therefore provides good visual access to status and diagnostic information.

Module and channel-specific diagnostics are supported, for example:

- Undervoltage detection for outputs and valves
- Short-circuit detection for sensors, outputs and valves
- Open-load detection for a missing solenoid coil
- Saving the last 40 causes of errors with error start and error end

The diagnostic messages can be read out via the bus interface in the higher-order controller and visualised for the central recording and evaluation of error causes. This is done using the individual fieldbus-specific channels. CPX-CECs also offer the option of access via the integrated Ethernet interface (remote maintenance via PC/web applications).

#### Overview of LEDs on the bus node



#### [1] Fieldbus-specific LEDs

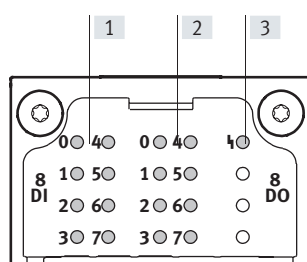
On each bus node, a maximum of 4 fieldbus-specific LEDs indicate the fieldbus communication status of the CPX terminal with the higher-order controller.

#### [2] CPX-specific LEDs

A further 4 CPX-specific LEDs provide non-fieldbus-specific information about the status of the CPX terminal, for example:

- Power system
- Power load
- System error
- Modify parameters

#### Input/output module status and diagnostic LEDs



#### [1] Status LEDs for the inputs and outputs

Each input and output channel is assigned a status LED.

[2] Channel-related diagnostic LEDs  
Depending on the module design, another diagnostic LED is available for each I/O channel

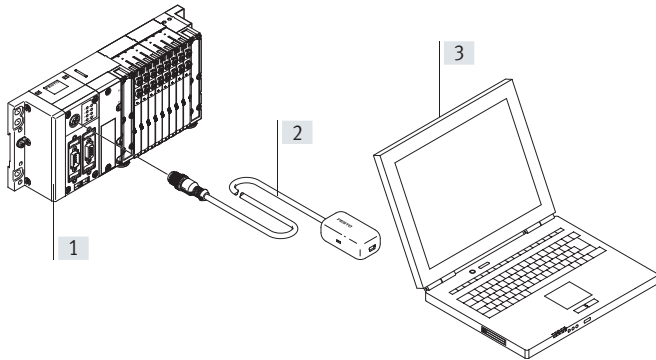
[3] Group diagnostic LEDs  
An LED indicates the group diagnostics for each module



## Key features – Diagnostics

### Diagnostics

Display on a PC



- [1] CPX terminal with valve terminal
- [2] Adapter diagnostic interface to USB
- [3] Laptop/portable device with USB interface and installed FMT software
  - Error location and type
  - Without programming
  - Saving the configuration
  - Preparing screenshots

## Key features – Parameterisation

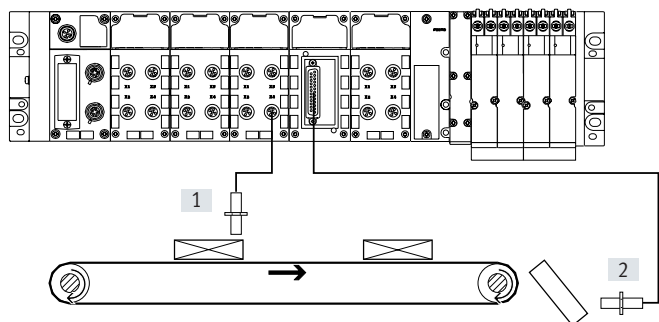
### Parameterisation

Changes to the application are often required during commissioning. The parameterisable characteristics of the CPX modules mean that functions can be very easily changed using configuration software. This reduces the number of modules needed and, consequently, the amount of storage space required.

It is therefore possible, for example, to reduce the input debounce time for an input module – normally 3 ms – to 0.1 ms on a "fast" input module for faster processes, or to set the response of a valve following a fieldbus interruption.

Depending on the modules used, parameterisation can be carried out via the following interfaces:

- Ethernet
- Fieldbus
- Control block direct interface (programming interface)



- [1] Input debounce time 3 ms
- [2] Input debounce time 0.1 ms

## Key features – Addressing

## Addressing

The various CPX modules occupy a different number of I/O addresses within the CPX system. The maximum address space for bus nodes depends on the performance of the fieldbus systems.

Maximum system configuration:

- 1 bus node or control block
- 9 I/O modules
- 1 pneumatic interface (e.g. pneumatic interface MPA-S with up to 16 MPA connection blocks)

The maximum system configuration can be limited in individual cases by exceeding the address space.

**Note**

Please refer to the detailed description of the configuration/addressing rules in the technical data for CPX bus nodes.

## Overview – Address space for CPX bus node and control block

|             | Protocol                                                                                                                       | Max. total |         | Max. digital |         | Max. analogue |         |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|------------|---------|--------------|---------|---------------|---------|
|             |                                                                                                                                | Inputs     | Outputs | Inputs       | Outputs | Inputs        | Outputs |
| CPX-CEC     | <ul style="list-style-type: none"> <li>• CODESYS Level 2</li> <li>• TCP/IP</li> <li>• Easy IP</li> <li>• Modbus TCP</li> </ul> | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB11    | DeviceNet®                                                                                                                     | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB13    | PROFIBUS                                                                                                                       | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB23-24 | CC-Link®                                                                                                                       | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB36    | EtherNet/IP                                                                                                                    | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB37    | EtherCAT®                                                                                                                      | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB39    | Sercos III                                                                                                                     | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB40    | POWERLINK                                                                                                                      | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-FB43    | PROFINET RT                                                                                                                    | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-M-FB44  | PROFINET RT                                                                                                                    | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |
| CPX-M-FB45  | PROFINET RT                                                                                                                    | 512 bit    | 512 bit | 512 DI       | 512 DO  | 32 AI         | 18 AO   |

**Note**

The bandwidth of the bus nodes can be restricted by the choice of module and the maximum number of modules.

## Example of CPX-FB43 (PROFINET RT)

|                        | Digital inputs | Digital outputs | Remarks                                                                                                                                                                            |
|------------------------|----------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1x CPX-CTEL-4-M12-5POL | 256            | 256             | <ul style="list-style-type: none"> <li>• The address space is occupied by 7 CPX I/O modules plus pneumatic interface</li> <li>• No additional modules can be configured</li> </ul> |
| 2x CPX-2ZE2DA          | 192            | 192             |                                                                                                                                                                                    |
| 4x CPX-16DE            | 64             | –               |                                                                                                                                                                                    |
| 8x VMPPA1              | –              | 64              |                                                                                                                                                                                    |
| Assigned address space | 512            | 512             |                                                                                                                                                                                    |

DI = Digital inputs (1 bit)

DO = Digital outputs (1 bit)

AO = Analogue outputs (16 bits)

AI = Analogue inputs (16 bits)

## Key features – Addressing

| Overview – Allocated addresses for CPX modules |                                           |                                           |
|------------------------------------------------|-------------------------------------------|-------------------------------------------|
|                                                | Inputs [bit]                              | Outputs [bit]                             |
| CPX-CP-4-FB                                    | 16, 32, 48, 64, 80, 96, 128 <sup>1)</sup> | 16, 32, 48, 64, 80, 96, 128 <sup>1)</sup> |
| CPX-CTEL-4-M12-5POL                            | 0, 64, 128, 192, 256 <sup>1)</sup>        | 0, 64, 128, 192, 256 <sup>1)</sup>        |
| CPX-CTEL-2-M12-5POL-LK                         | 64, 128, 192, 256 <sup>1)</sup>           | 64, 128, 192, 256 <sup>1)</sup>           |
| CPX-CMAX-C1-1                                  | 64                                        | 64                                        |
| CPX-4DE                                        | 4                                         | –                                         |
| CPX-8DE                                        | 8                                         | –                                         |
| CPX-8DE-D                                      | 8                                         | –                                         |
| CPX-8NDE                                       | 8                                         | –                                         |
| CPX-F8DE-P                                     | 48                                        | 56                                        |
| CPX-16DE                                       | 16                                        | –                                         |
| CPX-M-16DE-D                                   | 16                                        | –                                         |
| CPX-L-16DE-16-KL-3POL                          | 16                                        | –                                         |
| CPX-4DA                                        | –                                         | 4                                         |
| CPX-8DA                                        | –                                         | 8                                         |
| CPX-8DA-H                                      | –                                         | 8                                         |
| CPX-8DE-8DA                                    | 8                                         | 8                                         |
| CPX-L-8DE-8DA-16-KL-3POL                       | 8                                         | 8                                         |
| CPX-2ZE2DA                                     | 96                                        | 96                                        |
| CPX-2AE-U-I                                    | 2 x 16                                    | –                                         |
| CPX-4AE-U-I                                    | 4 x 16                                    | –                                         |
| CPX-4AE-I                                      | 4 x 16                                    | –                                         |
| CPX-4AE-P-B2                                   | 4 x 16                                    | –                                         |
| CPX-4AE-P-D10                                  | 4 x 16                                    | –                                         |
| CPX-4AE-T                                      | 4 x 16                                    | –                                         |
| CPX-4AE-TC                                     | 4 x 16                                    | –                                         |
| CPX-2AA-U-I                                    | –                                         | 2 x 16                                    |
| CPX-FVDA-P2                                    | 48                                        | 48                                        |
| VMPA1-FB-EMS-8                                 | –                                         | 8                                         |
| VMPA1-FB-EMG-8                                 | –                                         | 8                                         |
| VMPA2-FB-EMS-4                                 | –                                         | 4                                         |
| VMPA2-FB-EMG-4                                 | –                                         | 4                                         |
| VMPA1-FB-EMS-D2-8                              | –                                         | 8                                         |
| VMPA1-FB-EMG-D2-8                              | –                                         | 8                                         |
| VMPA2-FB-EMS-D2-4                              | –                                         | 4                                         |
| VMPA2-FB-EMG-D2-4                              | –                                         | 4                                         |
| VMPA-FB-PS-1                                   | 16                                        | –                                         |
| VMPA-FB-PS-3/5                                 | 16                                        | –                                         |
| VMPA-FB-PS-P1                                  | 16                                        | –                                         |
| VMPA-FB-EMG-P1                                 | 16                                        | 16                                        |
| VMPAL-EPL-CPX                                  | –                                         | 4, 8, 16, 24, 32 <sup>1)</sup>            |
| VABA-S6-1-X1                                   | –                                         | 8, 16, 24, 32 <sup>1)</sup>               |
| VABA-S6-1-X2                                   | –                                         | 8, 16, 24, 32 <sup>1)</sup>               |
| VABA-S6-1-X2-D                                 | 8, 16, 24, 32 <sup>1)</sup>               | 8, 16, 24, 32 <sup>1)</sup>               |
| VABA-S6-1-X1-CB                                | –                                         | 8, 16, 24 <sup>1)</sup>                   |
| VABA-S6-1-X2-CB                                | –                                         | 8, 16, 24 <sup>1)</sup>                   |
| VABA-S6-1-X2-F1-CB                             | –                                         | 8, 16, 24 <sup>1)</sup>                   |
| VABA-S6-1-X2-F2-CB                             | –                                         | 8, 16, 24 <sup>1)</sup>                   |
| VABA-S6-1-X1-3V-CB                             | –                                         | 8, 16, 24 <sup>1)</sup>                   |
| VABA-S6-1-X2-3V-CB                             | –                                         | 8, 16, 24 <sup>1)</sup>                   |

1) Dependent on the DIL switch setting on the module

Datasheet

 Module width  
50 mm

 Repair service



 **Note**  
The data given here apply to the CPX system. If components that conform to lower values are used in the system, the specification for the entire system is reduced to the values for those components.

**Example**  
Degree of protection IP65/IP67 applies only to the fully assembled system with fitted plugs or covers (which must also conform to IP65/IP67).  
If components with a lower degree of protection are used, the protection level of the entire system is reduced to the degree of protection of the component with the lowest degree of protection, for example CageClamp connection block with degree of protection IP20 or MPA pneumatics with degree of protection IP65.

| General technical data               |                                                                                        |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                            |
|--------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module no.                           |                                                                                        | 197330                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                            |
| Max. number of modules <sup>1)</sup> | Control block                                                                          | 1                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                            |
|                                      | Bus node                                                                               | 1                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                            |
|                                      | I/O modules/CP interface/CTEL interface/electrical interface CPX-CTEL-2/axis interface | 9                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                            |
|                                      | Pneumatic interface                                                                    | 1                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                            |
| Max. address capacity                | Inputs                                                                                 | [byte]                                                                                                                                                                                                                                                                            | 64                                                                                                                                                                                                                         |
|                                      | Outputs                                                                                | [byte]                                                                                                                                                                                                                                                                            | 64                                                                                                                                                                                                                         |
| Internal cycle time                  |                                                                                        | [ms]                                                                                                                                                                                                                                                                              | < 1                                                                                                                                                                                                                        |
| Configuration support                |                                                                                        | Fieldbus-specific                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                            |
| LED displays                         | Bus node/control block/gateway                                                         |                                                                                                                                                                                                                                                                                   | Up to 4 LEDs, bus-specific<br>4 LEDs, CPX-specific <ul style="list-style-type: none"><li>• PS = Power system</li><li>• PL = Power load</li><li>• SF = System error</li><li>• M = Modify parameter/forcing active</li></ul> |
|                                      | I/O modules                                                                            |                                                                                                                                                                                                                                                                                   | Min. one group diagnostic LED<br>Channel-oriented status and diagnostic LED, depending on the module                                                                                                                       |
|                                      | Pneumatic interface                                                                    |                                                                                                                                                                                                                                                                                   | One group diagnostic LED<br>Valve status LED on valve                                                                                                                                                                      |
| Diagnostics                          |                                                                                        | <ul style="list-style-type: none"><li>• Channel- and module-orientated diagnostics for inputs/outputs and valves</li><li>• Detecting the module undervoltage for the different potential values</li><li>• Storage of the last 40 errors with timestamp (acyclic access)</li></ul> |                                                                                                                                                                                                                            |

1) A maximum of 11 modules in total can be combined.  
(e.g. 1 control block + 9 I/O modules + 1 pneumatic interface, or 1 control block + 1 bus node + 8 I/O modules + 1 pneumatic interface)

## Datasheet

|                                                                      |                                       |                                                                                                                                              |
|----------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General technical data</b>                                        |                                       |                                                                                                                                              |
| Module no.                                                           |                                       | 197330                                                                                                                                       |
| Parameterisation                                                     |                                       | Diagnostic behaviour                                                                                                                         |
|                                                                      |                                       | Fail-safe response                                                                                                                           |
|                                                                      |                                       | Forcing of channels                                                                                                                          |
|                                                                      |                                       | Signal setup                                                                                                                                 |
| Commissioning support                                                |                                       | Forcing of inputs and outputs                                                                                                                |
| Degree of protection to EN 60529                                     |                                       | IP65, IP67                                                                                                                                   |
| Nominal operating voltage                                            | [V DC]                                | 24                                                                                                                                           |
| Operating voltage range                                              | [V DC]                                | 18 ... 30                                                                                                                                    |
| Power supply                                                         | Interlinking block with system supply |                                                                                                                                              |
|                                                                      | Electronics plus sensors              |                                                                                                                                              |
|                                                                      | Actuators plus valves                 | [A]                                                                                                                                          |
|                                                                      |                                       | [A]                                                                                                                                          |
|                                                                      | Additional supply                     |                                                                                                                                              |
|                                                                      | Actuators                             | [A]                                                                                                                                          |
|                                                                      | Additional power supply for valves    | [A]                                                                                                                                          |
| Current consumption                                                  |                                       | Depending on the system configuration                                                                                                        |
| Power failure buffering (bus electronics only)                       | [ms]                                  | 10                                                                                                                                           |
| Power supply connection                                              |                                       | M18, 4 pin                                                                                                                                   |
|                                                                      |                                       | 7/8" 5-pin                                                                                                                                   |
|                                                                      |                                       | 7/8" 4-pin                                                                                                                                   |
|                                                                      |                                       | AIDA push-pull, 5-pin                                                                                                                        |
| Fuse concept                                                         |                                       | Per module with electronic fuses                                                                                                             |
| Tests                                                                | Vibration test to DIN IEC 68          | <ul style="list-style-type: none"> <li>• With wall mounting: severity level 2</li> <li>• With DIN rail mounting: severity level 1</li> </ul> |
|                                                                      | Shock test to DIN IEC 68              | <ul style="list-style-type: none"> <li>• With wall mounting: severity level 2</li> <li>• With DIN rail mounting: severity level 1</li> </ul> |
| LABS (PWIS) conformity                                               |                                       | VDMA24364-B2-L                                                                                                                               |
| Immunity to interference                                             |                                       | EN 61000-6-2 (industry)                                                                                                                      |
| Interference emission                                                |                                       | EN 61000-6-4 (industry)                                                                                                                      |
| Isolation test for galvanically isolated circuits to IEC 1131 Part 2 | [V DC]                                | 500                                                                                                                                          |
| Galvanic isolation of electrical voltages                            | [V DC]                                | 80                                                                                                                                           |
| Protection against direct and indirect contact                       |                                       | PELV                                                                                                                                         |
| Materials                                                            |                                       | End plates: Die-cast aluminium                                                                                                               |
| Grid dimension                                                       | [mm]                                  | 50                                                                                                                                           |
| <b>Operating and environmental conditions</b>                        |                                       |                                                                                                                                              |
| Module no.                                                           |                                       | 197330                                                                                                                                       |
| Ambient temperature                                                  | [°C]                                  | −5 ... +50                                                                                                                                   |
| Storage temperature                                                  | [°C]                                  | −20 ... +70                                                                                                                                  |

Datasheet

| Certifications and approvals – Maximum values              |                                             |
|------------------------------------------------------------|---------------------------------------------|
| Module no.                                                 | 197330                                      |
| ATEX category for gas                                      | II 3G                                       |
| Type of ignition protection for gas                        | Ex ec IICT4 Gc X                            |
| Explosion-proof ambient temperature [°C]                   | –5 ≤ Ta ≤ +50                               |
| CE marking (see declaration of conformity) <sup>2)</sup>   | To EU Explosion Protection Directive (ATEX) |
|                                                            | To EU EMC Directive <sup>1)</sup>           |
|                                                            | To EU RoHS Directive                        |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | To UK explosion regulations                 |
|                                                            | To UK EMC regulations                       |
|                                                            | To UK RoHS regulations                      |
| KC marking                                                 | KC EMC                                      |
| Degree of protection to EN 60529                           | IP65, IP67                                  |
| Certification                                              | c UL us – Recognized (OL)                   |
|                                                            | RCM                                         |
| Explosion protection certification outside the EU          | EPL Gc (Ru)                                 |
|                                                            | EPL Gc (GB)                                 |

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) d Support/Downloads.  
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) More information [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

 **Note**

The values indicated represent the maximum performance limits that can be achieved with the fully assembled product. Depending on the individual components used, the actual value achieved for the overall product may be lower. You can select e.g. the individual components required to achieve the ATEX category by choosing the corresponding features in the online product configurator:

→ [Internet:cpx](http://Internet:cpx)

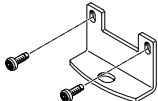
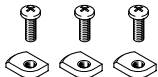
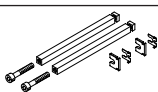
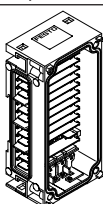
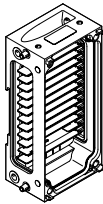
## Datasheet

| Weight [g]     |                                                                                                                                         |     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----|
| Control block  | CEC                                                                                                                                     | 155 |
|                | CEC...V3                                                                                                                                | 135 |
| Bus node       | FB11                                                                                                                                    | 120 |
|                | FB13                                                                                                                                    | 115 |
|                | FB23-24                                                                                                                                 | 115 |
|                | FB36                                                                                                                                    | 125 |
|                | FB37                                                                                                                                    | 125 |
|                | FB39                                                                                                                                    | 125 |
|                | FB40                                                                                                                                    | 125 |
|                | FB43                                                                                                                                    | 185 |
|                | FB44                                                                                                                                    | 280 |
|                | FB45                                                                                                                                    | 280 |
| I/O module     | 4 digital outputs                                                                                                                       | 42  |
|                | 4 digital inputs                                                                                                                        | 39  |
|                | 8 digital inputs                                                                                                                        | 39  |
|                | 8 digital inputs, positive logic (PNP), enhanced diagnostic function                                                                    | 45  |
|                | 8 digital inputs, negative logic (NPN)                                                                                                  | 40  |
|                | 16 digital inputs, internal electronic fuse per module                                                                                  | 41  |
|                | 16 digital inputs, internal electronic fuse per channel pair, for CPX in metal                                                          | 46  |
|                | 16 digital inputs, for CPX in polymer, including interlinking block and connection block with spring-loaded terminals                   | 167 |
|                | 8 digital inputs, 8 digital outputs                                                                                                     | 48  |
|                | 8 digital inputs, 8 digital outputs, for CPX in polymer, including interlinking block and connection block with spring-loaded terminals | 171 |
|                | 8 digital outputs, power supply 0.5 A per channel                                                                                       | 49  |
|                | 8 digital outputs, power supply 2.1 A per channel pair                                                                                  | 48  |
|                | 2 analogue current or voltage inputs                                                                                                    | 48  |
|                | 4 analogue current inputs                                                                                                               | 47  |
|                | 2 analogue current or voltage outputs                                                                                                   | 49  |
|                | 2 or 4 analogue temperature inputs                                                                                                      | 47  |
|                | 4 analogue temperature inputs, with 2-conductor connection for a PT1000 sensor for cold junction compensation                           | 46  |
|                | 4 analogue pressure inputs                                                                                                              | 115 |
| PROFIsafe      | Shut-off module                                                                                                                         | 50  |
|                | Input module                                                                                                                            | 46  |
| Counter module | 2ZE2DA                                                                                                                                  | 130 |
| CP interface   | CP                                                                                                                                      | 139 |
| CTEL interface | CTEL                                                                                                                                    | 110 |

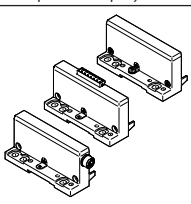
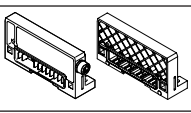
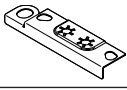
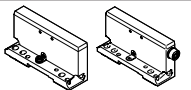
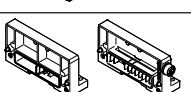
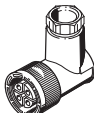
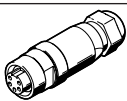
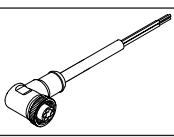
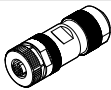
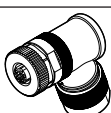
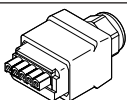
| Weight [g]                   |                                                                                   |       |
|------------------------------|-----------------------------------------------------------------------------------|-------|
| Electrical interface         | CTEL-2                                                                            | 110   |
| Axis controller              | CMAx                                                                              | 140   |
| Polymer connection block     | 8-way, M8 3-pin                                                                   | 62    |
|                              | 8-way, M8 4-pin                                                                   | 65    |
|                              | 4-way, M12 5-pin                                                                  | 60    |
|                              | 4-way, M12 5-pin, quick lock, shielded with metal thread                          | 87    |
|                              | 8-way, M12 5-pin                                                                  | 76    |
|                              | 4-way, M12 8-pin                                                                  | 65    |
|                              | Spring-loaded terminal, 32-pin                                                    | 75    |
|                              | Sub-D 25-pin                                                                      | 72    |
| Metal connection block       | 8-way, DIL switch                                                                 | 57    |
|                              | 4-way, M12 5-pin                                                                  | 112   |
|                              | 4-way, M12 5-pin, pulsed sensor supply                                            | 110   |
|                              | 8-way, M12 5-pin                                                                  | 152   |
| Polymer interlinking block   | Without power supply                                                              | 108   |
|                              | System supply                                                                     | 125   |
| Interlinking block, metal    | Without power supply                                                              | 169   |
|                              | System supply, 7/8" 4-pin                                                         | 228   |
|                              | System supply, 7/8" 5-pin                                                         | 187   |
|                              | System supply, M12x1                                                              | 279   |
|                              | System supply, push-pull                                                          | 279   |
|                              | System forwarding, M12x1                                                          | 279   |
| Tie rods                     | 1 block                                                                           | 41    |
|                              | 2 blocks                                                                          | 71    |
|                              | 3 blocks                                                                          | 97    |
|                              | 4 blocks                                                                          | 127   |
|                              | 5 blocks                                                                          | 156   |
|                              | 6 blocks                                                                          | 173   |
|                              | 7 blocks                                                                          | 199   |
|                              | 8 blocks                                                                          | 247   |
|                              | 9 blocks                                                                          | 274   |
|                              | 10 blocks                                                                         | 301   |
| End plate for polymer design | Left                                                                              | 110   |
|                              | Left, with system supply                                                          | 145   |
|                              | Right                                                                             | 110   |
| End plate for metal design   | Left                                                                              | 113   |
| End plate with extension     | Left                                                                              | 190   |
|                              | Right                                                                             | 175   |
| Pneumatic interface          | MPA-S                                                                             | 238.4 |
|                              | VTSA/VTSA-F                                                                       | 590   |
|                              | VTSA-F-CB without voltage zones                                                   | 560   |
|                              | VTSA-F-CB with safe voltage zones                                                 | 734   |
|                              | VTSA-F-CB with safe voltage zones and power supply for external consuming devices | 754   |
|                              | VTSA-F-CB with external power supply                                              | 580   |



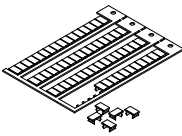
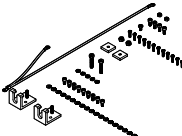
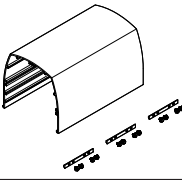
## Datasheet

| Ordering data – Accessories                                                        |                                                                                                            |                                    | Part no.    | Type                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------|-------------|---------------------------|
| Designation                                                                        |                                                                                                            |                                    |             |                           |
| Mounting                                                                           |                                                                                                            |                                    |             |                           |
|    | Attachment for wall mounting (for long valve terminals, pack of 10), design for polymer manifold sub-bases |                                    | 529040      | CPX-BG-RW-10x             |
|    | Attachment for wall mounting, version for metal manifold sub-bases                                         | 2 mounting brackets, 4 screws      | 550217      | CPX-M-BG-RW-2X            |
|                                                                                    |                                                                                                            | 1 mounting bracket, 2 screws       | 2721419     | CPX-M-BG-VT-2X            |
|    | Mounting for DIN rail                                                                                      | CPX without pneumatic components   | 526032      | CPX-CPA-BG-NRH            |
|                                                                                    |                                                                                                            | CPX-VTSA                           |             |                           |
|                                                                                    |                                                                                                            | CPX-VTSA-F                         |             |                           |
|                                                                                    |                                                                                                            | CPX-MPA                            |             |                           |
|                                                                                    |                                                                                                            |                                    |             |                           |
| Tie rods                                                                           |                                                                                                            |                                    |             |                           |
|    | Tie rod CPX                                                                                                | Extension, 1 block                 | 525418      | CPX-ZA-1-E                |
|                                                                                    |                                                                                                            | 1 block                            | 195718      | CPX-ZA-1                  |
|                                                                                    |                                                                                                            | 2 blocks                           | 195720      | CPX-ZA-2                  |
|                                                                                    |                                                                                                            | 3 blocks                           | 195722      | CPX-ZA-3                  |
|                                                                                    |                                                                                                            | 4 blocks                           | 195724      | CPX-ZA-4                  |
|                                                                                    |                                                                                                            | 5 blocks                           | 195726      | CPX-ZA-5                  |
|                                                                                    |                                                                                                            | 6 blocks                           | 195728      | CPX-ZA-6                  |
|                                                                                    |                                                                                                            | 7 blocks                           | 195730      | CPX-ZA-7                  |
|                                                                                    |                                                                                                            | 8 blocks                           | 195732      | CPX-ZA-8                  |
|                                                                                    |                                                                                                            | 9 blocks                           | 195734      | CPX-ZA-9                  |
|                                                                                    | 10 blocks                                                                                                  | 195736                             | CPX-ZA-10   |                           |
|                                                                                    |                                                                                                            |                                    |             |                           |
| Polymer interlinking block                                                         |                                                                                                            |                                    |             |                           |
|  | Without power supply                                                                                       | –                                  | 195742      | CPX-GE-EV                 |
|                                                                                    | With system supply                                                                                         | M18                                | 195746      | CPX-GE-EV-S               |
|                                                                                    |                                                                                                            | M18, for ATEX environment          | 8022170     | CPX-GE-EV-S-VL            |
|                                                                                    |                                                                                                            | 7/8" – 4-pin                       | 541248      | CPX-GE-EV-S-7/8-4POL      |
|                                                                                    |                                                                                                            | 7/8" – 5-pin                       | 541244      | CPX-GE-EV-S-7/8-5POL      |
|                                                                                    |                                                                                                            | 7/8" – 5-pin, for ATEX environment | 8022172     | CPX-GE-EV-S-7/8-5POL-VL   |
|                                                                                    | With additional supply for outputs                                                                         | M18                                | 195744      | CPX-GE-EV-Z               |
|                                                                                    |                                                                                                            | 7/8" – 4-pin                       | 541250      | CPX-GE-EV-Z-7/8-4POL      |
|                                                                                    |                                                                                                            | 7/8" – 5-pin                       | 541246      | CPX-GE-EV-Z-7/8-5POL      |
| With additional supply for valves                                                  | M18                                                                                                        | 533577                             | CPX-GE-EV-V |                           |
|                                                                                    |                                                                                                            |                                    |             |                           |
| Interlinking block, metal                                                          |                                                                                                            |                                    |             |                           |
|  | Without power supply                                                                                       | –                                  | 550206      | CPX-M-GE-EV               |
|                                                                                    |                                                                                                            | For CPX-FVDA-P2 only               | 567806      | CPX-M-GE-EV-FVO           |
|                                                                                    | With system supply                                                                                         | 7/8" – 4-pin                       | 568956      | CPX-M-GE-EV-S-7/8-CIP-4P  |
|                                                                                    |                                                                                                            | 7/8" – 5-pin                       | 550208      | CPX-M-GE-EV-S-7/8-5POL    |
|                                                                                    |                                                                                                            | 7/8" – 5-pin, for ATEX environment | 8022165     | CPX-M-GE-EV-S-7/8-5POL-VL |
|                                                                                    |                                                                                                            | M12x1, L-coded, 5-pin              | 8098392     | CPX-M-GE-EV-S-M12-5POL    |
|                                                                                    |                                                                                                            | Push-pull – 5-pin                  | 563057      | CPX-M-GE-EV-S-PP-5POL     |
|                                                                                    | With additional supply for outputs                                                                         | 7/8" – 5-pin                       | 550210      | CPX-M-GE-EV-Z-7/8-5POL    |
|                                                                                    |                                                                                                            | Push-pull – 5-pin                  | 563058      | CPX-M-GE-EV-Z-PP-5POL     |
|                                                                                    | With system forwarding                                                                                     | M12x1, L-coded, 5-pin              | 8098391     | CPX-M-GE-EV-W-M12-5POL    |

## Datasheet

| Ordering data – Accessories                                                                                                                           |                                                                                     |                                   |          |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|----------|----------------------|
| Designation                                                                                                                                           |                                                                                     |                                   | Part no. | Type                 |
| Mounting accessories                                                                                                                                  |                                                                                     |                                   |          |                      |
|                                                                      | Screws for mounting the bus node/connection block on the polymer interlinking block | Bus node/metal connection block   | 550218   | CPX-DPT-30X32-S-4X   |
|                                                                                                                                                       | Screws for mounting the bus node/connection block on the metal interlinking block   | Bus node/polymer connection block | 550219   | CPX-M-M3x22-4x       |
|                                                                                                                                                       |                                                                                     | Bus node/metal connection block   | 550216   | CPX-M-M3x22-S-4x     |
| End plates for polymer design                                                                                                                         |                                                                                     |                                   |          |                      |
|                                                                      | Left end plate                                                                      | –                                 | 195716   | CPX-EPL-EV           |
|                                                                                                                                                       |                                                                                     | With system supply                | 576315   | CPX-EPL-EV-S         |
|                                                                                                                                                       |                                                                                     | With extension                    | 576314   | CPX-EPL-EV-X         |
|                                                                      | Right end plate                                                                     | –                                 | 195714   | CPX-EPR-EV           |
|                                                                                                                                                       |                                                                                     | With extension                    | 576313   | CPX-EPR-EV-X         |
|                                                                      | Earthing component for right/left end plate                                         | Pack of 5                         | 538892   | CPX-EPFE-EV          |
| End plates for metal design                                                                                                                           |                                                                                     |                                   |          |                      |
|                                                                     | Left end plate                                                                      | –                                 | 550212   | CPX-M-EPL-EV         |
|                                                                                                                                                       |                                                                                     | With extension                    | 576317   | CPX-M-EPL-EV-X       |
|                                                                    | Right end plate                                                                     | –                                 | 550214   | CPX-M-EPR-EV         |
|                                                                                                                                                       |                                                                                     | With extension                    | 576316   | CPX-M-EPR-EV-X       |
| Power supply                                                                                                                                          |                                                                                     |                                   |          |                      |
|                                                                    | Plug socket for mains connection M18x1, straight, 4-pin                             | For 1.5 mm2                       | 18493    | NTSD-GD-9            |
|                                                                                                                                                       |                                                                                     | For 2.5 mm²                       | 18526    | NTSD-GD-13,5         |
|                                                                                                                                                       | Plug socket for mains connection M18x1, angled, 4-pin                               | For 1.5 mm2                       | 18527    | NTSD-WD-9            |
|                                                                                                                                                       |                                                                                     | For 2.5 mm²                       | 533119   | NTSD-WD-11           |
|                                        | Plug socket for mains connection 7/8", straight, 5-pin                              | 0.25 ... 2.0 mm²                  | 543107   | NECU-G78G5-C2        |
|                                                                                                                                                       | Plug socket for mains connection 7/8", straight, 4-pin                              | 0.25 ... 2.0 mm²                  | 543108   | NECU-G78G4-C2        |
|  | Plug socket for mains connection 7/8", angled, 5-pin – open cable end, 5-core       | 2 m                               | 573855   | NEBU-G78W5-K-2-N-LE5 |
|                                                                    | Power supply socket M12x1, L-coded, straight                                        | 5-pin                             | 8166793  | NECL-L12G5-C2-Q10    |
|                                                                                                                                                       | Power supply plug M12x1, L-coded, straight                                          | 5-pin                             | 8166791  | NECL-S-L12G5-C2-Q10  |
|                                                                    | Power supply socket M12x1, L-coded, angled                                          | 5-pin                             | 8166794  | NECL-L12W5-C2-Q10    |
|                                                                                                                                                       | Power supply plug M12x1, L-coded, angled                                            | 5-pin                             | 8166792  | NECL-S-L12W5-C2-Q10  |
|                                                                    | Push-pull power supply socket, plug pattern PP, fulfils requirements to AIDA        | 5-pin                             | 5195383  | NECU-M-PPG5PP-C1-PN  |
|                                                                    | Straight plug, spring-loaded terminal, for left-hand end plate with system supply   | 7-pin                             | 576319   | NECU-L3G7-C1         |

## Datasheet

| Ordering data – Accessories                                                        |                                                                                                              |         |          |                 |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------|----------|-----------------|
| Designation                                                                        |                                                                                                              |         | Part no. | Type            |
| Inscription labels                                                                 |                                                                                                              |         |          |                 |
|    | Inscription labels 6x10 mm, 64 pieces, in a frame                                                            |         | 18576    | IBS-6x10        |
| Hood                                                                               |                                                                                                              |         |          |                 |
|    | Mounting rail for attaching the hood                                                                         | 1000 mm | 572256   | CAFC-X1-S       |
|    | Mounting kit for CPX hood                                                                                    |         | 572257   | CAFC-X1-BE      |
|   | Hood section for CPX terminal including mounting attachments for connecting several hood sections in series. | 200 mm  | 572258   | CAFC-X1-GAL-200 |
|                                                                                    |                                                                                                              | 300 mm  | 572259   | CAFC-X1-GAL-300 |
| User documentation                                                                 |                                                                                                              |         |          |                 |
|  | CPX system manual                                                                                            | German  | 526445   | CPX-SYS-DE      |
|                                                                                    |                                                                                                              | English | 526446   | CPX-SYS-EN      |

## Datasheet

### User documentation – General information

Comprehensive user documentation is vital for the fast and reliable use of fieldbus components.

The manuals provided by Festo contain step-by-step instructions for using the CPX terminal:

1. Installation
2. Commissioning and parameterisation
3. Diagnostics

Application-oriented explanations are provided for integrating the CPX terminal in the programming and configuration software of the various controller manufacturers.

Use the order code to select the language you want.

The manuals for the configuration you have ordered are supplied automatically.

The documents can be downloaded quickly and easily from the Festo website.

→ [www.festo.com](http://www.festo.com)



| Overview – User documentation |                                                 |                                                                                                                    |
|-------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Type                          | Title                                           | Description                                                                                                        |
| <b>Pneumatics</b>             |                                                 |                                                                                                                    |
| P.BE-VTSA-44-...              | Valve terminals with VTSA and VTSA-F pneumatics | Instructions on mounting, installation, commissioning and diagnostics of the VTSA and VTSA-F pneumatic components. |
| P.BE-MPA-...                  | Valve terminals with MPA-S pneumatics           | Instructions on mounting, installation, commissioning and diagnostics of the MPA-S pneumatic components.           |
| MPAL-VI-...                   | Valve terminal                                  | Instructions on mounting, installation, commissioning and diagnostics of the MPA-L pneumatic components.           |

## Datasheet

| Overview – User documentation |                                                    |                                                                                                                                                                                                         |
|-------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                          | Title                                              | Description                                                                                                                                                                                             |
| <b>Electronics</b>            |                                                    |                                                                                                                                                                                                         |
| CPX-SYS-...                   | System description, installation and commissioning | Overview of the design, components and mode of operation of the CPX terminal; installation and commissioning instructions as well as basic principles of parameterisation.                              |
| CPX-FVDA-P2-...               | PROFIsafe shut-off module                          | Connection technology and mounting, installation and commissioning instructions for the PROFIsafe shut-off module of the type CPX-FVDA-P2.                                                              |
| CPX-AA/-_AE-...               | CPX I/O modules, digital                           | Connection technology and mounting, installation and commissioning instructions for digital input and output modules of type CPX-... as well as the VTSA/VTSA-F and MPA-S/L pneumatic interface.        |
| CPX-F8DE-P-...                | Input module CPX-F8DE-N                            | Connection technology and mounting, installation and commissioning instructions for the PROFIsafe input module of type CPX-F8DE-P.                                                                      |
| CPX-2ZE2DA-...                | I/O module CPX-2ZE2DA                              | Connection technology and mounting, installation and commissioning instructions for counter modules of type CPX-2ZE2DA.                                                                                 |
| CPX-AA/-_AE-...               | CPX-EA modules, analogue                           | Connection technology and mounting, installation and commissioning instructions for analogue input and output modules of type CPX-... as well as pressure sensors and proportional pressure regulators. |
| CPX-CP-4-FB-...               | CPX CP interface                                   | Instructions on mounting, installation, commissioning and diagnostics of the CP interface.                                                                                                              |
| CPX-CTEL-4-M12-5POL-...       | CPX CTEL interface                                 | Instructions on mounting, installation, commissioning and diagnostics of the CPX CTEL master.                                                                                                           |
| CPX-CTEL-2-M12-5POLLK-...     | Electrical interface CPX-CTEL-2                    | Instructions on mounting, installation, commissioning and diagnostics for the CPX electrical interface for IO-Link®.                                                                                    |
| CPX-CMAX-C1-1-...             | CPX axis controller                                | Instructions on mounting, installation, commissioning and diagnostics of the CPX axis controller (CMAX).                                                                                                |
| CPX-CMAX-C1-1-...             | CPX axis controller                                | Information on control, diagnostics and parameterisation of the axis controller via the field-bus.                                                                                                      |
| CPX-FB-...                    | CPX bus node                                       | Instructions on mounting, installation, commissioning and diagnostics of the relevant bus node.                                                                                                         |
| CPX-(M)-FB33_35/43_45...      | CPX bus node for PROFINET                          | Instructions on mounting, installation, commissioning and diagnostics of the relevant bus node.                                                                                                         |
| CPX-CEC-...                   | CPX-CODESYS controller (control block)             | Instructions on mounting, installation, commissioning and diagnostics of the relevant control block.                                                                                                    |

## User documentation – GSD, EDS, ...

Device description files and icons are used to explain the integration of the CPX terminal in the configuration software of the various controller manufacturers.

These can be downloaded quickly and easily from [www.festo.com](http://www.festo.com).

## Datasheet – CPX maintenance tool

### Function

The CPX Maintenance Tool (CPX-FMT) combines service software with a connecting adapter. The service software is a tool for the design, parameterisation and online diagnostics of the CPX terminal.

The USB-to-M12 adapter features built-in galvanic isolation (between CPX and PC) and enables a PC to be connected to the diagnostic interface of the CPX terminal.

- Adapter
- Software on CD-ROM



### Application

Only from Festo

The CPX-FMT software enables access to CPX valve terminals via Ethernet with the bus nodes EtherNet/IP (FB 36), Sercos III (FB 39) and PROFINET (FB 33, FB 34, FB 35, FB 41, FB 45). The bus nodes or control blocks can be connected directly to a PC via a USB adapter from Festo. Diagnostic data such as the error trace or module diagnostics can be read out and parameters can be modified in plain text.

The data can be used directly on a PC. There is an option, for example, to send screenshots of a configuration or the current error trace directly via email. In addition, CPX configurations can also be saved and archived directly as a CPX-FMT project. Undocumented changes can subsequently be identified using the online/offline comparison function.

On-site tests such as the actuation of valves or the emulation of sensor feedback (in both cases called "forcing"), for example, can be carried out without an existing controller infrastructure.

It must be noted that with the CPX-FMT, only local parameters on the CPX valve terminal can be changed and saved. The configuration of the networks or controller software cannot be influenced.

### General technical data

|                                                            |                  |                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                       |                  | NEFC-M12G5-0.3-U1G5                                                                                                                                                                                                                                                                       |
| System requirements                                        | PC               | IBM-compatible                                                                                                                                                                                                                                                                            |
|                                                            | Drive            | CD-ROM                                                                                                                                                                                                                                                                                    |
|                                                            | Interfaces       | USB port (specification USB 1.1 or higher)                                                                                                                                                                                                                                                |
|                                                            | Operating system | MS Windows 2000 or XP                                                                                                                                                                                                                                                                     |
| Function range                                             |                  | <ul style="list-style-type: none"> <li>• Configuration and parameterisation</li> <li>• Reading out of system, module, channel diagnostics and error trace</li> <li>• Saving the configuration as a project</li> <li>• Integration of plug-ins/links to self-executing programs</li> </ul> |
| Scope of delivery                                          |                  | <ul style="list-style-type: none"> <li>• Adapter, M12, 5-pin to mini USB socket</li> <li>• CD-ROM with installation program</li> </ul>                                                                                                                                                    |
| Type of mounting                                           |                  | Screw-in                                                                                                                                                                                                                                                                                  |
| Electrical connection                                      |                  | Plug M12x1, 5-pin                                                                                                                                                                                                                                                                         |
| Adapter cable composition                                  |                  | 4 x 0.34 mm <sup>2</sup>                                                                                                                                                                                                                                                                  |
| Cable length                                               | [m]              | 0.3                                                                                                                                                                                                                                                                                       |
| Degree of protection to EN 60529                           |                  | IP20                                                                                                                                                                                                                                                                                      |
| CE marking (see declaration of conformity) <sup>1)</sup>   |                  | To EU RoHS Directive                                                                                                                                                                                                                                                                      |
| UKCA marking (see declaration of conformity) <sup>1)</sup> |                  | To UK RoHS regulations                                                                                                                                                                                                                                                                    |
| Ambient temperature                                        | [°C]             | –5 ... +50                                                                                                                                                                                                                                                                                |
| Material                                                   | Housing          | ABS                                                                                                                                                                                                                                                                                       |
|                                                            | Cable sheath     | PUR                                                                                                                                                                                                                                                                                       |
|                                                            | Pin contact      | Gold-plated brass                                                                                                                                                                                                                                                                         |
| Note on materials                                          |                  | RoHS-compliant                                                                                                                                                                                                                                                                            |
| LABS (PWIS) conformity                                     |                  | VDMA24364-B2-L                                                                                                                                                                                                                                                                            |

1) More information [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

Datasheet – CPX maintenance tool

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[1] USB connection Mini B 5P      [2] Plug M12x1, 5-pin

| Type | B1 | D1    | D2 | H1 | L1  | L2 | L3   |
|------|----|-------|----|----|-----|----|------|
| NEFC | 31 | M12x1 | 5  | 24 | 300 | 56 | 44.5 |

| Ordering data                                                                    |                                                                 | Part no. | Type                |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------|----------|---------------------|
| Designation                                                                      |                                                                 |          |                     |
|  | CPX Maintenance Tool (CPX-FMT), software and USB-to-M12 adapter | 547432   | NEFC-M12G5-0.3-U1G5 |

## Datasheet – CODESYS controller

- Industrial Ethernet
- TCP/IP
- EasyIP
- Web interface
- Email
- Data transfer

The CODESYS controller is a modern control system for CPX terminals that enables programming with CODESYS to IEC 61131-3.

The power supply to and communication with other modules takes place via the interlinking block.

In addition to network connections, LEDs are also provided for the bus status, operating status of the PLC and CPX peripherals information, as are switching elements and a diagnostic interface for CPX-FMT.



| Application                                                                                                                                                                                                                                  |                                                                                                                                                                                                                         |                                                                                                                                                                                                                         |                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Bus connection                                                                                                                                                                                                                               |                                                                                                                                                                                                                         | Communication protocols                                                                                                                                                                                                 | Operating modes                                                                                                                               |
| The CPX-CEC is a remote controller that can be connected to a higher-order PLC via the bus nodes of the CPX terminal or via Ethernet.                                                                                                        | At the same time, it is possible to operate the CPX-CEC as a compact stand-alone controller directly on the machine.                                                                                                    | <ul style="list-style-type: none"> <li>• Fieldbus via CPX bus node</li> <li>• Modbus/TCP</li> <li>• EasyIP</li> </ul>                                                                                                   | <ul style="list-style-type: none"> <li>• Stand-alone</li> <li>• Remote controller, fieldbus</li> <li>• Remote controller, Ethernet</li> </ul> |
| Setting options                                                                                                                                                                                                                              |                                                                                                                                                                                                                         |                                                                                                                                                                                                                         |                                                                                                                                               |
| The CPX-CEC has the following interfaces for monitoring, programming and commissioning:                                                                                                                                                      | <ul style="list-style-type: none"> <li>• For the CPX-FMT</li> <li>• Ethernet interface for IT applications</li> <li>• Remote diagnostics</li> </ul>                                                                     | The operating mode and fieldbus protocol are set using the DIL switch on the CPX-CEC.                                                                                                                                   | The integrated web server offers a convenient means of querying data saved in the CPX-CEC.                                                    |
| Characteristics                                                                                                                                                                                                                              |                                                                                                                                                                                                                         |                                                                                                                                                                                                                         |                                                                                                                                               |
| <ul style="list-style-type: none"> <li>• Easy actuation of valve terminal configurations with MPA, VTSA</li> <li>• Diagnostics with flexible monitoring options for pressure, flow rate, cylinder operating time, air consumption</li> </ul> | <ul style="list-style-type: none"> <li>• Activation of decentralised installation systems on the basis of CPI control of applications in proportional pneumatics</li> <li>• AS-Interface control via gateway</li> </ul> | <ul style="list-style-type: none"> <li>• Connection to all fieldbuses as a remote controller and for pre-processing</li> <li>• Control of electric actuators as individual axes via CANopen (CPX-CEC-C1/-M1)</li> </ul> | <ul style="list-style-type: none"> <li>• Early warnings and visualisation options</li> <li>• Servo-pneumatic applications</li> </ul>          |



## Datasheet – CODESYS controller

| General technical data                              |                                                                                         |                                       |                                                                  |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------|
| Protocol                                            |                                                                                         |                                       | CODESYS Level 2                                                  |
|                                                     |                                                                                         |                                       | EasyIP                                                           |
|                                                     |                                                                                         |                                       | Modbus TCP                                                       |
|                                                     |                                                                                         |                                       | TCP/IP                                                           |
| Processing time                                     |                                                                                         |                                       | Approx. 200 µs/1 k instructions                                  |
| Programming software                                |                                                                                         |                                       | CODESYS provided by Festo                                        |
| Programming language                                |                                                                                         |                                       | To IEC 61131-3                                                   |
|                                                     |                                                                                         |                                       | Sequential function chart (SFC)                                  |
|                                                     |                                                                                         |                                       | Instruction list (IL)                                            |
|                                                     |                                                                                         |                                       | Function chart (FCH), additional continuous function chart (CFC) |
|                                                     |                                                                                         |                                       | Ladder diagram (LD)                                              |
|                                                     |                                                                                         |                                       | Structured text (ST)                                             |
| Programming                                         | Operating language                                                                      | German, English                       |                                                                  |
|                                                     | Support for file handling                                                               | Yes                                   |                                                                  |
| Device-specific diagnostics                         |                                                                                         |                                       | Diagnostics memory                                               |
|                                                     |                                                                                         |                                       | Channel and module-oriented diagnostics                          |
|                                                     |                                                                                         |                                       | Undervoltage/short circuit of modules                            |
| LED indicators                                      | Bus-specific                                                                            | TP: Link/traffic                      |                                                                  |
|                                                     | Product-specific                                                                        | RUN: PLC status                       |                                                                  |
|                                                     |                                                                                         | STOP: PLC status                      |                                                                  |
|                                                     |                                                                                         | ERR: PLC runtime error                |                                                                  |
|                                                     |                                                                                         | PS: Electronics supply, sensor supply |                                                                  |
|                                                     |                                                                                         | PL: Load supply                       |                                                                  |
|                                                     |                                                                                         | SF: System error                      |                                                                  |
|                                                     |                                                                                         | M: Modify/forcing active              |                                                                  |
| IP address setting                                  |                                                                                         |                                       | DHCP                                                             |
|                                                     |                                                                                         |                                       | Via CODESYS                                                      |
|                                                     |                                                                                         |                                       | Via MMI                                                          |
| Function elements                                   | CPX diagnostic status, copy CPX diagnostic trace, read CPX module diagnostics, and more |                                       |                                                                  |
| Dimensions (including interlinking block) W x L x H |                                                                                         |                                       | [mm] 50 x 107 x 55                                               |

| Materials              |                |  |               |
|------------------------|----------------|--|---------------|
| Housing                |                |  | Reinforced PA |
|                        |                |  | PC            |
| Note on materials      | RoHS-compliant |  |               |
| LABS (PWIS) conformity | VDMA24364-B2-L |  |               |

| Operating and environmental conditions |      |                    |  |
|----------------------------------------|------|--------------------|--|
| Ambient temperature                    | [°C] | –5 ... +50         |  |
| Storage temperature                    | [°C] | –20 ... +70        |  |
| Relative humidity                      | [%]  | 95, non-condensing |  |
| Corrosion resistance class CRC1)       |      | 2                  |  |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

| Electrical data                                            |                           |        |               |
|------------------------------------------------------------|---------------------------|--------|---------------|
| Nominal operating voltage                                  |                           | [V DC] | 24            |
| Load voltage                                               | Nominal operating voltage | [V DC] | 24            |
|                                                            | With pneumatics type VTSA | [V DC] | 21.6 ... 26.4 |
|                                                            | With pneumatics type MPA  | [V DC] | 18 ... 30     |
|                                                            | Without pneumatics        | [V DC] | 18 ... 30     |
| Power failure buffering                                    |                           | [ms]   | 10            |
| Intrinsic current consumption at nominal operating voltage |                           | [mA]   | Typically 85  |
| Degree of protection to EN 60529                           |                           |        | IP65, IP67    |

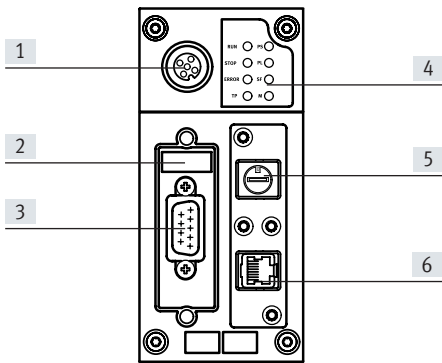
## Datasheet – CODESYS controller

| Technical data               |                                                  |        |                                      |                          |                          |                                          |
|------------------------------|--------------------------------------------------|--------|--------------------------------------|--------------------------|--------------------------|------------------------------------------|
| Type                         |                                                  |        | CPX-CEC-C1                           |                          | CPX-CEC-C1-V3            | CPX-CEC-M1-V3                            |
| Additional functions         |                                                  |        | Motion functions for electric drives |                          |                          | SoftMotion functions for electric drives |
| CPU data                     | Flash                                            | [MB]   | 32                                   | 32                       | 32                       |                                          |
|                              | RAM                                              | [MB]   | 32                                   | 256                      | 256                      |                                          |
|                              | Processor                                        | [MHz]  | 400                                  | 800                      | 800                      |                                          |
| Control interface            |                                                  |        | CAN bus                              |                          | CAN bus                  |                                          |
| Parameterisation             |                                                  |        | CODESYS V2.3                         |                          | CODESYS V3               |                                          |
| Configuration support        |                                                  |        | CODESYS V2.3                         |                          | CODESYS V3               |                                          |
| Program memory, user program |                                                  |        | [MB]                                 | 4                        | 16                       | 16                                       |
| Flags                        |                                                  |        | Variable CODESYS concept             |                          |                          |                                          |
|                              | Remanent data                                    | [kB]   | 30                                   | 28                       | 28                       |                                          |
|                              | Global data memory                               | [MB]   | 8                                    | –                        | –                        |                                          |
| Control elements             |                                                  |        | DIL switch for CAN termination       |                          |                          |                                          |
|                              |                                                  |        | Rotary switch for RUN/STOP           |                          |                          |                                          |
| Total number of axes         |                                                  |        | 31                                   | 127                      | 31                       |                                          |
| Ethernet                     | No. of                                           |        | 1                                    |                          |                          |                                          |
|                              | Connection technology                            |        | RJ45 socket, 8-pin                   |                          |                          |                                          |
|                              | Data transmission speed                          | [Mbps] | 10/100                               |                          |                          |                                          |
|                              | Supported protocols                              |        | TCP/IP, EasyIP, Modbus TCP           |                          |                          |                                          |
| Fieldbus interface           | No. of                                           |        | 1                                    |                          |                          |                                          |
|                              | Connection technology                            |        | Sub-D plug, 9-pin                    |                          |                          |                                          |
|                              | Data transmission speed, can be set via software | [kbps] | 125, 250, 500, 800, 1000             | 125, 250, 500, 800, 1000 | 125, 250, 500, 800, 1000 |                                          |
|                              | Supported protocols                              |        | CAN bus                              |                          |                          |                                          |
|                              | Galvanic isolation                               |        | Yes                                  |                          |                          |                                          |

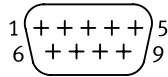
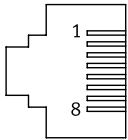
| Technical data               |                         |                              |               |
|------------------------------|-------------------------|------------------------------|---------------|
| Type                         |                         | CPX-CEC                      | CPX-CEC-S1-V3 |
| CPU data                     | Flash                   | [MB]                         | 32            |
|                              | RAM                     | [MB]                         | 32            |
|                              | Processor               | [MHz]                        | 400           |
| Parameterisation             |                         | CODESYS V2.3                 |               |
| Configuration support        |                         | CODESYS V2.3                 |               |
| Additional functions         |                         | Diagnostic functions         |               |
|                              |                         | RS232 communication function |               |
| Program memory, user program |                         | [MB]                         | 4             |
| Flags                        |                         | Variable CODESYS concept     |               |
|                              | Remanent data           | [kB]                         | 30            |
|                              | Global data memory      | [MB]                         | 8             |
| Control elements             |                         | Rotary switch for RUN/STOP   |               |
| Ethernet                     | No. of                  | 1                            |               |
|                              | Connection technology   | RJ45 socket, 8-pin           |               |
|                              | Data transmission speed | [Mbps]                       | 10/100        |
|                              | Supported protocols     | TCP/IP, EasyIP, Modbus TCP   |               |
| Data interface               | No. of                  | 1                            |               |
|                              | Connection technology   | Sub-D socket, 9-pin          |               |
|                              | Data transmission speed | [kbps]                       | 9.6 ... 230.4 |
|                              | Supported protocols     | RS232 interface              |               |
|                              | Max. cable length       | [m]                          | –             |
|                              | Galvanic isolation      | Yes                          |               |

Datasheet – CODESYS controller

Connection and display elements CPX-CEC-C1/-M1



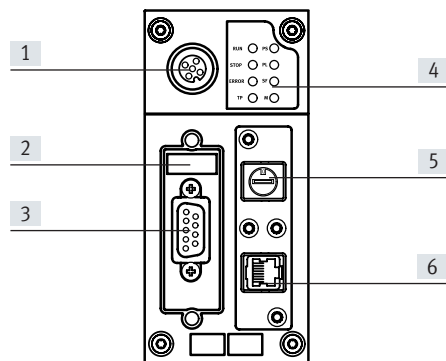
- [1] CPX-FMT connection
- [2] DIL switch
- [3] Fieldbus interface (Sub-D plug, 9-pin)
- [4] Status LEDs, bus-specific and product-specific
- [5] RUN/STOP rotary switch
- [6] Ethernet interface (RJ45 socket, 8-pin)

| Pin assignment – CPX-CEC-C1/-M1                                                    |         |           |                                      |
|------------------------------------------------------------------------------------|---------|-----------|--------------------------------------|
|                                                                                    | Pin     | Signal    | Meaning                              |
| Fieldbus interface, Sub-D plug                                                     |         |           |                                      |
|    | 1       | n.c.      | Not connected                        |
|                                                                                    | 2       | CAN_L     | CAN low                              |
|                                                                                    | 3       | CAN_GND   | CAN Ground                           |
|                                                                                    | 4       | n.c.      | Not connected                        |
|                                                                                    | 5       | CAN_SHLD  | Connection to functional earth FE    |
|                                                                                    | 6       | CAN_GND   | CAN Ground (optional) 1)             |
|                                                                                    | 7       | CAN_H     | CAN High                             |
|                                                                                    | 8       | n.c.      | Not connected                        |
|                                                                                    | 9       | n.c.      | Not connected                        |
|                                                                                    | Housing | Shielding | Plug housing must be connected to FE |
| Ethernet interface, RJ45 plug                                                      |         |           |                                      |
|  | 1       | TD+       | Transmitted data+                    |
|                                                                                    | 2       | TD-       | Transmitted data-                    |
|                                                                                    | 3       | RD+       | Received data+                       |
|                                                                                    | 4       | n.c.      | Not connected                        |
|                                                                                    | 5       | n.c.      | Not connected                        |
|                                                                                    | 6       | RD-       | Received data-                       |
|                                                                                    | 7       | n.c.      | Not connected                        |
|                                                                                    | 8       | n.c.      | Not connected                        |
|                                                                                    | Housing | Shielding | Shielding                            |

1) If a servo drive is connected to an external power supply, CAN Ground (optional), pin 6, cannot be used on the CPX-CEC-C1/-M1.

## Datasheet – CODESYS controller

### Connection and display elements CPX-CEC/CPX-CEC-S1-V3

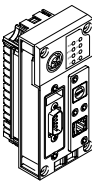
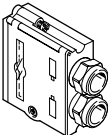
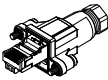
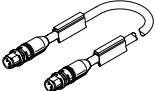
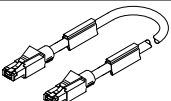


- [1] CPX-FMT connection
- [2] DIL switch
- [3] RS232 interface  
(Sub-D socket, 9-pin)
- [4] Status LEDs, bus-specific and  
product-specific
- [5] RUN/STOP rotary switch
- [6] Ethernet interface (RJ45 socket,  
8-pin)

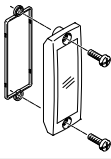
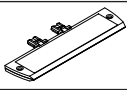
#### Pin assignment – CPX-CEC/CPX-CEC-S1-V3

|                                       | Pin       | Signal    | Meaning                        |
|---------------------------------------|-----------|-----------|--------------------------------|
| <b>RS 232 interface, Sub-D socket</b> |           |           |                                |
|                                       | 1         | n.c.      | Not connected                  |
|                                       | 2         | RxD       | Received data                  |
|                                       | 3         | TxD       | Transmitted data               |
|                                       | 4         | n.c.      | Not connected                  |
|                                       | 5         | GND       | Data reference potential       |
|                                       | 6         | n.c.      | Not connected                  |
|                                       | 7         | n.c.      | Not connected                  |
|                                       | 8         | n.c.      | Not connected                  |
|                                       | 9         | n.c.      | Not connected                  |
|                                       | Shielding | Shielding | Connection to functional earth |
| <b>Ethernet interface, RJ45 plug</b>  |           |           |                                |
|                                       | 1         | TD+       | Transmitted data+              |
|                                       | 2         | TD-       | Transmitted data-              |
|                                       | 3         | RD+       | Received data+                 |
|                                       | 4         | n.c.      | Not connected                  |
|                                       | 5         | n.c.      | Not connected                  |
|                                       | 6         | RD-       | Received data-                 |
|                                       | 7         | n.c.      | Not connected                  |
|                                       | 8         | n.c.      | Not connected                  |
|                                       | Housing   | Shielding | Shielding                      |

## Datasheet – CODESYS controller

| Ordering data                                                                      |                                                                          |                                      |                                  |          |                       |                            |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------|----------------------------------|----------|-----------------------|----------------------------|
| Designation                                                                        |                                                                          |                                      |                                  | Part no. | Type                  |                            |
| Control block                                                                      |                                                                          |                                      |                                  |          |                       |                            |
|    | Motion functions for electric drives                                     |                                      | CODESYS V2.3                     | 155 g    | 567347                | CPX-CEC-C1                 |
|                                                                                    |                                                                          |                                      | CODESYS V3                       | 135 g    | 3473128               | CPX-CEC-C1-V3              |
|                                                                                    | SoftMotion functions for electric drives                                 |                                      | CODESYS V3                       | 135 g    | 3472765               | CPX-CEC-M1-V3              |
|                                                                                    |                                                                          |                                      | RS232 communication function     |          | CODESYS V2.3          | 155 g                      |
|                                                                                    |                                                                          |                                      | CODESYS V3                       | 135 g    | 3472425               | CPX-CEC-S1-V3              |
| Fieldbus interface                                                                 |                                                                          |                                      |                                  |          |                       |                            |
|    | Sub-D plug, 9-pin, for CANopen                                           |                                      |                                  | 532219   | FBS-SUB-9-BU-2x5POL-B |                            |
|    | Micro style bus connection, 2xM12 for DeviceNet/CANopen                  |                                      |                                  | 525632   | FBA-2-M12-5POL        |                            |
|    | Socket for micro style connection, M12                                   |                                      |                                  | 8162291  | NECB-M12G5-C2         |                            |
|   | Plug for micro style connection, M12                                     |                                      |                                  | 8162296  | NECB-S-M12G5-C2       |                            |
|  | Open style bus connection for 5-pin terminal strip for DeviceNet/CANopen |                                      |                                  | 525634   | FBA-1-SL-5POL         |                            |
|  | Terminal strip for open style connection, 5-pin                          |                                      |                                  | 525635   | FBSD-KL-2x5POL        |                            |
| Ethernet interface                                                                 |                                                                          |                                      |                                  |          |                       |                            |
|  | Plug RJ45                                                                |                                      | Degree of protection IP 65, IP67 |          | 534494                | FBS-RJ45-8-GS              |
|  | Cover for RJ45 connection                                                |                                      | Degree of protection IP 65, IP67 |          | 534496                | AK-RJ45                    |
|  | Straight plug, RJ45, 8-pin                                               | Straight plug, M12x1, 4-pin, D-coded | Degree of protection IP20        | 1 m      | 8040451               | NEBC-D12G4-ES-1-S-R3G4-ET  |
|                                                                                    |                                                                          |                                      |                                  | 3 m      | 8040452               | NEBC-D12G4-ES-3-S-R3G4-ET  |
|                                                                                    |                                                                          |                                      |                                  | 5 m      | 8040453               | NEBC-D12G4-ES-5-S-R3G4-ET  |
|                                                                                    |                                                                          |                                      |                                  | 10 m     | 8040454               | NEBC-D12G4-ES-10-S-R3G4-ET |
|  | Straight plug, RJ45, 8-pin                                               | Straight plug, RJ45, 8-pin           | Degree of protection IP20        | 1 m      | 8040455               | NEBC-R3G4-ES-1-S-R3G4-ET   |

## Datasheet – CODESYS controller

| Ordering data                                                                     |                                                     |         |          |               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------|---------|----------|---------------|
| Designation                                                                       |                                                     |         | Part no. | Type          |
| Covers and attachments                                                            |                                                     |         |          |               |
|  | Inspection cover, transparent, for Sub-D connection |         | 533334   | AK-SUB-9/15-B |
|  | Inscription label holder for connection block       |         | 536593   | CPX-ST-1      |
| User documentation                                                                |                                                     |         |          |               |
|  | Description control block CPX-CEC                   | German  | 569121   | CPX-CEC-DE    |
|                                                                                   |                                                     | English | 569122   | CPX-CEC-EN    |

Datasheet – DeviceNet® bus node



Bus node for handling communication between the electrical terminal CPX and a DeviceNet® network.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The fieldbus communication status is displayed via the three DeviceNet®-specific LEDs.



**Application**  
Bus connection

The bus connection can be selected when ordering, either micro style as 2xM12 round plugs or open style as a terminal strip with IP20 protection.

Both connection types have the function of an integrated T-distributor with incoming and outgoing bus line.

DeviceNet® implementation

The CPX-FB11 operates with the Pre-defined Master/Slave Connection Set as a Group 2 Only Server.

The polled I/O, change of state or cyclic method is used for the transmission of cyclic I/O data. The type of transmission can be selected in the network configuration.

The device diagnostics for all bus nodes CPX-FB11 is effectively gathered via strobed I/O and displayed in the input table of the controller.

In addition to cyclic data transmission, acyclic communication is supported through explicit messaging, which enables detailed device diagnostics and parameterisation.

A comprehensive EDS file supports the display of acyclic data. It is also possible to display system information and assign parameters while the controller is running via the user program or the configuration software.

An example of this is access to the integrated diagnostic memory function, i.e. storage of the last 40 errors with timestamp, module, channel and error type.

With its address capacity of 64 byte inputs and 64 byte outputs, the CPX-FB11 supports any configuration of I/O modules, including pneumatic interface.

Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8 byte outputs
- 8 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

- 56 byte inputs
- 56 byte outputs

## Datasheet – DeviceNet® bus node

| General technical data                              |                         |                                                                                                                                                                                                                                                         |               |
|-----------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Type                                                |                         | CPX-FB11                                                                                                                                                                                                                                                |               |
| Fieldbus interface                                  |                         | Choice of <ul style="list-style-type: none"><li>• Micro style bus connection: 2xM12 with degree of protection IP65, IP67</li><li>• Open style bus connection: 5-pin terminal strip IP20</li></ul>                                                       |               |
| Baud rates                                          |                         | [kbps]                                                                                                                                                                                                                                                  | 125, 250, 500 |
| Addressing range                                    |                         | 0 ... 63<br>Set using DIL switch                                                                                                                                                                                                                        |               |
| Product                                             | Type                    | Communication adapter (12 dec.)                                                                                                                                                                                                                         |               |
|                                                     | Code                    | 4554 dec.                                                                                                                                                                                                                                               |               |
| Types of communication                              |                         | Polled I/O, change of state/cyclic, strobed I/O and explicit messaging                                                                                                                                                                                  |               |
| Configuration support                               |                         | EDS file and bitmaps                                                                                                                                                                                                                                    |               |
| Max. address capacity                               | Inputs                  | [byte]                                                                                                                                                                                                                                                  | 64            |
|                                                     | Outputs                 | [byte]                                                                                                                                                                                                                                                  | 64            |
| LED displays (bus-specific)                         |                         | MS = Module status<br>NS = Network status<br>IO = I/O status                                                                                                                                                                                            |               |
| Device-specific diagnostics                         |                         | Module and channel-oriented diagnostics via manufacturer-specific diagnostic object                                                                                                                                                                     |               |
| Parameterisation                                    |                         | <ul style="list-style-type: none"><li>• Module and system parameterisation via configuration interface in plain text (EDS)</li><li>• Online in run or program mode</li></ul>                                                                            |               |
| Additional functions                                |                         | <ul style="list-style-type: none"><li>• Storage of the last 40 errors with timestamp (access via EDS)</li><li>• 8-bit system status in image table for inputs</li><li>• 2-byte inputs and 2-byte outputs, system diagnostics in process image</li></ul> |               |
| Control elements                                    |                         | DIL switches                                                                                                                                                                                                                                            |               |
| Operating voltage                                   | Nominal width           | [V DC]                                                                                                                                                                                                                                                  | 24            |
|                                                     | Permissible range       | [V DC]                                                                                                                                                                                                                                                  | 18 ... 30     |
|                                                     | Power failure buffering | [ms]                                                                                                                                                                                                                                                    | 10            |
| Current consumption                                 |                         | [mA]                                                                                                                                                                                                                                                    | Typically 200 |
| Degree of protection to EN 60529                    |                         | IP65, IP67                                                                                                                                                                                                                                              |               |
| Temperature range                                   | Operation               | [°C]                                                                                                                                                                                                                                                    | –5 ... +50    |
|                                                     | Storage/transport       | [°C]                                                                                                                                                                                                                                                    | –20 ... +70   |
| Materials                                           |                         | Reinforced PA, PC                                                                                                                                                                                                                                       |               |
| LABS (PWIS) conformity                              |                         | VDMA24364-B2-L                                                                                                                                                                                                                                          |               |
| Grid dimension                                      |                         | [mm]                                                                                                                                                                                                                                                    | 50            |
| Dimensions (including interlinking block) W x L x H |                         | [mm]                                                                                                                                                                                                                                                    | 50 x 107 x 50 |
| Product weight                                      |                         | [g]                                                                                                                                                                                                                                                     | 120           |

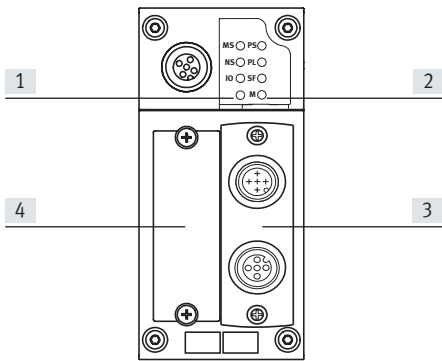
 **Note**

Please observe the general limits and guidelines for the system when configuring the electrical modules.



Datasheet – DeviceNet® bus node

Connection and indicator components

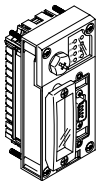
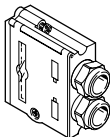
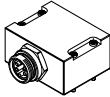
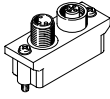
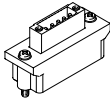
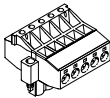
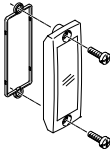
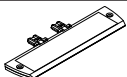
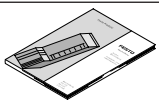


- [1] Bus-specific LEDs
- [2] CPX-specific status LEDs
- [3] Selectable fieldbus interface
  - Micro style
  - Open style
- [4] DIL switch cover

| Pin assignment for the DeviceNet® interface         |     |                              |             |                                |
|-----------------------------------------------------|-----|------------------------------|-------------|--------------------------------|
| Terminal assignment                                 | Pin | Signal-related wire colour1) | Signal      | Designation                    |
| Sub-D plug                                          |     |                              |             |                                |
|                                                     | 1   | –                            | n.c.        | Not connected                  |
|                                                     | 2   | Blue                         | CAN_L       | Received/transmitted data low  |
|                                                     | 3   | Black                        | 0 V bus     | 0 V CAN interface              |
|                                                     | 4   | –                            | n.c.        | Not connected                  |
|                                                     | 5   | Clear                        | Shielding   | Connection to housing          |
|                                                     | 6   | –                            | n.c.        | Not connected                  |
|                                                     | 7   | White                        | CAN_H       | Received/transmitted data high |
|                                                     | 8   | –                            | n.c.        | Not connected                  |
|                                                     | 9   | Red                          | 24 V DC bus | 24 V DC supply CAN interface   |
| Micro style bus connection (M12), incoming/outgoing |     |                              |             |                                |
|                                                     | 1   | Clear                        | Shielding   | Connection to housing          |
|                                                     | 2   | Red                          | 24 V DC bus | 24 V DC supply CAN interface   |
|                                                     | 3   | Black                        | 0 V bus     | 0 V CAN interface              |
|                                                     | 4   | White                        | CAN_H       | Received/transmitted data high |
|                                                     | 5   | Blue                         | CAN_L       | Received/transmitted data low  |
|                                                     | 1   | Clear                        | Shielding   | Connection to housing          |
|                                                     | 2   | Red                          | 24 V DC bus | 24 V DC supply CAN interface   |
|                                                     | 3   | Black                        | 0 V bus     | 0 V CAN interface              |
|                                                     | 4   | White                        | CAN_H       | Received/transmitted data high |
|                                                     | 5   | Blue                         | CAN_L       | Received/transmitted data low  |
| Open style bus connection                           |     |                              |             |                                |
|                                                     | 1   | Black                        | 0 V bus     | 0 V CAN interface              |
|                                                     | 2   | Blue                         | CAN_L       | Received/transmitted data low  |
|                                                     | 3   | Clear                        | Shielding   | Connection to housing          |
|                                                     | 4   | White                        | CAN_H       | Received/transmitted data high |
|                                                     | 5   | Red                          | 24 V DC bus | 24 V DC supply CAN interface   |
| 7/8" bus connection                                 |     |                              |             |                                |
|                                                     | 1   | Black                        | Shielding   | Connection to housing          |
|                                                     | 2   | Blue                         | 24 V DC     | 24 V DC supply CAN interface   |
|                                                     | 3   | Clear                        | 0 V         | 0 V CAN interface              |
|                                                     | 4   | White                        | CAN_H       | Received/transmitted data high |
|                                                     | 5   | Red                          | CAN_L       | Received/transmitted data low  |

1) Typical of DeviceNet® connecting cables

## Datasheet – DeviceNet® bus node

| Ordering data                                                                       |                                                                | Part no. | Type                    |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------|----------|-------------------------|
| Designation                                                                         |                                                                |          |                         |
| Bus node                                                                            |                                                                |          |                         |
|    | DeviceNet® bus node                                            | 526172   | CPX-FB11                |
| Bus connection                                                                      |                                                                |          |                         |
|    | Sub-D plug                                                     | 532219   | FBS-SUB-9-BU-2x5POL-B   |
|    | Connection block, Sub-D socket 9-pin, plug 7/8" 5-pin          | 571052   | CPX-AB-1-7/8-DN         |
|    | Micro style bus connection, 2xM12                              | 525632   | FBA-2-M12-5POL          |
|   | Socket for micro style connection, M12                         | 8162291  | NECB-M12G5-C2           |
|                                                                                     | Plug for micro style connection, M12                           | 8162296  | NECB-S-M12G5-C2         |
|  | Open style bus connection for 5-pin terminal strip             | 525634   | FBA-1-SL-5POL           |
|  | Terminal strip for open style connection, 5-pin                | 525635   | FBSD-KL-2x5POL          |
|  | Inspection cover, transparent                                  | 533334   | AK-SUB-9/15-B           |
|  | Inscription label holder for connection block                  | 536593   | CPX-ST-1                |
|  | Adapter M12, 5-pin to mini USB socket, and controller software | 547432   | NEFC-M12G5-0.3-U1G5     |
| User documentation                                                                  |                                                                |          |                         |
|  | User documentation for bus node CPX-FB11                       | German   | 526421 CPX-FB11-DE      |
|                                                                                     |                                                                | English  | 526422 CPX-FB11-EN      |
|                                                                                     |                                                                | Spanish  | 526423 P.BE-CPX-FB11-ES |
|                                                                                     |                                                                | French   | 526424 P.BE-CPX-FB11-FR |
|                                                                                     |                                                                | Italian  | 526425 P.BE-CPX-FB11-IT |

Datasheet – PROFIBUS bus node

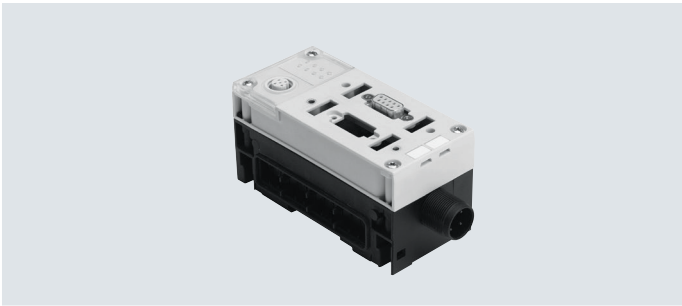


Bus node for handling communication between the electrical terminal CPX and a higher-order master via PROFIBUS DP.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The fieldbus communication status is displayed via the PROFIBUS-specific error LED.



**Application**  
Bus connection

|                                                                                                              |                                                                                                                                                                                                    |                                                                                      |                                                                                                         |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| The bus connection is established via a 9-pin Sub-D socket with a typical PROFIBUS allocation (to EN 50170). | The bus connector plug (with degree of protection IP65/IP67 from Festo or degree of protection IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable. | An active bus terminal can be connected using the DIL switch integrated in the plug. | The Sub-D interface is designed for controlling network components with a fibre-optic cable connection. |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|

PROFIBUS DP implementation

|                                                                                                                                                |                                                                                                                                                                                                                                           |                                                                                                                                                               |                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| The CPX-FB13 supports the PROFIBUS DP protocol to EN 50170 Volume 2 for cyclic I/O exchange, parameterisation and diagnostic functions (DPV0). | In addition to DPV0, acyclic communication to the advanced specification DPV1 is supported. DPV1 provides acyclic access to advanced system information and allows parameterisation while the controller is running via the user program. | An example of this is access to the integrated diagnostic memory function, i.e. storage of the last 40 errors with timestamp, module, channel and error type. | With its address capacity of 64 byte inputs and 64 byte outputs, the CPX-FB13 supports any configuration of I/O modules, including pneumatic interface. |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

Points to note in connection with CPX-CEC

|                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block. | In this case, the bus node only provides the communication interface to the PLC.<br>Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up the following address capacity in the CPX system: | <ul style="list-style-type: none"><li>• 8 byte outputs</li><li>• 8 byte inputs</li></ul> <p>The following address capacity remains in the control block or CPX system for controlling the peripherals:</p> <ul style="list-style-type: none"><li>• 56 byte inputs</li><li>• 56 byte outputs</li></ul> |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

## Datasheet – PROFIBUS bus node

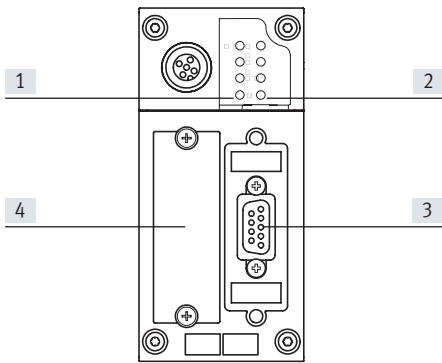
| General technical data                              |                         |                                                                                                                                                                                                                                                    |               |
|-----------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Type                                                |                         | CPX-FB13                                                                                                                                                                                                                                           |               |
| Fieldbus interface                                  |                         | Sub-D socket, 9-pin (EN 50170)<br>Galvanically isolated 5 V                                                                                                                                                                                        |               |
| Baud rates                                          |                         | [Mbps]                                                                                                                                                                                                                                             | 0.0096 ... 12 |
| Addressing range                                    |                         | 1 ... 125<br>Set using DIL switch                                                                                                                                                                                                                  |               |
| Product family                                      |                         | 4: Valves                                                                                                                                                                                                                                          |               |
| ID number                                           |                         | 0x059E                                                                                                                                                                                                                                             |               |
| Types of communication                              |                         | DPV0: Cyclic communication<br>DPV1: Acyclic communication                                                                                                                                                                                          |               |
| Configuration support                               |                         | GSD file and bitmaps                                                                                                                                                                                                                               |               |
| Max. address capacity                               | Inputs                  | [byte]                                                                                                                                                                                                                                             | 64            |
|                                                     | Outputs                 | [byte]                                                                                                                                                                                                                                             | 64            |
| LED displays (bus-specific)                         |                         | BF: Bus fault                                                                                                                                                                                                                                      |               |
| Device-specific diagnostics                         |                         | Identifier and channel-oriented diagnostics to EN 50170 (PROFIBUS standard)                                                                                                                                                                        |               |
| Parameterisation                                    |                         | <ul style="list-style-type: none"><li>Start-up parameterisation via configuration interface in plain text (GSD)</li><li>Acyclical parameterisation via DPV1</li></ul>                                                                              |               |
| Additional functions                                |                         | <ul style="list-style-type: none"><li>Storage of the last 40 errors with timestamp (access via DPV1)</li><li>8-bit system status in image table for inputs</li><li>2-byte inputs and 2-byte outputs, system diagnostics in process image</li></ul> |               |
| Control elements                                    |                         | DIL switches                                                                                                                                                                                                                                       |               |
| Operating voltage                                   | Nominal width           | [V DC]                                                                                                                                                                                                                                             | 24            |
|                                                     | Permissible range       | [V DC]                                                                                                                                                                                                                                             | 18 ... 30     |
|                                                     | Power failure buffering | [ms]                                                                                                                                                                                                                                               | 10            |
| Current consumption                                 |                         | [mA]                                                                                                                                                                                                                                               | Typically 200 |
| Degree of protection to EN 60529                    |                         | IP65, IP67                                                                                                                                                                                                                                         |               |
| Temperature range                                   | Operation               | [°C]                                                                                                                                                                                                                                               | −5 ... +50    |
|                                                     | Storage/transport       | [°C]                                                                                                                                                                                                                                               | −20 ... +70   |
| Materials                                           |                         | Reinforced PA, PC                                                                                                                                                                                                                                  |               |
| LABS (PWIS) conformity                              |                         | VDMA24364-B2-L                                                                                                                                                                                                                                     |               |
| Grid dimension                                      |                         | [mm]                                                                                                                                                                                                                                               | 50            |
| Dimensions (including interlinking block) W x L x H |                         | [mm]                                                                                                                                                                                                                                               | 50 x 107 x 50 |
| Product weight                                      |                         | [g]                                                                                                                                                                                                                                                | 115           |

**Note**

Please observe the general limits and guidelines for the system when configuring the electrical modules.

Datasheet – PROFIBUS bus node

Connection and indicator components

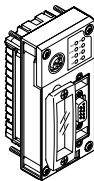
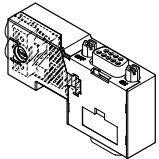
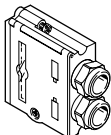
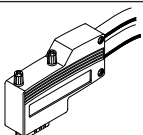
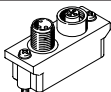
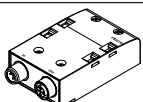
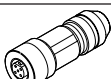
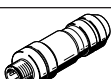
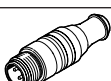


- [1] Bus status LEDs/bus fault
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (Sub-D socket, 9-pin)
- [4] DIL switch cover

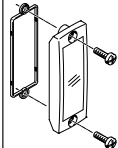
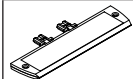
| Pin assignment for PROFIBUS DP interface |           |                      |                                     |
|------------------------------------------|-----------|----------------------|-------------------------------------|
| Terminal assignment                      | Pin       | Signal               | Designation                         |
| Sub-D socket                             |           |                      |                                     |
|                                          | 1         | n.c.                 | Not connected                       |
|                                          | 2         | n.c.                 | Not connected                       |
|                                          | 3         | RxD/TxD-P            | Received/transmitted data P         |
|                                          | 4         | CNTR-P <sup>1)</sup> | Repeater control signal             |
|                                          | 5         | DGND                 | Data reference potential (M5V)      |
|                                          | 6         | VP                   | Supply voltage (P5V)                |
|                                          | 7         | n.c.                 | Not connected                       |
|                                          | 8         | RxD/TxD-N            | Received/transmitted data N         |
|                                          | 9         | n.c.                 | Not connected                       |
|                                          | Housing   | Shielding            | Connection to housing               |
| Bus connection M12 adapter (B-coded)     |           |                      |                                     |
| Incoming                                 |           |                      |                                     |
|                                          | 1         | n.c.                 | Not connected                       |
|                                          | 2         | RxD/TxD-N            | Received/transmitted data N         |
|                                          | 3         | n.c.                 | Not connected                       |
|                                          | 4         | RxD/TxD-P            | Received/transmitted data P         |
|                                          | 5 and M12 | Shielding            | Connection to FE (functional earth) |
| Outgoing                                 |           |                      |                                     |
|                                          | 1         | VP                   | Supply voltage (P5V)                |
|                                          | 2         | RxD/TxD-N            | Received/transmitted data N         |
|                                          | 3         | DGND                 | Data reference potential (M5V)      |
|                                          | 4         | RxD/TxD-P            | Received/transmitted data P         |
|                                          | 5 and M12 | Shielding            | Connection to FE (functional earth) |

1) The repeater control signal CNTR-P is realised as a TTL signal.

## Datasheet – PROFIBUS bus node

| Ordering data                                                                       |                                                                                                                                   | Part no. | Type                 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|
| Designation                                                                         |                                                                                                                                   |          |                      |
| Bus node                                                                            |                                                                                                                                   |          |                      |
|    | PROFIBUS bus node                                                                                                                 | 195740   | CPX-FB13             |
| Bus connection                                                                      |                                                                                                                                   |          |                      |
|    | Sub-D plug, straight, with terminating resistor and programming interface                                                         | 574589   | NECU-S1W9-C2-APB     |
|    | Sub-D plug, straight                                                                                                              | 532216   | FBS-SUB-9-GS-DP-B    |
|   | Sub-D plug, angled                                                                                                                | 533780   | FBS-SUB-9-WS-PB-K    |
|  | Bus connection M12 adapter (B-coded)                                                                                              | 533118   | FBA-2-M12-5POL-RK    |
|  | Connection block M12 adapter (B-coded)                                                                                            | 541519   | CPX-AB-2-M12-RK-DP   |
|  | Straight socket, M12x1, 5-pin<br>for self-assembly of a connecting cable compatible with FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP | 1067905  | NECU-M-B12G5-C2-PB   |
|  | Plug M12x1, 5-pin, straight,<br>for self-assembly of a connecting cable compatible with FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP  | 1066354  | NECU-M-S-B12G5-C2-PB |
|  | Terminating resistor, M12, B-coded for PROFIBUS                                                                                   | 1072128  | CACR-S-B12G5-220-PB  |

Datasheet – PROFIBUS bus node

| Ordering data                                                                    |                                                                |         |          |                     |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|---------|----------|---------------------|
| Designation                                                                      |                                                                |         | Part no. | Type                |
| Bus connection                                                                   |                                                                |         |          |                     |
|  | Inspection cover, transparent                                  |         | 533334   | AK-SUB-9/15-B       |
|  | Inscription label holder for connection block M12              |         | 536593   | CPX-ST-1            |
|  | Adapter M12, 5-pin to mini USB socket, and controller software |         | 547432   | NEFC-M12G5-0.3-U1G5 |
| User documentation                                                               |                                                                |         |          |                     |
|  | User documentation for bus node CPX-FB13                       | German  | 526427   | CPX-FB13-DE         |
|                                                                                  |                                                                | English | 526428   | CPX-FB13-EN         |

## Datasheet – CC-Link® bus node

# CC-Link

Bus node for handling communication between the electrical terminal CPX and a higher-order master for Control & Communication-Link (CC-Link®) from Mitsubishi.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The status of the fieldbus communication is displayed via 4 CC-Link®-specific LEDs.



### Application

#### Bus connection

The bus connection can be selected when ordering and is established via a screw terminal with degree of protection IP20, a Sub-D plug with degree of

protection IP65/IP67 from Festo or degree of protection IP20 from other manufacturers.

Both connection types have the function of an integrated T-distributor and thus support the connection of an incoming and outgoing bus cable.

#### CC-Link® implementation

The CPX bus node CPX-FB23-24 optionally supports the CC-Link® versions 2.0 (as function module F24) and 1.1 (as function module F23). These designations are also found in the system diagram for the CPX Maintenance Tool (CPX-FMT) from Festo.

Function module F24 corresponds to CC-Link® version 2.0 and supports a maximum of four stations per slave, up to an address capacity of 64 bytes of digital I/O and 64 bytes of analogue I/O in each case. It is possible to optimise the configuration of the addressing in terms of either cycle time or station.

Function module F23 corresponds to CC-Link® version 1.1 and supports a maximum of four stations per slave, up to an address capacity of 32 bytes of digital I/O and 14 bytes of analogue I/O in each case.

The function module and option are set using the DIL switch on the CPX bus node.

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8 byte outputs
- 8 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

- 56 byte inputs
- 56 byte outputs



## Datasheet – CC-Link® bus node

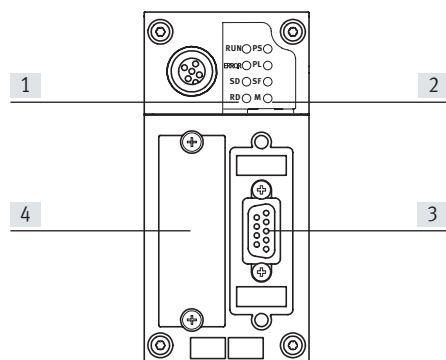
| General technical data                              |                   |     |        |                                                                                                                                                                                      |
|-----------------------------------------------------|-------------------|-----|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                |                   |     |        | CPX-FB23-24                                                                                                                                                                          |
| Fieldbus interface                                  |                   |     |        | Choice of <ul style="list-style-type: none"><li>• Sub-D socket, 9-pin</li><li>• Sub-D plug, for self-assembly</li><li>• Screw terminal strip, IP20</li></ul>                         |
| Baud rates                                          |                   |     | [kbps] | 156 ... 10000                                                                                                                                                                        |
| Protocol                                            |                   |     |        | CC-Link®                                                                                                                                                                             |
| Max. address capacity, inputs                       | FB23              | RWr | [byte] | 32                                                                                                                                                                                   |
|                                                     |                   | Rx  | [byte] | 14                                                                                                                                                                                   |
|                                                     | FB24              | RWr | [byte] | 64                                                                                                                                                                                   |
|                                                     |                   | Rx  | [byte] | 64                                                                                                                                                                                   |
| Max. address capacity, outputs                      | FB23              | RWw | [byte] | 32                                                                                                                                                                                   |
|                                                     |                   | Ry  | [byte] | 14                                                                                                                                                                                   |
|                                                     | FB24              | RWw | [byte] | 64                                                                                                                                                                                   |
|                                                     |                   | Ry  | [byte] | 64                                                                                                                                                                                   |
| LED displays (bus-specific)                         |                   |     |        | RUN     = Communication status<br>ERROR   = Communication error<br>SD       = Send data<br>RD       = Receive data                                                                   |
| Device-specific diagnostics                         |                   |     |        | <ul style="list-style-type: none"><li>• Diagnostics memory</li><li>• Channel and module-oriented diagnostics</li><li>• Undervoltage of modules</li></ul>                             |
| Parameterisation                                    |                   |     |        | <ul style="list-style-type: none"><li>• Diagnostic behaviour</li><li>• Fail-safe response</li><li>• Forcing of channels</li><li>• Signal setup</li><li>• System parameters</li></ul> |
| Additional functions                                |                   |     |        | <ul style="list-style-type: none"><li>• System status can be displayed using process data</li><li>• Additional diagnostic interface for operator units</li></ul>                     |
| Control elements                                    |                   |     |        | DIL switches                                                                                                                                                                         |
| Operating voltage                                   | Nominal width     |     | [V DC] | 24                                                                                                                                                                                   |
|                                                     | Permissible range |     | [V DC] | 18 ... 30                                                                                                                                                                            |
| Current consumption                                 |                   |     | [mA]   | Typically 200                                                                                                                                                                        |
| Degree of protection to EN 60529                    |                   |     |        | IP65, IP67                                                                                                                                                                           |
| Temperature range                                   | Operation         |     | [°C]   | −5 ... +50                                                                                                                                                                           |
|                                                     | Storage/transport |     | [°C]   | −20 ... +70                                                                                                                                                                          |
| Materials                                           |                   |     |        | Reinforced PA, PC                                                                                                                                                                    |
| LABS (PWIS) conformity                              |                   |     |        | VDMA24364-B2-L                                                                                                                                                                       |
| Grid dimension                                      |                   |     | [mm]   | 50                                                                                                                                                                                   |
| Dimensions (including interlinking block) W x L x H |                   |     | [mm]   | 50 x 107 x 50                                                                                                                                                                        |
| Product weight                                      |                   |     | [g]    | 115                                                                                                                                                                                  |

 **Note**

Please observe the general limits and guidelines for the system when configuring the electric modules.

## Datasheet – CC-Link® bus node

### Connection and indicator components

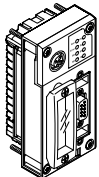
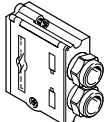
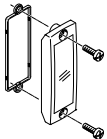
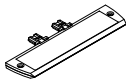


- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (Sub-D socket, 9-pin)
- [4] DIL switch cover

### Pin assignment for the CC-Link® interface

| Terminal assignment                    | Pin | Signal           | Designation              |
|----------------------------------------|-----|------------------|--------------------------|
| <b>Sub-D socket</b>                    |     |                  |                          |
|                                        | 1   | n.c.             | Not connected            |
|                                        | 2   | DA               | Data A                   |
|                                        | 3   | DG               | Data reference potential |
|                                        | 4   | n.c.             | Not connected            |
|                                        | 5   | FE <sup>1)</sup> | Functional earth         |
|                                        | 6   | n.c.             | Not connected            |
|                                        | 7   | DB               | Data B                   |
|                                        | 8   | n.c.             | Not connected            |
|                                        | 9   | n.c.             | Not connected            |
| <b>Bus connection – screw terminal</b> |     |                  |                          |
|                                        | 1   | FG               | Functional earth/housing |
|                                        | 2   | SLD              | Shielding                |
|                                        | 3   | DG               | Data reference potential |
|                                        | 4   | DB               | Data B                   |
|                                        | 5   | DA               | Data A                   |

## Datasheet – CC-Link® bus node

| Ordering data                                                                      |                                                                | Part no. | Type                        |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|----------|-----------------------------|
| Designation                                                                        |                                                                |          |                             |
| Bus node                                                                           |                                                                |          |                             |
|    | CC-Link® bus node                                              | 526176   | CPX-FB23-24                 |
| Bus connection                                                                     |                                                                |          |                             |
|    | Sub-D plug                                                     | 532220   | FBS-SUB-9-GS-2x4POL-B       |
|    | Inspection cover, transparent                                  | 533334   | AK-SUB-9/15-B               |
|    | Inscription label holder for connection block                  | 536593   | CPX-ST-1                    |
|   | Adapter M12, 5-pin to mini USB socket, and controller software | 547432   | NEFC-M12G5-0.3-U1G5         |
| User documentation                                                                 |                                                                |          |                             |
|  | User documentation for bus node CPX-FB23-24                    | German   | 526403 CPX-FB23-24-DE       |
|                                                                                    |                                                                | English  | 526404 CPX-FB23-24-EN       |
|                                                                                    |                                                                | Chinese  | 8026069 P.BE-CPX-FB23-24-ZH |

## Datasheet – PROFINET bus node, M12, D-coded



Bus node for operating the CPX valve terminal on PROFINET.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The fieldbus communication status is displayed via three bus-specific LEDs.



### Application

#### Bus connection

The bus connection is established via two M12 sockets, D-coded to IEC 61076-2-101 with degree of protection IP65, IP67.

Both connections are equivalent 100BaseTX Ethernet ports with integrated auto MDI functionality (crossover and patch cables can be used) that are brought together via an internal switch.

- Maximum segment length 100 m
- Transmission rate 100 Mbps

#### PROFINET implementation

The bus nodes support the PROFINET protocol on the basis of the Ethernet standard and TCP/IP technology to IEEE802.3.

This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs or process equipment. In addition, non-real-time critical information such as diagnostic

information, configuration information, etc. can be transferred. The Ethernet bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel.

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements and a diagnostic interface. PROFINET provides the

user with access to all peripherals, diagnostic data and parameter data of the CPX valve terminal. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX can be read out and, dependent on the function, changed via CPX-FMT.

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8 byte outputs
- 8 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

- 56 byte inputs
- 56 byte outputs

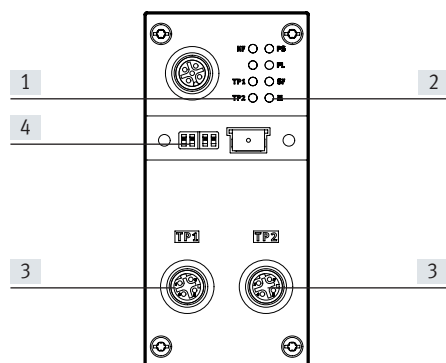
## Datasheet – PROFINET bus node, M12, D-coded

| General technical data                              |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |
|-----------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Type                                                |                    | CPX-FB43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |
| Fieldbus interface                                  |                    | 2x socket, M12, 4-pin, D-coded                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Baud rates                                          |                    | [Mbps]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 100           |
| Protocol                                            |                    | PROFINET RT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
|                                                     |                    | PROFINET IRT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Max. address capacity                               | Inputs             | [byte]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 64            |
|                                                     | Outputs            | [byte]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 64            |
| LED indicators                                      | (bus-specific)     | M/P = Maintenance/PROFenergy<br>NF = Network error<br>TP1 = Network active, port 1<br>TP2 = Network active, port 2                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
|                                                     | (product-specific) | M = Modify, parameterisation<br>PL = Load supply<br>PS = Electronic supply, sensor supply<br>SF = System error                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Device-specific diagnostics                         |                    | <ul style="list-style-type: none"><li>Channel and module-oriented diagnostics</li><li>Undervoltage of modules</li><li>Diagnostics memory</li></ul>                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Configuration support                               |                    | GSDML file                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
| Parameterisation                                    |                    | <ul style="list-style-type: none"><li>System parameters</li><li>Diagnostic behaviour</li><li>Signal setup</li><li>Fail-safe response</li><li>Forcing of channels</li></ul>                                                                                                                                                                                                                                                                                                                                                                    |               |
| Additional functions                                |                    | <ul style="list-style-type: none"><li>Start-up parameterisation in plain text via fieldbus</li><li>Fast start-up (FSU)</li><li>Channel-oriented diagnostics via fieldbus</li><li>Acyclic data access via fieldbus and via Ethernet</li><li>System status can be displayed using process data</li><li>Additional diagnostic interface for operator unit</li></ul> <ul style="list-style-type: none"><li>I&amp;M</li><li>LLDP</li><li>MRP</li><li>MRPD</li><li>MQTT</li><li>PROFIsafe</li><li>PROFenergy</li><li>S2 system redundancy</li></ul> |               |
| Control elements                                    |                    | <ul style="list-style-type: none"><li>DIL switches</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Operating voltage                                   | Nominal width      | [V DC]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 24            |
|                                                     | Permissible range  | [V DC]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 18 ... 30     |
| Current consumption                                 |                    | [mA]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Typically 70  |
| Degree of protection to EN 60529                    |                    | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
| Temperature range                                   | Operation          | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | – 5... +50    |
|                                                     | Storage/transport  | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | –20 ... +70   |
| Certification                                       |                    | RCM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Materials                                           | Housing            | Die-cast aluminium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Note on materials                                   |                    | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| LABS (PWIS) conformity                              |                    | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Dimensions (including interlinking block) W x L x H |                    | [mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 50 x 107 x 50 |
| Product weight                                      |                    | [g]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 185           |

- 
**Note**  
Please observe the general limits and guidelines for the system when configuring the electric modules.
- 
**Note**  
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal or polymer:
  - Self-tapping screws for polymer interlinking blocks
  - Screws with metric thread for metal interlinking blocks

## Datasheet – PROFINET bus node, M12, D-coded

### Connection and indicator components

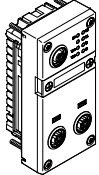
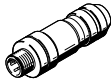
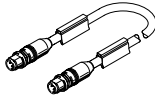
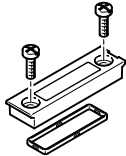
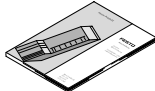


- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (socket M12, 4-pin, D-coded)
- [4] Transparent DIL switch cover

### Pin assignment for the fieldbus interface

| Terminal assignment         | Pin     | Signal | Designation       |
|-----------------------------|---------|--------|-------------------|
| <b>Socket, M12, D-coded</b> |         |        |                   |
|                             | 1       | TD+    | Transmitted data+ |
|                             | 2       | RD+    | Received data+    |
|                             | 3       | TD-    | Transmitted data- |
|                             | 4       | RD-    | Received data-    |
|                             | Housing |        | Shielding         |

## Datasheet – PROFINET bus node, M12, D-coded

| Ordering data                                                                      |                                                          |                                      |                                                                                                                                                           |                            |                              |
|------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------|
| Designation                                                                        |                                                          |                                      | Part no.                                                                                                                                                  | Type                       |                              |
| Bus node                                                                           |                                                          |                                      |                                                                                                                                                           |                            |                              |
|    | PROFINET bus node                                        |                                      | <ul style="list-style-type: none"><li>• I&amp;M</li><li>• LLDP</li><li>• MRP</li><li>• MRPD</li><li>• PROFINergy</li><li>• S2 system redundancy</li></ul> | 8110369                    | CPX-FB43                     |
| Bus connection                                                                     |                                                          |                                      |                                                                                                                                                           |                            |                              |
|    | Plug M12x1, 4-pin, D-coded                               |                                      |                                                                                                                                                           | 543109                     | NECU-M-S-D12G4-C2-ET         |
|    | Connecting cable, Straight plug, M12x1, 4-pin, D-coded   | Straight plug, M12x1, 4-pin, D-coded | 0.5 m                                                                                                                                                     | 8040446                    | NEBC-D12G4-ES-0.5-S-D12G4-ET |
|                                                                                    |                                                          |                                      | 1 m                                                                                                                                                       | 8040447                    | NEBC-D12G4-ES-1-S-D12G4-ET   |
|                                                                                    |                                                          |                                      | 3 m                                                                                                                                                       | 8040448                    | NEBC-D12G4-ES-3-S-D12G4-ET   |
|                                                                                    |                                                          |                                      | 5 m                                                                                                                                                       | 8040449                    | NEBC-D12G4-ES-5-S-D12G4-ET   |
|                                                                                    |                                                          |                                      | 10 m                                                                                                                                                      | 8040450                    | NEBC-D12G4-ES-10-S-D12G4-ET  |
|                                                                                    | Straight plug, RJ45, 8-pin                               | 1 m                                  | 8040451                                                                                                                                                   | NEBC-D12G4-ES-1-S-R3G4-ET  |                              |
|                                                                                    |                                                          | 3 m                                  | 8040452                                                                                                                                                   | NEBC-D12G4-ES-3-S-R3G4-ET  |                              |
|                                                                                    |                                                          | 5 m                                  | 8040453                                                                                                                                                   | NEBC-D12G4-ES-5-S-R3G4-ET  |                              |
|                                                                                    |                                                          | 10 m                                 | 8040454                                                                                                                                                   | NEBC-D12G4-ES-10-S-R3G4-ET |                              |
| Open end, 4-core                                                                   | 5 m                                                      | 8040456                              | NEBC-LE4-ES-5-D12G4-ET                                                                                                                                    |                            |                              |
|   | Transparent cover for the DIL switches                   |                                      |                                                                                                                                                           | 548757                     | CPX-AK-P                     |
|  | Cover cap for sealing unused bus connections (10 pieces) |                                      |                                                                                                                                                           | 165592                     | ISK-M12                      |
| User documentation                                                                 |                                                          |                                      |                                                                                                                                                           |                            |                              |
|  | Description electronics, CPX bus node                    | German                               | 548759                                                                                                                                                    | CPX-(M)-FB33_35/43_45-DE   |                              |
|                                                                                    |                                                          | English                              | 548760                                                                                                                                                    | CPX-(M)-FB33_35/43_45-EN   |                              |
|                                                                                    |                                                          | Spanish                              | 548761                                                                                                                                                    | CPX-(M)-FB33_35/43_45-ES   |                              |
|                                                                                    |                                                          | French                               | 548762                                                                                                                                                    | CPX-(M)-FB33_35/43_45-FR   |                              |
|                                                                                    |                                                          | Italian                              | 548763                                                                                                                                                    | CPX-(M)-FB33_35/43_45-IT   |                              |

## Datasheet – PROFINET bus node, push-pull RJ45

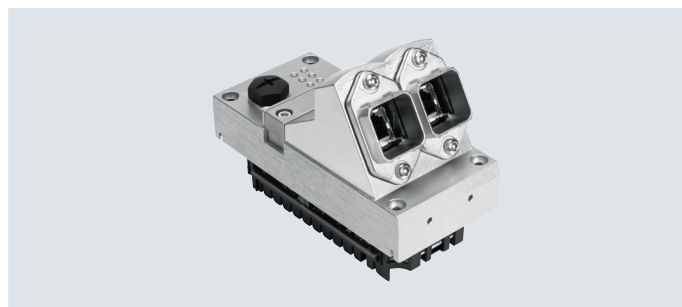


Bus node for operating the CPX valve terminal on PROFINET.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The status of the fieldbus communication is displayed via 4 bus-specific LEDs.



### Application

#### Bus connection

The bus connection is established via two RJ45 push-pull sockets to IEC 61076-3-106 and IEC 60603 with degree of protection IP65, IP67.

Both connections are equivalent 100BaseTX Ethernet ports with integrated auto MDI functionality (cross-over and patch cables can be used) that are brought together via an internal switch.

- Maximum segment length 100 m
- Transmission rate 100 Mbps

#### PROFINET implementation

The bus nodes support the PROFINET protocol on the basis of the Ethernet standard and TCP/IP technology to IEEE802.3.

This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs or process equipment. In addition, non-real-time critical information such as diagnostic

information, configuration information, etc. can be transferred.

The Ethernet bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel.

The bus nodes feature LEDs for bus status and CPX peripheral information as well as switch elements and a diagnostic interface. PROFINET provides the

user with access to all peripherals, diagnostic data and parameter data of the CPX valve terminal. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX can be read out and, dependent on the function, changed via CPX-FMT.

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8/16 byte outputs
- 8/16 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

- 56/48 byte inputs
- 56/48 byte outputs



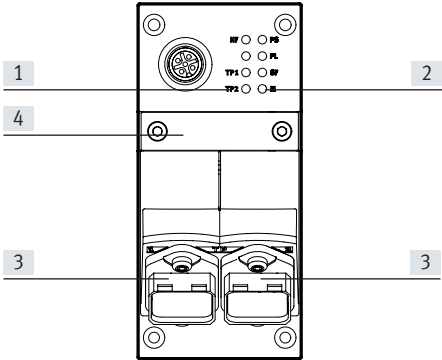
## Datasheet – PROFINET bus node, push-pull RJ45

| General technical data                                     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |
|------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Type                                                       |                    | CPX-M-FB44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
| Fieldbus interface                                         |                    | 2x RJ45 push-pull socket, AIDA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Baud rate                                                  | [Mbps]             | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Protocol                                                   |                    | PROFINET RT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
|                                                            |                    | PROFINET IRT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Max. address capacity                                      | Inputs             | [byte]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 64            |
|                                                            | Outputs            | [byte]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 64            |
| LED indicators                                             | (bus-specific)     | M/P = Maintenance/PROFenergy<br>NF = Network error<br>TP1 = Network active, port 1<br>TP2 = Network active, port 2                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
|                                                            | (product-specific) | M = Modify, parameterisation<br>PL = Load supply<br>PS = Electronic supply, sensor supply<br>SF = System error                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Device-specific diagnostics                                |                    | <ul style="list-style-type: none"><li>Channel and module-oriented diagnostics</li><li>Undervoltage of modules</li><li>Diagnostics memory</li></ul>                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Configuration support                                      |                    | GSDML file                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
| Parameterisation                                           |                    | <ul style="list-style-type: none"><li>System parameters</li><li>Diagnostic behaviour</li><li>Signal setup</li><li>Fail-safe response</li><li>Forcing of channels</li></ul>                                                                                                                                                                                                                                                                                                                                                                    |               |
| Additional functions                                       |                    | <ul style="list-style-type: none"><li>Start-up parameterisation in plain text via fieldbus</li><li>Fast start-up (FSU)</li><li>Channel-oriented diagnostics via fieldbus</li><li>Acyclic data access via fieldbus and via Ethernet</li><li>System status can be displayed using process data</li><li>Additional diagnostic interface for operator unit</li></ul> <ul style="list-style-type: none"><li>I&amp;M</li><li>LLDP</li><li>MRP</li><li>MRPD</li><li>MQTT</li><li>PROFIsafe</li><li>PROFenergy</li><li>S2 system redundancy</li></ul> |               |
| Control elements                                           |                    | <ul style="list-style-type: none"><li>DIL switches</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Operating voltage                                          | Nominal width      | [V DC]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 24            |
|                                                            | Permissible range  | [V DC]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 18 ... 30     |
| Intrinsic current consumption at nominal operating voltage |                    | [mA]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Typ. 70       |
| Degree of protection to EN 60529                           |                    | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
| Temperature range                                          | Operation          | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | – 5... +50    |
|                                                            | Storage/transport  | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | –20 ... +70   |
| Certification                                              |                    | RCM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Material information: Housing                              |                    | Die-cast aluminium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Note on materials                                          |                    | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| LABS (PWIS) conformity                                     |                    | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
| Dimensions (including interlinking block) W x L x H        |                    | [mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 50 x 107 x 80 |
| Product weight                                             |                    | [g]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 280           |

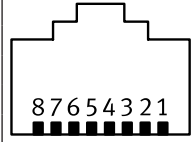
- 
**Note**  
Please observe the general limits and guidelines for the system when configuring the electric modules.
- 
**Note**  
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal or polymer:
  - Self-tapping screws for polymer interlinking blocks
  - Screws with metric thread for metal interlinking blocks

Datasheet – PROFINET bus node, push-pull RJ45

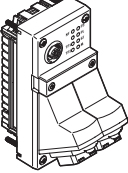
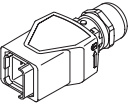
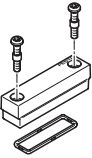
Connection and indicator components



- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (RJ45 socket, 8-pin)
- [4] DIL switch

| Pin assignment for the fieldbus interface                                         |         |           |                   |
|-----------------------------------------------------------------------------------|---------|-----------|-------------------|
| Terminal assignment                                                               | Pin     | Signal    | Designation       |
| RJ45 socket                                                                       |         |           |                   |
|  | 1       | TD+       | Transmitted data+ |
|                                                                                   | 2       | TD-       | Transmitted data- |
|                                                                                   | 3       | RD+       | Received data+    |
|                                                                                   | 4       | n.c.      | Not connected     |
|                                                                                   | 5       | n.c.      | Not connected     |
|                                                                                   | 6       | RD-       | Received data-    |
|                                                                                   | 7       | n.c.      | Not connected     |
|                                                                                   | 8       | n.c.      | Not connected     |
|                                                                                   | Housing | Shielding | Shielding         |

## Datasheet – PROFINET bus node, push-pull RJ45

| Ordering data                                                                      |                                       |                                                                                                                                                                  |          |                          |
|------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------|
| Designation                                                                        |                                       |                                                                                                                                                                  | Part no. | Type                     |
| Bus node                                                                           |                                       |                                                                                                                                                                  |          |                          |
|    | PROFINET bus node                     | <ul style="list-style-type: none"> <li>• I&amp;M</li> <li>• LLDP</li> <li>• MRP</li> <li>• MRPD</li> <li>• PROFinergy</li> <li>• S2 system redundancy</li> </ul> | 8110370  | CPX-M-FB44               |
| Bus connection                                                                     |                                       |                                                                                                                                                                  |          |                          |
|    | Plug RJ45, 8-pin                      | Push-pull with locking mechanism against unintentional pulling                                                                                                   | 5195384  | NECC-M-S-R3G8PP-HX-PN    |
|    | Cover cap for bus connection          |                                                                                                                                                                  | 8090740  | NEAC-M-S-BD-R3SCPP       |
|    | Cover cap for bus connection          |                                                                                                                                                                  | 2873540  | CPX-M-AK-D               |
|   | Cover for DIL switches                |                                                                                                                                                                  | 548754   | CPX-M-AK-M               |
| User documentation                                                                 |                                       |                                                                                                                                                                  |          |                          |
|  | Description electronics, CPX bus node | German                                                                                                                                                           | 548759   | CPX-(M)-FB33_35/43_45-DE |
|                                                                                    |                                       | English                                                                                                                                                          | 548760   | CPX-(M)-FB33_35/43_45-EN |
|                                                                                    |                                       | Spanish                                                                                                                                                          | 548761   | CPX-(M)-FB33_35/43_45-ES |
|                                                                                    |                                       | French                                                                                                                                                           | 548762   | CPX-(M)-FB33_35/43_45-FR |
|                                                                                    |                                       | Italian                                                                                                                                                          | 548763   | CPX-(M)-FB33_35/43_45-IT |

## Datasheet – PROFINET bus node, push-pull SCRJ

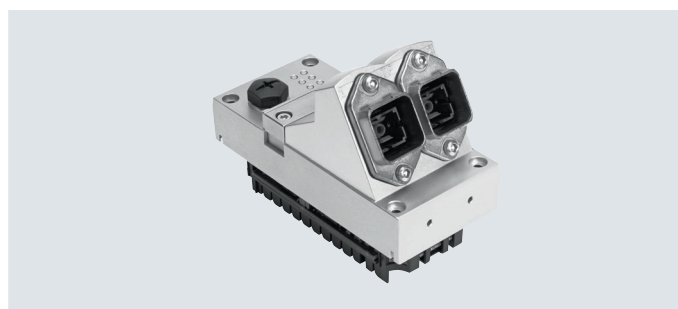


Bus node for operating the CPX valve terminal on PROFINET.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The fieldbus communication status is displayed via three bus-specific LEDs.



### Application

#### Bus connection

The bus connection is established via SCRJ push-pull sockets to IEC61754-24 (fibre optic cable, AIDA standard) with degree of protection IP65, IP67.

The connections on the CPX bus node are equivalent 100BaseFX Ethernet ports that are brought together via an internal switch.

Fibre optic cables made of polymer (POF, 980/1000 µm) are also suitable as a transmission medium.

- Maximum segment length 50 m
- Transmission rate 100 Mbps
- Supports LLDP and SNMP

#### PROFINET implementation

The bus nodes support the PROFINET protocol on the basis of the Ethernet standard and TCP/IP technology to IEEE802.3.

This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs or process equipment. In addition, non-real-time critical information such as diagnostic

information, configuration information, etc. can be transferred.

The Ethernet bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel.

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements and a diagnostic interface. PROFINET provides the

user with access to all peripheral, diagnostic and parameter data for the CPX valve terminal. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX can be read out and, dependent on the function, changed via CPX-FMT.

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8/16 byte outputs
- 8/16 byte inputs

The following address capacity remains in the control block or CPX system for activating the peripherals:

- 56/48 byte inputs
- 56/48 byte outputs

## Datasheet – PROFINET bus node, push-pull SCRJ

| General technical data                                     |                    |                                                                                                                                                                                                                                                                                                                                                                  |               |
|------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Type                                                       |                    | CPX-M-FB45                                                                                                                                                                                                                                                                                                                                                       |               |
| Fieldbus interface                                         |                    | 2x SCRJ push-pull socket, AIDA                                                                                                                                                                                                                                                                                                                                   |               |
| Baud rate                                                  | [Mbps]             | 100                                                                                                                                                                                                                                                                                                                                                              |               |
| Protocol                                                   |                    | PROFINET RT                                                                                                                                                                                                                                                                                                                                                      |               |
|                                                            |                    | PROFINET IRT                                                                                                                                                                                                                                                                                                                                                     |               |
| Max. address capacity                                      | Inputs             | [byte]                                                                                                                                                                                                                                                                                                                                                           | 64            |
|                                                            | Outputs            | [byte]                                                                                                                                                                                                                                                                                                                                                           | 64            |
| LED indicators                                             | (bus-specific)     | M/P = Maintenance/PROFenergy<br>NF = Network error<br>TP1 = Network active, port 1<br>TP2 = Network active, port 2                                                                                                                                                                                                                                               |               |
|                                                            | (product-specific) | M = Modify, parameterisation<br>PL = Load supply<br>PS = Electronic supply, sensor supply<br>SF = System error                                                                                                                                                                                                                                                   |               |
| Device-specific diagnostics                                |                    | <ul style="list-style-type: none"><li>Channel and module-oriented diagnostics</li><li>Undervoltage of modules</li><li>Diagnostics memory</li></ul>                                                                                                                                                                                                               |               |
| Configuration support                                      |                    | GSDML file                                                                                                                                                                                                                                                                                                                                                       |               |
| Parameterisation                                           |                    | <ul style="list-style-type: none"><li>System parameters</li><li>Diagnostic behaviour</li><li>Signal setup</li><li>Fail-safe response</li><li>Forcing of channels</li></ul>                                                                                                                                                                                       |               |
| Additional functions                                       |                    | <ul style="list-style-type: none"><li>Start-up parameterisation in plain text via fieldbus</li><li>Fast start-up (FSU)</li><li>Channel-oriented diagnostics via fieldbus</li><li>Acyclic data access via fieldbus and via Ethernet</li><li>System status can be displayed using process data</li><li>Additional diagnostic interface for operator unit</li></ul> |               |
|                                                            |                    | <ul style="list-style-type: none"><li>I&amp;M</li><li>LLDP</li><li>MRP</li><li>MRPD</li><li>MQTT</li><li>PROFIsafe</li><li>PROFenergy</li><li>S2 system redundancy</li></ul>                                                                                                                                                                                     |               |
| Control elements                                           |                    | DIL switches                                                                                                                                                                                                                                                                                                                                                     |               |
| Operating voltage                                          | Nominal width      | [V DC]                                                                                                                                                                                                                                                                                                                                                           | 24            |
|                                                            | Permissible range  | [V DC]                                                                                                                                                                                                                                                                                                                                                           | 18 ... 30     |
| Intrinsic current consumption at nominal operating voltage |                    | [mA]                                                                                                                                                                                                                                                                                                                                                             | Typ. 145      |
| Certification                                              |                    | RCM                                                                                                                                                                                                                                                                                                                                                              |               |
| Degree of protection to EN 60529                           |                    | IP65, IP67                                                                                                                                                                                                                                                                                                                                                       |               |
| Temperature range                                          | Operation          | [°C]                                                                                                                                                                                                                                                                                                                                                             | – 5... +50    |
|                                                            | Storage/transport  | [°C]                                                                                                                                                                                                                                                                                                                                                             | –20 ... +70   |
| Material information: Housing                              |                    | Die-cast aluminium                                                                                                                                                                                                                                                                                                                                               |               |
| Note on materials                                          |                    | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                   |               |
| LABS (PWIS) conformity                                     |                    | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                   |               |
| Grid dimension                                             |                    | [mm]                                                                                                                                                                                                                                                                                                                                                             | 50            |
| Dimensions (including interlinking block) W x L x H        |                    | [mm]                                                                                                                                                                                                                                                                                                                                                             | 50 x 107 x 80 |
| Product weight                                             |                    | [g]                                                                                                                                                                                                                                                                                                                                                              | 280           |

 **Note**

Please observe the general limits and guidelines for the system when configuring the electric modules.

 **Note**

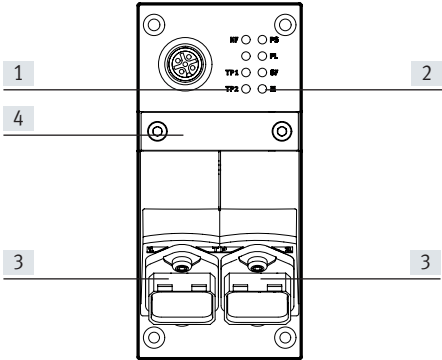
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal or polymer:

- Self-tapping screws for polymer interlinking blocks

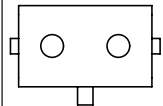
- Screws with metric thread for metal interlinking blocks

Datasheet – PROFINET bus node, push-pull SCRJ

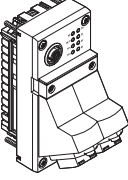
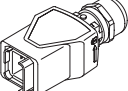
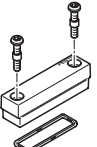
Connection and indicator components



- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (SCRJ socket, 2-pin)
- [4] DIL switch

| Pin assignment for the fieldbus interface                                         |     |        |             |
|-----------------------------------------------------------------------------------|-----|--------|-------------|
| Terminal assignment                                                               | Pin | Signal | Designation |
| Socket SCRJ                                                                       |     |        |             |
|  | 1   | Tx     | Outgoing    |
|                                                                                   | 2   | Rx     | Incoming    |

## Datasheet – PROFINET bus node, push-pull SCRJ

| Ordering data                                                                      |                                                                        |                                                                                                                                                                    |          |                          |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------|
| Designation                                                                        |                                                                        |                                                                                                                                                                    | Part no. | Type                     |
| Bus node                                                                           |                                                                        |                                                                                                                                                                    |          |                          |
|    | 2x SCRJ push-pull socket, AIDA                                         | <ul style="list-style-type: none"> <li>• I&amp;M</li> <li>• LLDP</li> <li>• MRP</li> <li>• MRPD</li> <li>• PROFinenergy</li> <li>• S2 system redundancy</li> </ul> | 8110371  | CPX-M-FB45               |
| Bus connection                                                                     |                                                                        |                                                                                                                                                                    |          |                          |
|    | SC-RJ connector to IEC 61754-24, 2-pin                                 | Push-pull with locking mechanism against unintentional pulling                                                                                                     | 5195381  | NOCC-M-S-SCRJG2PP-C5-PN  |
|    | Cover cap for bus connection                                           |                                                                                                                                                                    | 8090740  | NEAC-M-S-BD-R3SCPP       |
|    | Cover cap for bus connection                                           |                                                                                                                                                                    | 2873540  | CPX-M-AK-D               |
|   | Cover for DIL switches                                                 |                                                                                                                                                                    | 548754   | CPX-M-AK-M               |
|  | Screws for attaching an inscription label to the bus node (pack of 12) |                                                                                                                                                                    | 550222   | CPX-M-M2.5X8-12X         |
|  | Adapter M12, 5-pin to mini USB socket, and controller software         |                                                                                                                                                                    | 547432   | NEFC-M12G5-0.3-U1G5      |
| User documentation                                                                 |                                                                        |                                                                                                                                                                    |          |                          |
|  | Description electronics, CPX bus node                                  | German                                                                                                                                                             | 548759   | CPX-(M)-FB33_35/43_45-DE |
|                                                                                    |                                                                        | English                                                                                                                                                            | 548760   | CPX-(M)-FB33_35/43_45-EN |
|                                                                                    |                                                                        | Spanish                                                                                                                                                            | 548761   | CPX-(M)-FB33_35/43_45-ES |
|                                                                                    |                                                                        | French                                                                                                                                                             | 548762   | CPX-(M)-FB33_35/43_45-FR |
|                                                                                    |                                                                        | Italian                                                                                                                                                            | 548763   | CPX-(M)-FB33_35/43_45-IT |

## Datasheet – EtherNet/IP bus node

- Industrial Ethernet
- EtherNet/IP
- Web interface

Bus node for handling communication between the electrical terminal CPX and the EtherNet/IP network.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.



### Application

#### Bus connection

The bus connection is established via an M12 plug, D-coded to IEC 947-5-2 with degree of protection IP65, IP67.

EtherNet/IP is an open bus system based on the Ethernet standard and TCP/IP technology (IEEE802.3).

#### EtherNet/IP implementation

The CPX-FB36 supports the two operating modes: remote I/O and remote controller.

In remote I/O operating mode, all functions of the CPX valve terminal are directly

controlled by the Ethernet/IP master (host).

In addition to activation via a bus system, it is possible to use IT technologies. An integrated web server enables diagnostic data to be visualised via

HTML. Various programs support direct access to the device data from the automation network.

The Ethernet/IP node for CPX supports the transmission technology that con-

forms to DIN EN 50173/CAT 5 as an integrated interface.

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8 byte outputs
- 8 byte inputs

The following address capacity remains in the control block or CPX system for activating the peripherals:

- 56 byte inputs
- 56 byte outputs



## Datasheet – EtherNet/IP bus node

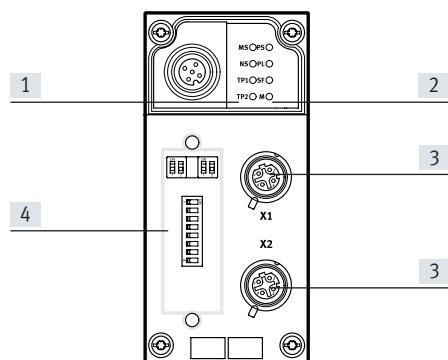
| General technical data                              |                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------|-------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                |                   |        | CPX-FB36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Fieldbus interface                                  |                   |        | 2x socket M12x1, 4-pin, D-coded                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Baud rates                                          | [Mbps]            |        | 10/100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Protocol                                            |                   |        | EtherNet/IP<br>Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Max. address capacity, inputs                       | [byte]            |        | 64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Max. address capacity, outputs                      | [byte]            |        | 64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| LED displays (bus-specific)                         |                   |        | MS = Module status<br>NS = Network status<br>TP1 = Network active, port 1<br>TP2 = Network active, port 2                                                                                                                                                                                                                                                                                                                                                                                                  |
| Device-specific diagnostics                         |                   |        | <ul style="list-style-type: none"> <li>Module and channel-oriented diagnostics</li> <li>Undervoltage of modules</li> <li>Diagnostic memory</li> </ul>                                                                                                                                                                                                                                                                                                                                                      |
| Configuration support                               |                   |        | <ul style="list-style-type: none"> <li>EDS file</li> <li>L5K export with CPX-FMT</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                |
| Parameterisation                                    |                   |        | <ul style="list-style-type: none"> <li>Diagnostic behaviour</li> <li>Fail-safe response</li> <li>Forcing of channels</li> <li>Idle mode characteristics</li> <li>Signal setup</li> <li>System parameters</li> </ul>                                                                                                                                                                                                                                                                                        |
| Additional functions                                |                   |        | <ul style="list-style-type: none"> <li>EtherNet/IP Quickconnect</li> <li>Ring topology (DLR)</li> <li>Acyclic data access via "Explicit Message" and Ethernet</li> <li>Integrated switch</li> <li>- IP addressing via DHCP, DIL switch or operator unit</li> <li>Channel-oriented diagnostics via fieldbus</li> <li>Start-up parameterisation in plain text via fieldbus</li> <li>System status can be displayed using process data</li> <li>Additional diagnostic interface for operator units</li> </ul> |
| Control elements                                    |                   |        | DIL switches                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operating voltage                                   | Nominal width     | [V DC] | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     | Permissible range | [V DC] | 18 ... 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Current consumption at nominal voltage              |                   | [mA]   | Typically 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Degree of protection to EN 60529                    |                   |        | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Temperature range                                   | Operation         | [°C]   | – 5... +50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                     | Storage/transport | [°C]   | –20 ... +70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Materials                                           |                   |        | Reinforced PA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Note on materials                                   |                   |        | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| LABS (PWIS) conformity                              |                   |        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Grid dimension                                      |                   | [mm]   | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Dimensions (including interlinking block) W x L x H |                   | [mm]   | 50 x 107 x 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Product weight                                      |                   | [g]    | 125                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Note**

Please observe the general limits and guidelines for the system when configuring the electrical modules.

## Datasheet – EtherNet/IP bus node

### Connection and indicator components

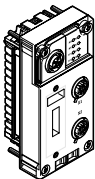
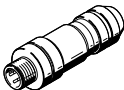
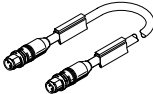
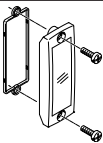
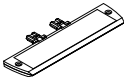
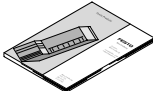


- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (socket M12, 4-pin, D-coded)
- [4] Transparent DIL switch cover

### Pin assignment for the fieldbus interface

| Terminal assignment         | Pin     | Signal | Designation       |
|-----------------------------|---------|--------|-------------------|
| <b>Socket, M12, D-coded</b> |         |        |                   |
|                             | 1       | TD+    | Transmitted data+ |
|                             | 2       | RD+    | Received data+    |
|                             | 3       | TD-    | Transmitted data- |
|                             | 4       | RD-    | Received data-    |
|                             | Housing | FE     | Shielding         |

## Datasheet – EtherNet/IP bus node

| Ordering data                                                                      |                                                                |                                         |                  |          |                              |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------|------------------|----------|------------------------------|
| Designation                                                                        |                                                                |                                         |                  | Part no. | Type                         |
| Bus node                                                                           |                                                                |                                         |                  |          |                              |
|    | EtherNet/IP bus node                                           |                                         |                  | 1912451  | CPX-FB36                     |
| Bus connection                                                                     |                                                                |                                         |                  |          |                              |
|    | Plug M12x1, 4-pin, D-coded                                     |                                         |                  | 543109   | NECU-M-S-D12G4-C2-ET         |
|    | Connecting cable,<br>Straight plug, M12x1,<br>4-pin, D-coded   | Straight plug, M12x1,<br>4-pin, D-coded | 0.5 m            | 8040446  | NEBC-D12G4-ES-0.5-S-D12G4-ET |
|                                                                                    |                                                                |                                         | 1 m              | 8040447  | NEBC-D12G4-ES-1-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 3 m              | 8040448  | NEBC-D12G4-ES-3-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 5 m              | 8040449  | NEBC-D12G4-ES-5-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 10 m             | 8040450  | NEBC-D12G4-ES-10-S-D12G4-ET  |
|                                                                                    |                                                                | Straight plug, RJ45, 8-pin              | 1 m              | 8040451  | NEBC-D12G4-ES-1-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 3 m              | 8040452  | NEBC-D12G4-ES-3-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 5 m              | 8040453  | NEBC-D12G4-ES-5-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 10 m             | 8040454  | NEBC-D12G4-ES-10-S-R3G4-ET   |
|                                                                                    |                                                                |                                         | Open end, 4-core | 5 m      | 8040456                      |
|   | Inspection cover, transparent                                  |                                         |                  | 533334   | AK-SUB-9/15-B                |
|  | Inscription label holder for connection block                  |                                         |                  | 536593   | CPX-ST-1                     |
|  | Adapter M12, 5-pin to mini USB socket, and controller software |                                         |                  | 547432   | NEFC-M12G5-0.3-U1G5          |
| User documentation                                                                 |                                                                |                                         |                  |          |                              |
|  | User documentation for bus node CPX-FB36                       |                                         | German           | 8024074  | CPX-FB36-DE                  |
|                                                                                    |                                                                |                                         | English          | 8024075  | CPX-FB36-EN                  |

## Datasheet – EtherCAT® bus node

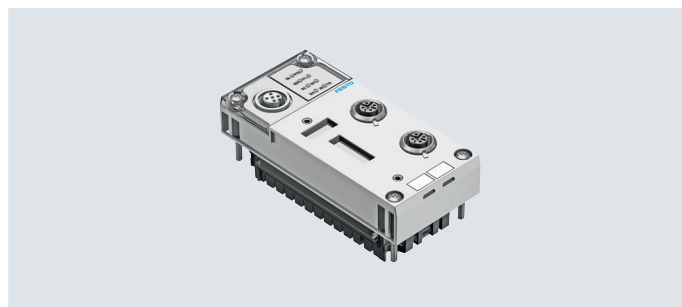


Bus node for operating the CPX valve terminal on EtherCAT.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.

The status of the fieldbus communication is displayed via 4 bus-specific LEDs.



### Application

#### Bus connection

The bus connection is established via two sockets M12x1, D-coded to IEC 61076-2-101 with degree of protection IP65, IP67.

Both connections are equivalent 100BaseTX Ethernet ports with integrated auto MDI functionality (cross-over and patch cable can be used) that are brought together via an internal switch.

- Maximum segment length 100 m
- Transmission rate 100 Mbps

#### EtherCAT® implementation

The CPX-FB37 supports the EtherCAT protocol on the basis of the Ethernet standard and TCP/IP technology to IEEE802.3.

This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs or process equipment. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred.

The data bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel.

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements and a diagnostic interface. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX can be read out and, dependent on the function, changed via CPX-FMT.

The functions MDP (modular device profile) and CoE (CAN over EtherCAT®) enable easy access to parameters and diagnostic data via EtherCAT.

Specific EtherCAT® functions:

- CoE (parameters and diagnostics or fail-safe mode): all module parameters can be set
- FoE (file over EtherCAT) makes it possible to download firmware easily
- EoE (Ethernet over EtherCAT): diagnostic data can be retrieved easily using a browser
- MDP (modular device profile): easy configuration using a module selection box
- Hot connect, easy replacement of an EtherCAT CPX terminal
- DC (distributed clocks), time-synchronised data transmission

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

- 8/16 byte outputs
- 8/16 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

- 56/48 byte inputs
- 56/48 byte outputs

## Datasheet – EtherCAT® bus node

| General technical data                              |                   |        |                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------|-------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                |                   |        | CPX-FB37                                                                                                                                                                                                                                                                                                                                                                              |
| Fieldbus interface                                  |                   |        | 2x socket M12x1, 4-pin, D-coded                                                                                                                                                                                                                                                                                                                                                       |
| Baud rates                                          |                   | [Mbps] | 100                                                                                                                                                                                                                                                                                                                                                                                   |
| Protocol                                            |                   |        | EtherCAT®                                                                                                                                                                                                                                                                                                                                                                             |
| Max. address capacity                               | Inputs            | [byte] | 64                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                     | Outputs           | [byte] | 64                                                                                                                                                                                                                                                                                                                                                                                    |
| LED indicators                                      | Bus-specific      |        | Error     = Communication error<br>L/A1     = Network active port 1<br>L/A2     = Network active port 2<br>Run       = Communication status                                                                                                                                                                                                                                           |
|                                                     | Product-specific  |        | M = Modify, parameterisation<br>PL        = Load supply<br>PS        = Electronic supply, sensor supply<br>SF        = System error                                                                                                                                                                                                                                                   |
| Device-specific diagnostics                         |                   |        | <ul style="list-style-type: none"><li>• Channel and module-oriented diagnostics</li><li>• Undervoltage of modules</li><li>• Diagnostics memory</li></ul>                                                                                                                                                                                                                              |
| Configuration support                               |                   |        | ESI file                                                                                                                                                                                                                                                                                                                                                                              |
| Parameterisation                                    |                   |        | <ul style="list-style-type: none"><li>• System parameters</li><li>• Diagnostic behaviour</li><li>• Signal setup</li><li>• Fail-safe response</li><li>• Forcing of channels</li></ul>                                                                                                                                                                                                  |
| Additional functions                                |                   |        | <ul style="list-style-type: none"><li>• System status can be displayed using process data</li><li>• Additional diagnostic interface for operator units</li><li>• Emergency message</li><li>• Acyclic data access via fieldbus</li><li>• Diagnostics object</li><li>• Compatibility mode with CPX-FB38</li><li>• Modular Device Profile (MDP)</li><li>• Variable PDO mapping</li></ul> |
| Control elements                                    |                   |        | DIL switches                                                                                                                                                                                                                                                                                                                                                                          |
| Operating voltage                                   | Nominal width     | [V DC] | 24                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                     | Permissible range | [V DC] | 18 ... 30                                                                                                                                                                                                                                                                                                                                                                             |
| Current consumption                                 |                   | [mA]   | Typically 100                                                                                                                                                                                                                                                                                                                                                                         |
| Degree of protection to EN 60529                    |                   |        | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                            |
| Temperature range                                   | Operation         | [°C]   | – 5... +50                                                                                                                                                                                                                                                                                                                                                                            |
|                                                     | Storage/transport | [°C]   | –20 ... +70                                                                                                                                                                                                                                                                                                                                                                           |
| Materials                                           | Housing           |        | Reinforced PA                                                                                                                                                                                                                                                                                                                                                                         |
| Note on materials                                   |                   |        | RoHs-compliant                                                                                                                                                                                                                                                                                                                                                                        |
| LABS (PWIS) conformity                              |                   |        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                        |
| Grid dimension                                      |                   | [mm]   | 50                                                                                                                                                                                                                                                                                                                                                                                    |
| Dimensions (including interlinking block) W x L x H |                   | [mm]   | 50 x 107 x 50                                                                                                                                                                                                                                                                                                                                                                         |
| Product weight                                      |                   | [g]    | 125                                                                                                                                                                                                                                                                                                                                                                                   |

 **Note**

Please observe the general limits and guidelines for the system when configuring the electrical modules.

 **Note**

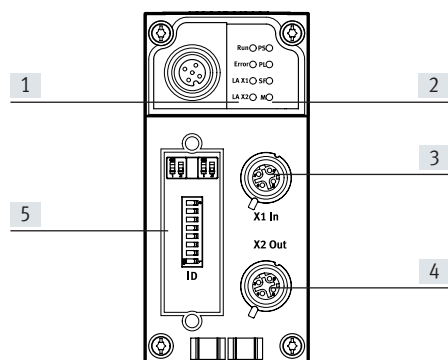
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal or polymer:

- Self-tapping screws for polymer interlinking blocks

- Screws with metric thread for metal interlinking blocks

## Datasheet – EtherCAT® bus node

### Connection and indicator components

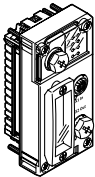
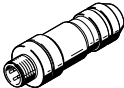
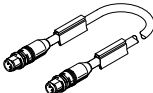
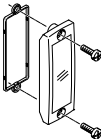
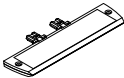
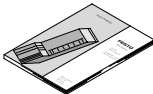


- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface, input (socket M12x1, 4-pin, D-coded)
- [4] Fieldbus interface, output (socket M12x1, 4-pin, D-coded)
- [5] DIL switch

### Pin assignment for the fieldbus interface

| Terminal assignment          | Pin     | Signal | Designation       |
|------------------------------|---------|--------|-------------------|
| <b>Socket M12x1, D-coded</b> |         |        |                   |
|                              | 1       | TD+    | Transmitted data+ |
|                              | 2       | RD+    | Received data+    |
|                              | 3       | TD-    | Transmitted data- |
|                              | 4       | RD-    | Received data-    |
|                              | Housing | FE     | Shielding         |

## Datasheet – EtherCAT® bus node

| Ordering data                                                                      |                                                                |                                         |         |          |                              |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------|---------|----------|------------------------------|
| Designation                                                                        |                                                                |                                         |         | Part no. | Type                         |
| Bus node                                                                           |                                                                |                                         |         |          |                              |
|    | EtherCAT® bus node                                             |                                         |         | 2735960  | CPX-FB37                     |
| Bus connection                                                                     |                                                                |                                         |         |          |                              |
|    | Plug M12x1, 4-pin, D-coded                                     |                                         |         | 543109   | NECU-M-S-D12G4-C2-ET         |
|    | Connecting cable,<br>Straight plug, M12x1,<br>4-pin, D-coded   | Straight plug, M12x1,<br>4-pin, D-coded | 0.5 m   | 8040446  | NEBC-D12G4-ES-0.5-S-D12G4-ET |
|                                                                                    |                                                                |                                         | 1 m     | 8040447  | NEBC-D12G4-ES-1-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 3 m     | 8040448  | NEBC-D12G4-ES-3-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 5 m     | 8040449  | NEBC-D12G4-ES-5-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 10 m    | 8040450  | NEBC-D12G4-ES-10-S-D12G4-ET  |
|                                                                                    |                                                                | Straight plug, RJ45, 8-pin              | 1 m     | 8040451  | NEBC-D12G4-ES-1-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 3 m     | 8040452  | NEBC-D12G4-ES-3-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 5 m     | 8040453  | NEBC-D12G4-ES-5-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 10 m    | 8040454  | NEBC-D12G4-ES-10-S-R3G4-ET   |
|   | Inspection cover, transparent                                  | Open end, 4-core                        |         | 8040456  | NEBC-LE4-ES-5-D12G4-ET       |
|                                                                                    |                                                                |                                         |         |          |                              |
|  | Cover cap for sealing unused bus connections (10 pieces)       |                                         |         | 165592   | ISK-M12                      |
|  | Inscription label holder for connection block                  |                                         |         | 536593   | CPX-ST-1                     |
|  | Adapter M12, 5-pin to mini USB socket, and controller software |                                         |         | 547432   | NEFC-M12G5-0.3-U1G5          |
| User documentation                                                                 |                                                                |                                         |         |          |                              |
|  | Description electronics, CPX bus node, type CPX-FB37           |                                         | German  | 8029674  | CPX-FB37-DE                  |
|                                                                                    |                                                                |                                         | English | 8029675  | CPX-FB37-EN                  |

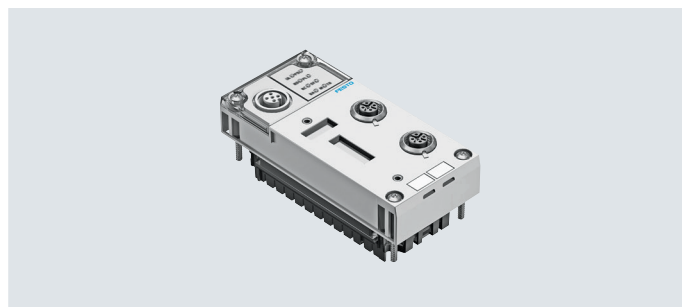
## Datasheet – Sercos III bus node

- Sercos
- Web interface

Bus node for handling communication between the electrical terminal CPX and the Sercos III network.

The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.



### Application

#### Bus connection

The bus connection is established via two plugs M12x1, D-coded to IEC 947-5-2 with degree of protection to IP65, IP67. The connections are equipped with automatic detection for the incoming and outgoing connection.

The Sercos III bus node can be used to connect the CPX valve terminal to the standardised Sercos III bus. Sercos III uses the Ethernet standard (IEEE802.3) and TCP/IP technology for communication in an industrial environment.

Industry-compatible Sercos III devices enable data to be exchanged with a higher data transmission rate, such as data from sensors, actuators or controllers.

Non-real-time critical information, such as diagnostics or configuration information, can also be transferred.

#### Webserver

In addition to activation via a bus system, it is possible to use IT technologies. An integrated web server enables

diagnostic data to be visualised via HTML. Various programs support direct

access to the device data from the automation network.

#### Points to note in connection with CPX-CEC

The CPX-FB39 supports the operating modes remote I/O and remote controller.

In remote I/O operating mode, all functions of the CPX valve terminal are directly controlled by the Sercos controller.

When a bus node is combined with a control block (CPX-CEC, in the fieldbus

remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by

linking the CPX modules and takes up the following address capacity in the CPX system:

- 8/16 byte outputs
- 8/16 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

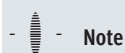
- 56/48 byte inputs

- 56/48 byte outputs



## Datasheet – Sercos III bus node

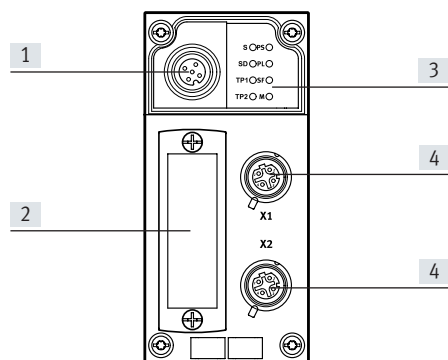
| General technical data                              |                   |        |                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------|-------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                |                   |        | CPX-FB39                                                                                                                                                                                                                                                                                                                                                                                          |
| Fieldbus interface                                  |                   |        | 2x M12x1 socket, D-coded, 4-pin                                                                                                                                                                                                                                                                                                                                                                   |
| Baud rates                                          |                   | [Mbps] | 100 full/half duplex                                                                                                                                                                                                                                                                                                                                                                              |
| Protocol                                            |                   |        | Sercos III                                                                                                                                                                                                                                                                                                                                                                                        |
| Max. address capacity                               | Inputs            | [byte] | 64                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                     | Outputs           | [byte] | 64                                                                                                                                                                                                                                                                                                                                                                                                |
| LED indicators                                      | Bus-specific      |        | S = Sercos LED<br>SD = Sercos sub-device LED<br>TP1 = Network active, port 1<br>TP2 = Network active, port 2                                                                                                                                                                                                                                                                                      |
|                                                     | Product-specific  |        | M = Modify, parameterisation<br>PL = Load supply<br>PS = Electronics supply, sensor supply<br>SF = System error                                                                                                                                                                                                                                                                                   |
| Device-specific diagnostics                         |                   |        | <ul style="list-style-type: none"> <li>Module and channel-oriented diagnostics</li> <li>Undervoltage of modules</li> <li>Diagnostic memory</li> </ul>                                                                                                                                                                                                                                             |
| Configuration support                               |                   |        | SDDML file                                                                                                                                                                                                                                                                                                                                                                                        |
| Parameterisation                                    |                   |        | <ul style="list-style-type: none"> <li>Diagnostic behaviour</li> <li>Fallback output data</li> <li>Forcing of channels</li> <li>Signal setup</li> <li>System parameters</li> </ul>                                                                                                                                                                                                                |
| Additional functions                                |                   |        | <ul style="list-style-type: none"> <li>Acyclic and cyclic data access via Sercos</li> <li>IP addressing via Sercos parameters or operator unit</li> <li>Channel-oriented diagnostics via fieldbus</li> <li>Start-up parameterisation in plain text via fieldbus</li> <li>System status can be displayed using process data</li> <li>Additional diagnostic interface for operator units</li> </ul> |
| Control elements                                    |                   |        | DIL switches                                                                                                                                                                                                                                                                                                                                                                                      |
| Operating voltage                                   | Nominal width     | [V DC] | 24                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                     | Permissible range | [V DC] | 18 ... 30                                                                                                                                                                                                                                                                                                                                                                                         |
| Current consumption at nominal voltage              |                   | [mA]   | Typically 100                                                                                                                                                                                                                                                                                                                                                                                     |
| Degree of protection to EN 60529                    |                   |        | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                                        |
| Temperature range                                   | Operation         | [°C]   | – 5... +50                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                     | Storage/transport | [°C]   | –20 ... +70                                                                                                                                                                                                                                                                                                                                                                                       |
| Materials                                           |                   |        | Reinforced PA                                                                                                                                                                                                                                                                                                                                                                                     |
| Note on materials                                   |                   |        | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                                                    |
| LABS (PWIS) conformity                              |                   |        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                    |
| Grid dimension                                      |                   | [mm]   | 50                                                                                                                                                                                                                                                                                                                                                                                                |
| Dimensions (including interlinking block) W x L x H |                   | [mm]   | 50 x 107 x 50                                                                                                                                                                                                                                                                                                                                                                                     |
| Product weight                                      |                   | [g]    | 125                                                                                                                                                                                                                                                                                                                                                                                               |

**Note**

Please observe the general limits and guidelines for the system when configuring the electrical modules.

## Datasheet – Sercos III bus node

### Connection and indicator components

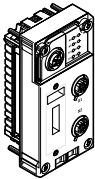
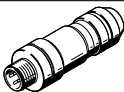
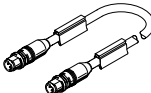
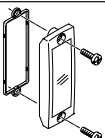
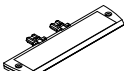
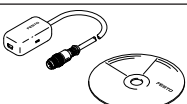
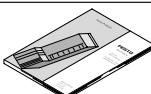


- [1] Service interface for PC with CPX maintenance tool NEFC-M12G5-0.3-U1G5
- [2] Transparent DIL switch cover
- [3] Status LED, bus-specific and CPX-specific
- [4] Fieldbus interface (socket M12x1, 4-pin, D-coded)

### Pin assignment for the fieldbus interface

| Terminal assignment                                                                                                                                                                                       | Pin     | Signal | Designation       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|-------------------|
| <b>Socket M12x1, D-coded</b>                                                                                                                                                                              |         |        |                   |
|                                                                                                                                                                                                           | 1       | TD+    | Transmitted data+ |
|                                                                                                                                                                                                           | 2       | RD+    | Received data+    |
|                                                                                                                                                                                                           | 3       | TD-    | Transmitted data- |
|                                                                                                                                                                                                           | 4       | RD-    | Received data-    |
|                                                                                                                                                                                                           | Housing | FE     | Shielding         |
| <div> <b>Note</b> </div> <p>The CPX-FB39 can automatically detect transmitter and receiver cables (auto-MDI/MDI-X auto-cross-over).<br/>RD and TD signal pairs are automatically swapped if required.</p> |         |        |                   |

## Datasheet – Sercos III bus node

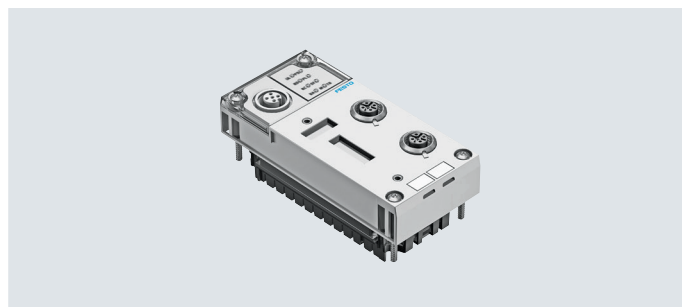
| Ordering data                                                                      |                                                                |                                      |                  |          |                              |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------|------------------|----------|------------------------------|
| Designation                                                                        |                                                                |                                      |                  | Part no. | Type                         |
| Bus node                                                                           |                                                                |                                      |                  |          |                              |
|    | Ethernet Sercos III bus node                                   |                                      |                  | 2093101  | CPX-FB39                     |
| Bus connection                                                                     |                                                                |                                      |                  |          |                              |
|    | Plug M12x1, 4-pin, D-coded                                     |                                      |                  | 543109   | NECU-M-S-D12G4-C2-ET         |
|    | Connecting cable, Straight plug, M12x1, 4-pin, D-coded         | Straight plug, M12x1, 4-pin, D-coded | 0.5 m            | 8040446  | NEBC-D12G4-ES-0.5-S-D12G4-ET |
|                                                                                    |                                                                |                                      | 1 m              | 8040447  | NEBC-D12G4-ES-1-S-D12G4-ET   |
|                                                                                    |                                                                |                                      | 3 m              | 8040448  | NEBC-D12G4-ES-3-S-D12G4-ET   |
|                                                                                    |                                                                |                                      | 5 m              | 8040449  | NEBC-D12G4-ES-5-S-D12G4-ET   |
|                                                                                    |                                                                |                                      | 10 m             | 8040450  | NEBC-D12G4-ES-10-S-D12G4-ET  |
|                                                                                    |                                                                | Straight plug, RJ45, 8-pin           | 1 m              | 8040451  | NEBC-D12G4-ES-1-S-R3G4-ET    |
|                                                                                    |                                                                |                                      | 3 m              | 8040452  | NEBC-D12G4-ES-3-S-R3G4-ET    |
|                                                                                    |                                                                |                                      | 5 m              | 8040453  | NEBC-D12G4-ES-5-S-R3G4-ET    |
|                                                                                    |                                                                |                                      | 10 m             | 8040454  | NEBC-D12G4-ES-10-S-R3G4-ET   |
|                                                                                    |                                                                |                                      | Open end, 4-core | 5 m      | 8040456                      |
|   | Inspection cover, transparent                                  |                                      |                  | 533334   | AK-SUB-9/15-B                |
|  | Cover cap for sealing unused bus connections (10 pieces)       |                                      |                  | 165592   | ISK-M12                      |
|  | Inscription label holder for connection block                  |                                      |                  | 536593   | CPX-ST-1                     |
|  | Adapter M12, 5-pin to mini USB socket, and controller software |                                      |                  | 547432   | NEFC-M12G5-0.3-U1G5          |
| User documentation                                                                 |                                                                |                                      |                  |          |                              |
|  | User documentation for bus node CPX-FB39                       |                                      | German           | 8028632  | CPX-FB39-DE                  |
|                                                                                    |                                                                |                                      | English          | 8028633  | CPX-FB39-EN                  |

## Datasheet – POWERLINK bus node

- Ethernet POWERLINK
- Web interface

Bus node for handling communication between the electrical terminal CPX and the Ethernet POWERLINK network. The bus node is provided with system supply via the interlinking block and processes communication with the I/O modules.

The status of the CPX terminal is displayed as a common message via 4 CPX-specific LEDs.



### Application

#### Bus connection

The bus connection is established via an M12x1 plug, D-coded to IEC 947-5-2 with degree of protection IP65, IP67. Ethernet POWERLINK uses the Ethernet standards and TCP/IP technology (IEEE802.3) for communication in an industrial environment and integrates all CANopen mechanisms.

It includes all the key features of standard Ethernet, including internode communication, hotplug capability and free selection of network topology. Ethernet POWERLINK fulfils the real-time requirements using a mix of timeslot and polling procedures. In other words, defined times are re-

served on the Ethernet cable exclusively for transferring real-time data. Only network participants which have previously been prompted by the controller are able to transmit data during these timeslots.

#### Ethernet POWERLINK implementation

The CPX-FB40 supports the two operating modes: remote I/O and remote controller.

In remote I/O operating mode, all functions of the CPX valve terminal are dir-

ectly controlled by the Ethernet POWERLINK master (host). In addition to activation via a bus system, it is possible to use IT technologies. An integrated web server enables diagnostic data to be visualised via

HTML. Various programs support direct access to the device data from the automation network. The Ethernet POWERLINK node for CPX supports the transmission technology

that conforms to DIN EN 50173/CAT 5 as an integrated interface.

#### Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX control block.

In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX bus node takes place by linking the CPX modules and takes up

the following address capacity in the CPX system:

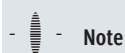
- 8 byte outputs
- 8 byte inputs

The following address capacity remains in the control block or CPX system for controlling the peripherals:

- 56 byte inputs
- 56 byte outputs

## Datasheet – POWERLINK bus node

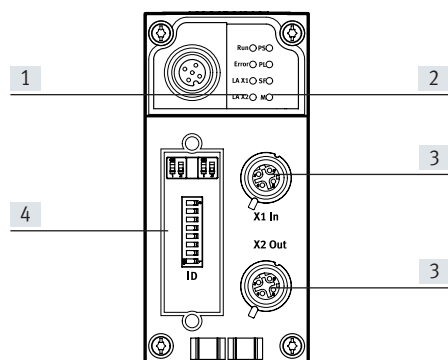
| General technical data                              |                             |        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------|-----------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                |                             |        | CPX-FB40                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Fieldbus interface                                  |                             |        | 2x M12x1 socket, D-coded, 4-pin                                                                                                                                                                                                                                                                                                                                                                                                   |
| Baud rates                                          |                             | [Mbps] | 100                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Protocol                                            |                             |        | Ethernet POWERLINK V2                                                                                                                                                                                                                                                                                                                                                                                                             |
| Max. address capacity                               | Inputs                      | [byte] | 64                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                     | Outputs                     | [byte] | 64                                                                                                                                                                                                                                                                                                                                                                                                                                |
| LED indicators                                      | Bus-specific                |        | BE = POWERLINK error<br>BS = POWERLINK status<br>L/A1 = Link/activity port 1<br>L/A2 = Link/activity port 2                                                                                                                                                                                                                                                                                                                       |
|                                                     | Product-specific            |        | M = Modify, parameterisation<br>PL = Load supply<br>PS = Electronic supply, sensor supply<br>SF = System error                                                                                                                                                                                                                                                                                                                    |
| Device-specific diagnostics                         |                             |        | <ul style="list-style-type: none"><li>• Module and channel-oriented diagnostics</li><li>• Undervoltage of modules</li><li>• Diagnostic memory</li></ul>                                                                                                                                                                                                                                                                           |
| Configuration support                               |                             |        | <ul style="list-style-type: none"><li>• XDC file</li><li>• XDD file</li></ul>                                                                                                                                                                                                                                                                                                                                                     |
| Parameterisation                                    |                             |        | <ul style="list-style-type: none"><li>• Diagnostic behaviour</li><li>• Fail-safe response</li><li>• Forcing of channels</li><li>• Signal setup</li><li>• System parameters</li></ul>                                                                                                                                                                                                                                              |
| Additional functions                                |                             |        | <ul style="list-style-type: none"><li>• Acyclic data access via "SDO" and Ethernet</li><li>• Integrated hub</li><li>• - IP addressing via DHCP, DIL switch or operator unit</li><li>• Channel-oriented diagnostics via fieldbus</li><li>• Start-up parameterisation in plain text via fieldbus</li><li>• System status can be displayed using process data</li><li>• Additional diagnostic interface for operator units</li></ul> |
| Control elements                                    |                             |        | DIL switches                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Operating voltage                                   | Nominal width               | [V DC] | 24                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                     | Permissible range           | [V DC] | 18 ... 30                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     | Reverse polarity protection |        | For operating voltage                                                                                                                                                                                                                                                                                                                                                                                                             |
| Current consumption at nominal voltage              |                             | [mA]   | Typically 100                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Degree of protection to EN 60529                    |                             |        | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Temperature range                                   | Operation                   | [°C]   | – 5... +50                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                     | Storage/transport           | [°C]   | –20 ... +70                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Materials                                           |                             |        | Reinforced PA                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Note on materials                                   |                             |        | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                                                                                    |
| LABS (PWIS) conformity                              |                             |        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Grid dimension                                      |                             | [mm]   | 50                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Dimensions (including interlinking block) W x L x H |                             | [mm]   | 50 x 107 x 50                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Product weight                                      |                             | [g]    | 125                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Note**

Please observe the general limits and guidelines for the system when configuring the electrical modules.

## Datasheet – POWERLINK bus node

### Connection and indicator components

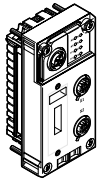
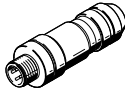
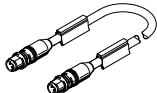
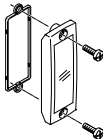
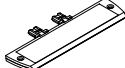
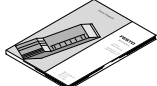


- [1] Bus-specific status LEDs
- [2] CPX-specific status LEDs
- [3] Fieldbus interface (socket M12x1, 4-pin, D-coded)
- [4] Transparent DIL switch cover

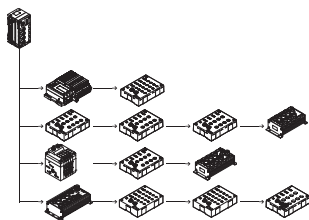
### Pin assignment for the fieldbus interface

| Terminal assignment          | Pin     | Signal | Designation       |
|------------------------------|---------|--------|-------------------|
| <b>Socket M12x1, D-coded</b> |         |        |                   |
|                              | 1       | TD+    | Transmitted data+ |
|                              | 2       | RD+    | Received data+    |
|                              | 3       | TD-    | Transmitted data- |
|                              | 4       | RD-    | Received data-    |
|                              | Housing | FE     | Shielding         |

## Datasheet – POWERLINK bus node

| Ordering data                                                                      |                                                                |                                         |         |          |                              |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------|---------|----------|------------------------------|
| Designation                                                                        |                                                                |                                         |         | Part no. | Type                         |
| Bus node                                                                           |                                                                |                                         |         |          |                              |
|    | Ethernet POWERLINK bus node                                    |                                         |         | 2474896  | CPX-FB40                     |
| Bus connection                                                                     |                                                                |                                         |         |          |                              |
|    | Plug M12x1, 4-pin, D-coded                                     |                                         |         | 543109   | NECU-M-S-D12G4-C2-ET         |
|    | Connecting cable,<br>Straight plug, M12x1,<br>4-pin, D-coded   | Straight plug, M12x1,<br>4-pin, D-coded | 0.5 m   | 8040446  | NEBC-D12G4-ES-0.5-S-D12G4-ET |
|                                                                                    |                                                                |                                         | 1 m     | 8040447  | NEBC-D12G4-ES-1-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 3 m     | 8040448  | NEBC-D12G4-ES-3-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 5 m     | 8040449  | NEBC-D12G4-ES-5-S-D12G4-ET   |
|                                                                                    |                                                                |                                         | 10 m    | 8040450  | NEBC-D12G4-ES-10-S-D12G4-ET  |
|                                                                                    |                                                                | Straight plug, RJ45, 8-pin              | 1 m     | 8040451  | NEBC-D12G4-ES-1-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 3 m     | 8040452  | NEBC-D12G4-ES-3-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 5 m     | 8040453  | NEBC-D12G4-ES-5-S-R3G4-ET    |
|                                                                                    |                                                                |                                         | 10 m    | 8040454  | NEBC-D12G4-ES-10-S-R3G4-ET   |
|                                                                                    |                                                                | Open end, 4-core                        | 5 m     | 8040456  | NEBC-LE4-ES-5-D12G4-ET       |
|   | Inspection cover, transparent                                  |                                         |         | 533334   | AK-SUB-9/15-B                |
|  | Inscription label holder for connection block                  |                                         |         | 536593   | CPX-ST-1                     |
|  | Adapter M12, 5-pin to mini USB socket, and controller software |                                         |         | 547432   | NEFC-M12G5-0.3-U1G5          |
| User documentation                                                                 |                                                                |                                         |         |          |                              |
|  | User documentation for bus node CPX-FB40                       |                                         | German  | 8028650  | CPX-FB40-DE                  |
|                                                                                    |                                                                |                                         | English | 8028651  | CPX-FB40-EN                  |

## Datasheet – Interface for CPI system



The electrical interface CPX-CP establishes the connection to CP modules of the installation system CPI via pre-assembled connecting cables. The I/O data of the connected valve terminals with CP string extension and CP input and output modules are transferred to the connected CPX bus node and thus via fieldbus to the higher-order controller.

This enables modular centralised and compact decentralised concepts to be established with one system.



### Application

#### CP connection

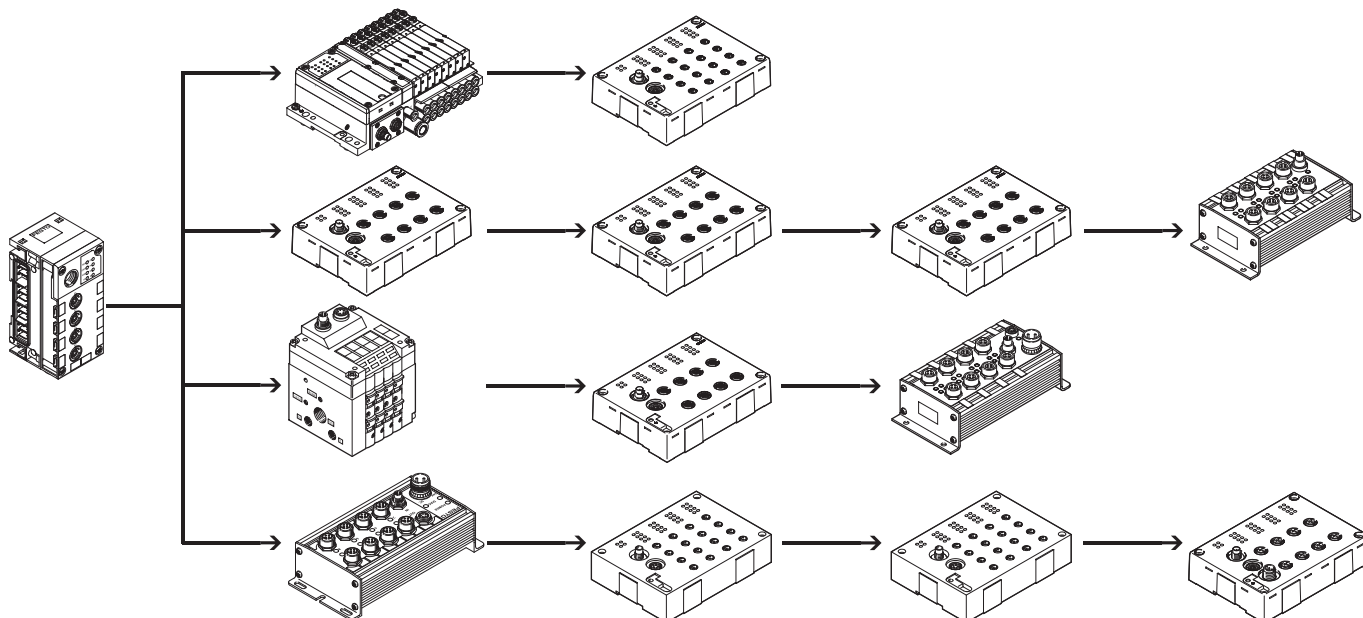
As well as transmitting the communication data, the max. 4 CP strings of a CPX-CP interface also transmit the power supply to the connected sensors and the load supply to the valves (or outputs). Both circuits are supplied separately with 24 V but using a common reference potential.

The valve terminals with CP string extension (or outputs) are supplied with voltage for the electronics and valves by the interlinking block.

The CP interface allows the following combinations:

- Centralised analogue and digital inputs and outputs of the CPX terminal
- Decentralised digital inputs and outputs of the CP installation system
- Valve/valve terminals that can be connected both centrally and decentral

### Configuration example – CP interface with CP modules





## Datasheet – Interface for CPI system

### Implementation

The CPX-CP interface supports the CPI system:

- Max. 4 individual electronically protected CP strings
- Max. 4 CP modules per string
- Max. 32 inputs/32 outputs per string
- The maximum length of a string is 10 m. If the CP interface is positioned centrally, the CP system can cover an area of 20 m in diameter.
- Modules with CPI functionality

The following CP module variants are available:

- Input modules with 8 or 16 digital inputs (connection technology M8 and M12)
- Output modules with 4 or 8 digital outputs (connection technology M12)
- Valve terminals with CP string extension (up to 32 solenoid coils, different valve functions)

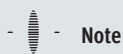
CPI modules support the following functions:

- Module-oriented diagnostics
- Module/channel-oriented parameterisation
- Support of all functions by the CPX-FMT
- Module can be positioned anywhere within the string

Several CP interface modules can be combined in one CPX terminal, depending on the address capacity of the bus node.

Example:

- CPX-FB13 (512 I/O)
- Max. 4 CP interface modules (128 I/Os each) possible



#### Note

When arranging the CP modules it should be taken into consideration that CP input modules without CPI functionality should always be placed at the end of a string.

### Configuration

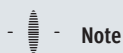
The following rules apply for a string of a CPX-CP interface:

- Max. one output module or one valve terminal without CPI functionality
- Max. one output module without CPI functionality or one valve terminal with CP string extension
- Any number of CP modules with CPI functionality, up to the maximum limit of 4 modules and/or 32 inputs/32 outputs per string
- Maximum extension:
- 4 input modules and 4 valve terminals/output modules without CPI functionality
- 16 CP modules with CPI functionality

The configuration of the strings with respect to the module type and position of the modules in the string is entered by activating the SAVE key in the CPX-CP interface and saved there permanently.

Saved data are retained even when the CP interface is isolated from the power supply.

The representation of the CP interface within a CPX terminal and thus at the fieldbus is dependent on the characteristics of the relevant fieldbus system. In addition to input and output addressing, this also applies to the representation of the diagnostics and parameterisation of the CP module and the characteristics of the CPI system.



#### Note

The remanent saving of configuration data means that changes in the configuration or faulty modules are still displayed even after a voltage failure.

## Datasheet – Interface for CPI system

| General technical data                              |                                                                                                                                                               |        |                                  |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|
| Type                                                | CPX-CP-4-FB                                                                                                                                                   |        |                                  |
| Brief description                                   | CP interface                                                                                                                                                  |        |                                  |
| Maximum number of                                   | CP strings                                                                                                                                                    |        | 4                                |
|                                                     | CP modules per string                                                                                                                                         |        | 4                                |
|                                                     | Outputs per string                                                                                                                                            |        | 32                               |
|                                                     | Inputs per string                                                                                                                                             |        | 32                               |
| CP connection                                       | Socket M9, 5-pin                                                                                                                                              |        |                                  |
| Baud rate                                           |                                                                                                                                                               | [kbps] | 1000                             |
| Cycle time                                          | CP modules without CPI functionality                                                                                                                          | [ms]   | 4                                |
|                                                     | CP modules with CPI functionality                                                                                                                             | [ms]   | 2                                |
| LED indicators                                      | L1 ... 4 = Status of the CP string 1 ... 4<br>PS = Electronics supply, sensor supply<br>PL = Load supply<br>RN = Status of the CP system<br>SF = System error |        |                                  |
| Device-specific diagnostics                         | Via bus node                                                                                                                                                  |        |                                  |
| Operating voltage                                   | Nominal width                                                                                                                                                 | [V DC] | 24 (reverse polarity protected)  |
|                                                     | Permissible range                                                                                                                                             | [V DC] | 18 ... 30                        |
|                                                     | Power failure buffering                                                                                                                                       | [ms]   | 20                               |
| Supply voltage for sensors                          |                                                                                                                                                               | [V DC] | 24 ±25% coming from the bus node |
| Actuator load voltage                               |                                                                                                                                                               | [V DC] | 24 ±10% coming from the bus node |
| Current consumption                                 | Without CP modules                                                                                                                                            | [A]    | Max. 0.2                         |
|                                                     | Per CP string                                                                                                                                                 | [A]    | Max. 1.6                         |
| Degree of protection to EN 60529                    | IP65, IP67                                                                                                                                                    |        |                                  |
| Temperature range                                   | Operation                                                                                                                                                     | [°C]   | –5 ... +50                       |
|                                                     | Storage/transport                                                                                                                                             | [°C]   | –20 ... +70                      |
| Materials                                           | PA                                                                                                                                                            |        |                                  |
| LABS (PWIS) conformity                              | VDMA24364-B2-L                                                                                                                                                |        |                                  |
| Grid dimension                                      |                                                                                                                                                               | [mm]   | 50                               |
| Dimensions (including interlinking block) W x L x H |                                                                                                                                                               | [mm]   | 50 x 107 x 45                    |
| Product weight                                      |                                                                                                                                                               | [g]    | 139                              |

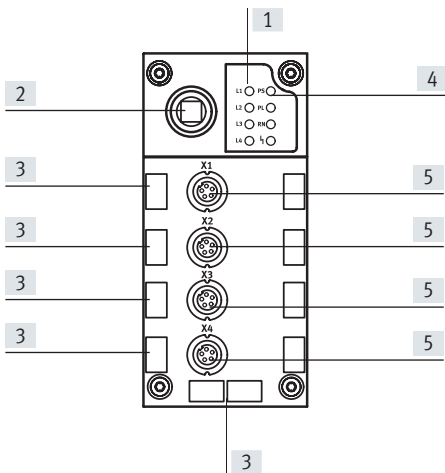


### Note

Please observe the general limits and guidelines for the system when configuring the electric modules.

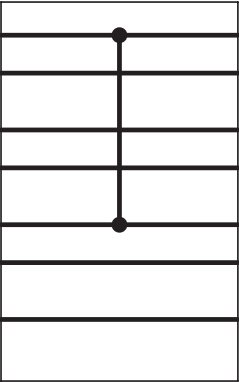
Datasheet – Interface for CPI system

Connection and indicator components

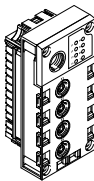
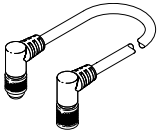
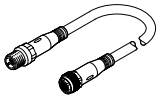
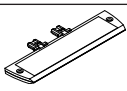
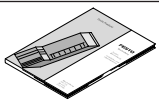


- [1] CP string LEDs
- [2] SAVE key
- [3] Holders for inscription labels (IBS 6x10)
- [4] CPX-specific status LEDs
- [5] CP connections for up to 4 strings (0 ... 3)

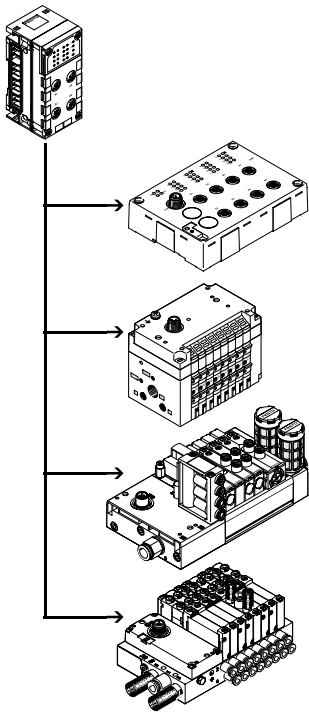
Power supply

|                                                                                    |                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <div>0V Valves</div> <div>24V Valves</div> <div>0V Output</div> <div>24V Output</div> <div>0V EL./Sen.</div> <div>24V EL./Sen.</div> <div>FE</div> | <p>The module combines the 0 V potential of the power supply for electronics and sensors with the 0 V potential of the power supply for valves.</p> <p>If all pins of the valves of a pneumatic interface connected to the right of the CP interface are to be switched off, an appropriate interlinking block with additional supply for valves must be used to the right of the CP interface.</p> |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Datasheet – Interface for CPI system

| Ordering data                                                                       |                                                                         |         | Part no. | Type                |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------|----------|---------------------|
| Designation                                                                         |                                                                         |         |          |                     |
| CP interface                                                                        |                                                                         |         |          |                     |
|    | Interface for max. 16 I/O modules and valve terminals of the CPI system |         | 526705   | CPX-CP-4-FB         |
| Bus connection                                                                      |                                                                         |         |          |                     |
|    | Cover cap                                                               | M12     | 165592   | ISK-M12             |
|    | Connecting cable, angled plug, angled socket                            | 0.25 m  | 540327   | KVI-CP-3-WS-WD-0.25 |
|                                                                                     |                                                                         | 0.5 m   | 540328   | KVI-CP-3-WS-WD-0.5  |
|                                                                                     |                                                                         | 2 m     | 540329   | KVI-CP-3-WS-WD-2    |
|                                                                                     |                                                                         | 5 m     | 540330   | KVI-CP-3-WS-WD-5    |
|                                                                                     |                                                                         | 8 m     | 540331   | KVI-CP-3-WS-WD-8    |
|    | Connecting cable, straight plug, straight socket                        | 2 m     | 540332   | KVI-CP-3-GS-GD-2    |
|                                                                                     |                                                                         | 5 m     | 540333   | KVI-CP-3-GS-GD-5    |
|                                                                                     |                                                                         | 8 m     | 540334   | KVI-CP-3-GS-GD-8    |
|    | Inscription label holder for connection block                           |         | 536593   | CPX-ST-1            |
| User documentation                                                                  |                                                                         |         |          |                     |
|  | User documentation for CPX CP interface                                 | German  | 539293   | CPX-CP-4-FB-DE      |
|                                                                                     |                                                                         | English | 539294   | CPX-CP-4-FB-EN      |
|                                                                                     |                                                                         | Spanish | 539295   | P.BE-CPX-CP-ES      |
|                                                                                     |                                                                         | French  | 539296   | P.BE-CPX-CP-FR      |
|                                                                                     |                                                                         | Italian | 539297   | P.BE-CPX-CP-IT      |

## Datasheet – I-Port interface



The electrical interface CPX CTEL master establishes the connection to modules of the CTEL/CTEU series that have an I-Port interface (device). The I/O data from the connected devices are transmitted to the connected CPX bus node and thus to the higher-order controller via fieldbus.

A maximum of 4 devices can be connected to a CPX CTEL master via corresponding M12 interfaces.



## Application

## I-Port interface

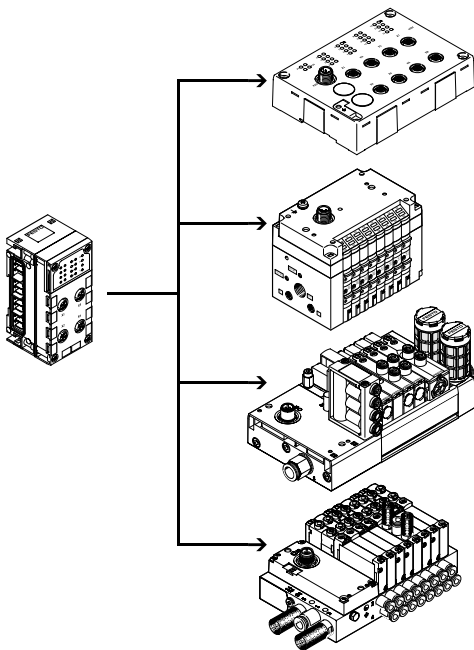
As well as transmitting the communication data, the I-Port interfaces of a CPX CTEL master also transmit the power supply to the connected sensors and the load supply to the valves (or

outputs). Both circuits are supplied separately with 24 V, using a separate ground.

The connecting cables used must meet the increased requirements resulting

from the dual function as signal cable and supply cable.

## Configuration example – CPX CTEL master with CTEL modules



The CPX-CTEL master provides 4 external I-Port interfaces, each of which can be connected to a device. I-Port is an interface for exchanging serial data for connecting decentralised modules or valve terminals from Festo. The I-Port interface is based on IO-Link® and is compatible with it in certain areas. The connection type corresponds to a star topology. In other words, only one module or one valve terminal can be connected to each I-Port.

The restrictions compared to IO-Link® include:

- Permanently set baud rate of 230.4 kbps
- SIO mode is not supported
- Max. 32 bytes of input data and 32 bytes of output data
- Only one dump of the master commands is used
- Configuration via IODD is not supported.

## Datasheet – I-Port interface

### Implementation

The CPX-CTEL master from Festo enables modules with an I-Port interface to be connected to a CPX system:

- Max. 4 devices with individual electronic protection
- Max. 64 inputs/64 outputs per I-Port interface
- The maximum length of a string is 20 m.

The following device variants are available:

- Input modules with 16 digital inputs (connection technology M8 3-pin and M12 5-pin)
- Valve terminals with I-Port interface (up to 48 solenoid coils, different valve functions)

The decentralised layout of the modules and valve terminals with I-Port enables them to be mounted close to the cylinders and actuators or sensors to be controlled. This means that the compressed air supply lines and sensor connecting cables used can be shortened, and it may be possible to use smaller valves, thereby saving costs.

Several CPX CTETL masters can be combined in one CPX terminal, depending on the address capacity of the bus node.

Example:

- CPX-FB13 (512 I/O)
- A maximum of 2 CPX CTETL masters is possible (each with 256 I/O)

### Configuration

#### Settings

The precise number of the I/O bytes made available depends on the requirements of the connected devices or of the relevant selected operating mode.

The operating mode or preset configuration of the CPX CTETL master can be specified by the user.

Selecting the operating mode and setting the manual configuration takes place via the DIL switches. These DIL switches are not required during continuous operation and are only accessible in the disassembled state.

#### Manual configuration

In the case of manual configuration (tool change mode), the volume of inputs and outputs in the process image of the CPX system or of the higher-order fieldbus can be defined manually using the DIL switches.

The process image then always has the same scope, regardless of the connected devices.

The specified I/O length always applies to all four I-Ports (max. 8 bytes per I-Port).

#### Automatic configuration

In the case of automatic configuration, the I/O length for each I-Port is determined individually and this value is used to select the appropriate or next highest configuration preset.

### Power supply for I-Port devices

The CPX-CTEL master provides two separate power supplies for the connected devices:

- For operating the device and the inputs connected to it
- For the outputs and valves that are connected to the device

The power supply for the devices and the inputs is provided by the power supply for the electronics and sensors of the CPX terminal.

The power supply for the outputs and valves is provided by the power supply for the valves of the CPX terminal.

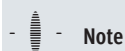
The interlinking block with additional supply ensures a separate supply voltage for the valves and outputs. This means it is possible to disconnect this supply voltage separately.

The valves and outputs of the connected I-Port devices can therefore be dis-

connected separately without disconnecting the devices.

## Datasheet – I-Port interface

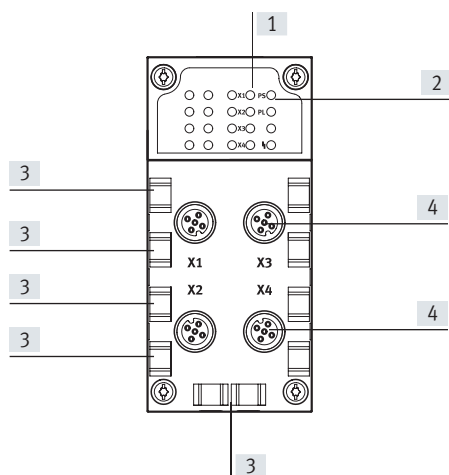
| General technical data                                     |                         |                                                                                                                                                                                                                                    |                                 |
|------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Type                                                       |                         | CPX-CTEL-4-M12-5POL                                                                                                                                                                                                                |                                 |
| Protocol                                                   |                         | I-Port                                                                                                                                                                                                                             |                                 |
| Maximum address volume                                     | Outputs                 | [bit]                                                                                                                                                                                                                              | 256                             |
|                                                            | Inputs                  | [bit]                                                                                                                                                                                                                              | 256                             |
| I-Port connection                                          |                         | 4x socket M12, 5-pin, A-coded                                                                                                                                                                                                      |                                 |
| Number of I-Port interfaces                                |                         | 4                                                                                                                                                                                                                                  |                                 |
| Maximum cable length                                       |                         | [m]                                                                                                                                                                                                                                | 20                              |
| Internal cycle time                                        |                         | [ms]                                                                                                                                                                                                                               | 1 per 8 bits of user data       |
| Galvanic isolation                                         | Channel – channel       | No                                                                                                                                                                                                                                 |                                 |
|                                                            | Channel – internal bus  | Yes, with intermediate air supply                                                                                                                                                                                                  |                                 |
| LED indicators                                             |                         | X1 ... 4      = Status of the I-Port interface 1 ... 4<br>PS            = Electronic supply<br>PL            = Load supply<br> = Module error     |                                 |
| Diagnostics                                                |                         | <ul style="list-style-type: none"> <li>• Communication error</li> <li>• Module short circuit</li> <li>• Module-oriented diagnostics</li> <li>• Undervoltage</li> </ul>                                                             |                                 |
| Parameterisation                                           |                         | <ul style="list-style-type: none"> <li>• Diagnostic behaviour</li> <li>• Fail-safe per channel</li> <li>• Forcing per channel</li> <li>• Idle mode per channel</li> <li>• Module parameters</li> <li>• Tool change mode</li> </ul> |                                 |
| Additional functions                                       |                         | Tool change mode                                                                                                                                                                                                                   |                                 |
| Control elements                                           |                         | DIL switches                                                                                                                                                                                                                       |                                 |
| Operating voltage                                          | Nominal width           | [V DC]                                                                                                                                                                                                                             | 24 (reverse polarity protected) |
|                                                            | Permissible range       | [V DC]                                                                                                                                                                                                                             | 18 ... 30                       |
|                                                            | Power failure buffering | [ms]                                                                                                                                                                                                                               | 10                              |
| Intrinsic current consumption at nominal operating voltage |                         | [mA]                                                                                                                                                                                                                               | Typically 65                    |
| Max. power supply per channel                              |                         | [A]                                                                                                                                                                                                                                | 4x 1.6                          |
| Max. total current of outputs per channel                  |                         | [A]                                                                                                                                                                                                                                | 4x 1.6                          |
| Degree of protection to EN 60529                           |                         | IP65, IP67                                                                                                                                                                                                                         |                                 |
| Temperature range                                          | Operation               | [°C]                                                                                                                                                                                                                               | –5 ... +50                      |
|                                                            | Storage/transport       | [°C]                                                                                                                                                                                                                               | –20 ... +70                     |
| Materials                                                  |                         | Reinforced PA, PC                                                                                                                                                                                                                  |                                 |
| Note on materials                                          |                         | RoHS-compliant                                                                                                                                                                                                                     |                                 |
| LABS (PWIS) conformity                                     |                         | VDMA24364-B2-L                                                                                                                                                                                                                     |                                 |
| Grid dimension                                             |                         | [mm]                                                                                                                                                                                                                               | 50                              |
| Dimensions (including interlinking block) W x L x H        |                         | [mm]                                                                                                                                                                                                                               | 50 x 107 x 55                   |
| Product weight                                             |                         | [g]                                                                                                                                                                                                                                | 110                             |

**Note**

Please observe the general limits and guidelines for the system when configuring the electric modules.

## Datasheet – I-Port interface

### Connection and indicator components



- [1] Status LEDs for I-Port interfaces
- [2] CPX-specific status LEDs
- [3] Holders for inscription labels (IBS 6x10)
- [4] I-Port interfaces for up to 4 devices

### Combinations of bus nodes/control blocks with interface CPX-CTEL

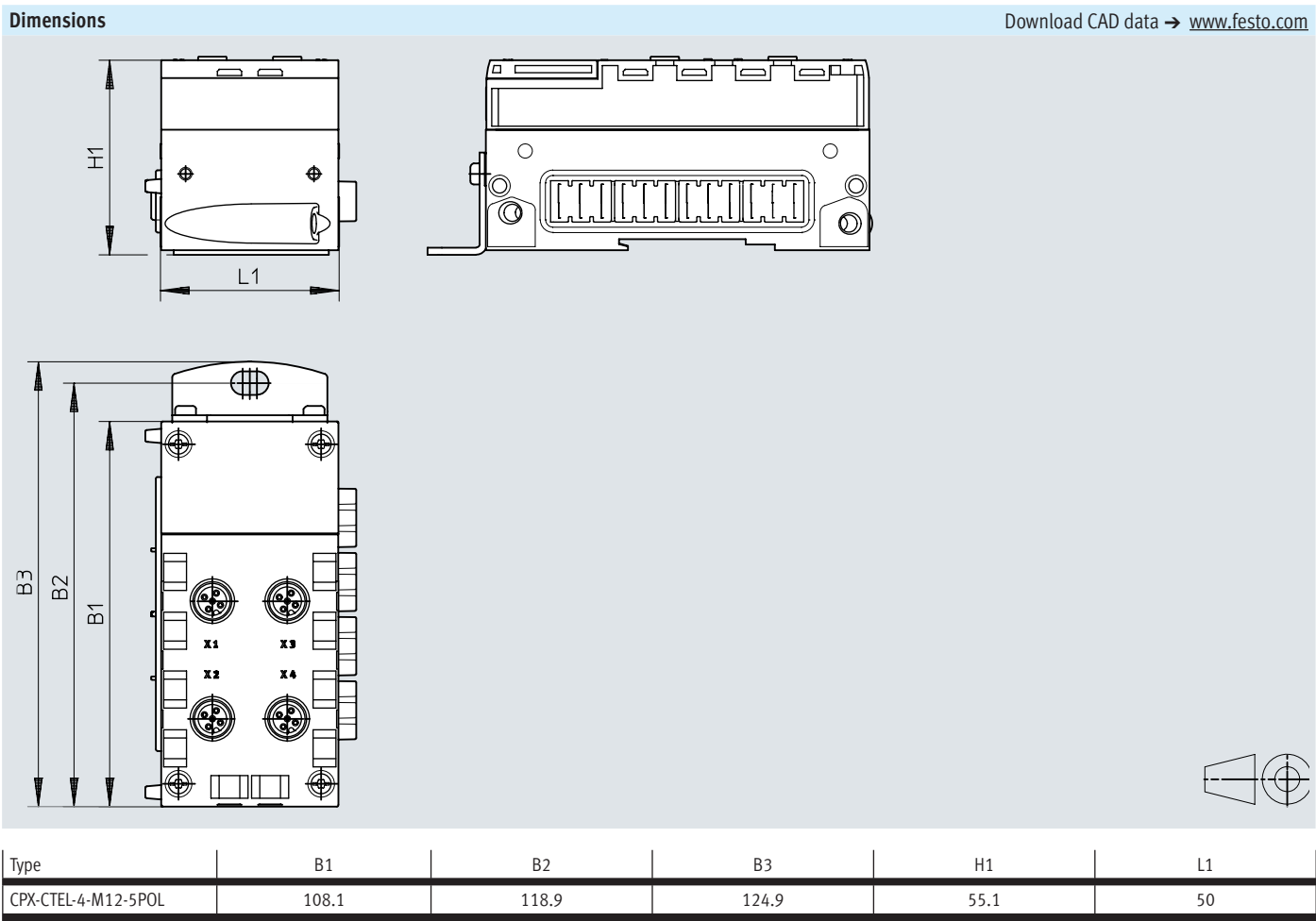
| Bus node/control block | Part no. | Interface           |
|------------------------|----------|---------------------|
|                        |          | CPX-CTEL-4-M12-5POL |
| CPX-CEC-C1             | 567347   | ■                   |
| CPX-CEC-C1-V3          | 3473128  | ■                   |
| CPX-CEC-M1-V3          | 3472765  | ■                   |
| CPX-CEC                | 567346   | ■                   |
| CPX-CEC-S1-V3          | 3472425  | ■                   |
| CPX-FB11               | 526172   | ■                   |
| CPX-FB13               | 195740   | ■                   |
| CPX-FB23-24            | 526176   | ■                   |
| CPX-FB36               | 1912451  | ■                   |
| CPX-FB37               | 2735960  | ■                   |
| CPX-FB39               | 2093101  | ■                   |
| CPX-FB40               | 2474896  | ■                   |
| CPX-FB43               | 8110369  | ■                   |
| CPX-M-FB44             | 8110370  | ■                   |
| CPX-M-FB45             | 8110371  | ■                   |

### Pin assignment – I-Port interface

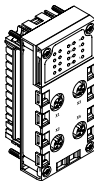
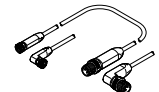
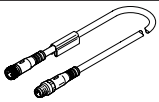
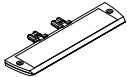
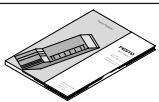
| Terminal assignment | Pin | Signal                | Designation                                        |
|---------------------|-----|-----------------------|----------------------------------------------------|
|                     | 1   | 24 V <sub>SEN</sub>   | 24 V DC supply voltage for electronics and inputs  |
|                     | 2   | 24 V <sub>VAL</sub>   | 24 V DC load voltage supply for valves and outputs |
|                     | 3   | 0 V <sub>SEN</sub>    | 0 V DC supply voltage for electronics and sensors  |
|                     | 4   | C/Q <sub>I-Port</sub> | Communication signal C/Q, data transmission line   |
|                     | 5   | 0 V <sub>VALVES</sub> | 0 V DC load voltage supply for valves and outputs  |



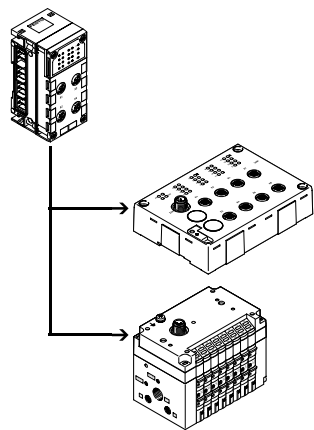
Datasheet – I-Port interface



## Datasheet – I-Port interface

| Ordering data                                                                      |                                                                                                                           |                                                           |        |                        |                              |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|--------|------------------------|------------------------------|
| Designation                                                                        |                                                                                                                           |                                                           |        | Part no.               | Type                         |
| CPX-CTEL master                                                                    |                                                                                                                           |                                                           |        |                        |                              |
|   | Interface for a maximum of 4 I/O modules and valve terminals with I-Port interface (devices)                              |                                                           |        | 1577012                | CPX-CTEL-4-M12-5POL          |
| Bus connection                                                                     |                                                                                                                           |                                                           |        |                        |                              |
|   | Cover cap                                                                                                                 | M12                                                       | 165592 | ISK-M12                |                              |
|   | Modular system for a choice of connecting cables                                                                          |                                                           |        | –                      | NEBA-...<br>→ Internet: neba |
|   | Connecting cable M12-M12, 5-pin <ul style="list-style-type: none"><li>• Straight socket</li><li>• Straight plug</li></ul> | Cable characteristic: suitable for use with energy chains | 5 m    | 574321                 | NEBU-M12G5-E-5-Q8N-M12G5     |
|                                                                                    |                                                                                                                           |                                                           | 7.5 m  | 574322                 | NEBU-M12G5-E-7.5-Q8N-M12G5   |
|                                                                                    |                                                                                                                           |                                                           | 10 m   | 574323                 | NEBU-M12G5-E-10-Q8N-M12G5    |
|   | Inscription label holder for connection block                                                                             |                                                           |        | 536593                 | CPX-ST-1                     |
| User documentation                                                                 |                                                                                                                           |                                                           |        |                        |                              |
|  | User documentation CPX CTET master                                                                                        | German                                                    | 574600 | CPX-CTEL-4-M12-5POL-DE |                              |
|                                                                                    |                                                                                                                           | English                                                   | 574601 | CPX-CTEL-4-M12-5POL-EN |                              |

Datasheet – IO-Link® interface



The electrical interface CPX-CTEL-2... enables the connection of modules with IO-Link® interface (IO-Link® device) to the CPX terminal. The I/O data from the connected devices are transmitted to the connected CPX bus node and thus to the higher-order controller via fieldbus.  
A maximum of two IO-Link devices can be connected to a CPX-CTEL-2... electrical interface via appropriate M12 interfaces.



Application

IO-Link®

The communication system IO-Link® is used to exchange serial data from decentralised function modules (devices) at the field level.  
The electrical interface CPX-CTEL-2... provides two external IO-Link® inter-

faces, each of which can be connected to a device.  
The connection type corresponds to a star topology, which means that only one device can be connected to each port.

The address space that the module makes available and assigns accordingly in the CPX system can be configured according to various presets. Selecting the operating mode and setting the manual configuration takes place via the DIL switches.

These DIL switches are not required during continuous operation and are only accessible in the disassembled state.

Constraints

The interfaces (ports) of electrical interface CPX-CTEL-2... support the connection of IO-Link® devices with few limitations.

- The process data length of the inputs and outputs is limited to 16 bytes each per port
- The driver strength on the C/Q line is limited to 250 mA
- SIO mode is not supported

Power supply for devices

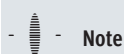
The electrical interface CPX-CTEL-2... provides two separate power supplies for the connected devices:  
• For operating the device and the inputs connected to it  
• For the outputs and valves that are connected to the device  
The power supply for the devices and the inputs is provided by the power

supply for the electronics and sensors of the CPX terminal.  
The power supply for the outputs and valves is provided by the power supply for the valves of the CPX terminal. The interlinking block with additional supply ensures a separate supply voltage for the valves and outputs. This

means it is possible to disconnect this supply voltage separately.  
The valves and outputs of the connected I-Port devices can therefore be disconnected separately without disconnecting the devices.

## Datasheet – IO-Link® interface

| General technical data                                     |                         |                                                                                                                                                                                                        |                                 |
|------------------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Type                                                       |                         | CPX-CTEL-2-M12-5POL-LK                                                                                                                                                                                 |                                 |
| Protocol                                                   |                         | IO-Link®, master version V 1.0                                                                                                                                                                         |                                 |
| Maximum address volume                                     | Outputs                 | [bit]                                                                                                                                                                                                  | 256                             |
|                                                            | Inputs                  | [bit]                                                                                                                                                                                                  | 256                             |
| I-Port connection                                          |                         | 2x socket M12, 5-pin, A-coded                                                                                                                                                                          |                                 |
| Number of IO-Link® interfaces                              |                         | 2                                                                                                                                                                                                      |                                 |
| Maximum cable length                                       |                         | [m]                                                                                                                                                                                                    | 20                              |
| Internal cycle time                                        |                         | [ms]                                                                                                                                                                                                   | 1 per 8 bits of user data       |
| Galvanic isolation                                         | Channel – channel       | No                                                                                                                                                                                                     |                                 |
|                                                            | Channel – internal bus  | Yes, with intermediate air supply                                                                                                                                                                      |                                 |
| LED indicators                                             |                         | X1 ... 2 = Status of the IO-Link® interface 1 ... 2<br>PS = Electronic supply<br>PL = Load supply<br> = Module error  |                                 |
| Diagnostics                                                |                         | <ul style="list-style-type: none"> <li>• Communication error</li> <li>• Module short circuit</li> <li>• Module-oriented diagnostics</li> <li>• Undervoltage</li> </ul>                                 |                                 |
| Parameterisation                                           |                         | <ul style="list-style-type: none"> <li>• Diagnostic behaviour</li> <li>• Fail-safe per channel</li> <li>• Forcing per channel</li> <li>• Idle mode per channel</li> <li>• Module parameters</li> </ul> |                                 |
| Additional functions                                       |                         | –                                                                                                                                                                                                      |                                 |
| Control elements                                           |                         | DIL switches                                                                                                                                                                                           |                                 |
| Operating voltage                                          | Nominal width           | [V DC]                                                                                                                                                                                                 | 24 (reverse polarity protected) |
|                                                            | Permissible range       | [V DC]                                                                                                                                                                                                 | 18 ... 30                       |
|                                                            | Power failure buffering | [ms]                                                                                                                                                                                                   | 10                              |
| Intrinsic current consumption at nominal operating voltage |                         | [mA]                                                                                                                                                                                                   | Typically 65                    |
| Max. power supply per channel                              |                         | [A]                                                                                                                                                                                                    | 2x 1.6                          |
| Max. total current of outputs per channel                  |                         | [A]                                                                                                                                                                                                    | 2x 1.6                          |
| Degree of protection to EN 60529                           |                         | IP65, IP67                                                                                                                                                                                             |                                 |
| Temperature range                                          | Operation               | [°C]                                                                                                                                                                                                   | –5 ... +50                      |
|                                                            | Storage/transport       | [°C]                                                                                                                                                                                                   | –20 ... +70                     |
| Materials                                                  |                         | Reinforced PA, PC                                                                                                                                                                                      |                                 |
| Note on materials                                          |                         | RoHS-compliant                                                                                                                                                                                         |                                 |
| LABS (PWIS) conformity                                     |                         | VDMA24364-B2-L                                                                                                                                                                                         |                                 |
| Grid dimension                                             |                         | [mm]                                                                                                                                                                                                   | 50                              |
| Dimensions (including interlinking block) W x L x H        |                         | [mm]                                                                                                                                                                                                   | 50 x 107 x 55                   |
| Product weight                                             |                         | [g]                                                                                                                                                                                                    | 110                             |

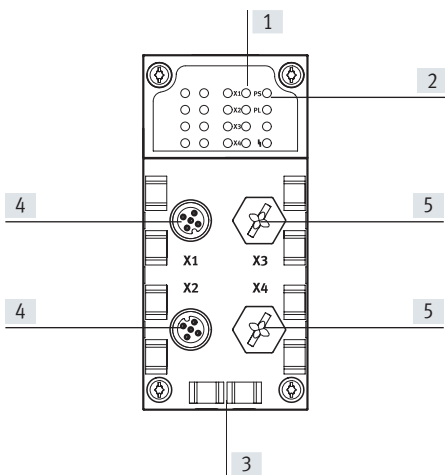


### Note

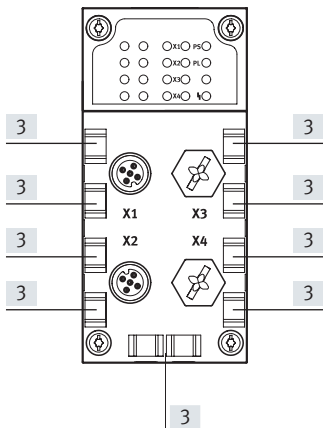
Please observe the general limits and guidelines for the system when configuring the electric modules.

Datasheet – IO-Link® interface

Connection and indicator components



- [1] Status LEDs for I-Port interfaces
- [2] CPX-specific status LEDs
- [3] Holders for inscription labels (IBS 6x10)
- [4] IO-Link® interfaces for up to 2 de-vices
- [5] Unused connections



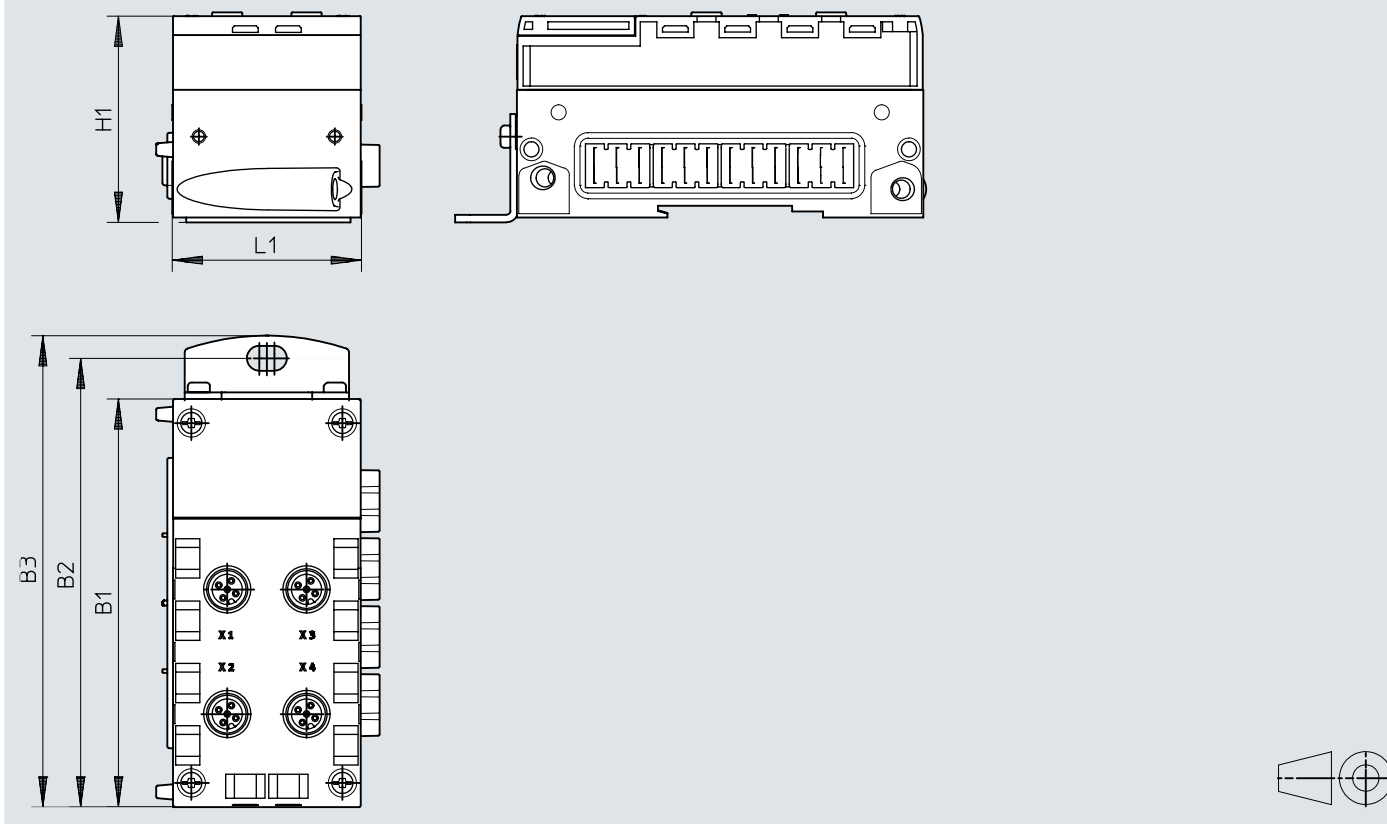
| Combinations of bus nodes/control blocks with interface CPX-CTEL-2 |          |                        |
|--------------------------------------------------------------------|----------|------------------------|
| Bus node/control block                                             | Part no. | Interface              |
|                                                                    |          | CPX-CTEL-2-M12-5POL-LK |
| CPX-CEC-C1-V3                                                      | 3473128  | ■                      |
| CPX-CEC-M1-V3                                                      | 3472765  | ■                      |
| CPX-CEC-S1-V3                                                      | 3472425  | ■                      |
| CPX-FB36                                                           | 1912451  | ■                      |
| CPX-FB39                                                           | 2093101  | ■                      |
| CPX-FB43                                                           | 8110369  | ■                      |
| CPX-M-FB44                                                         | 8110370  | ■                      |
| CPX-M-FB45                                                         | 8110371  | ■                      |

| Pin allocation – IO-Link interface |     |                       |                                                    |
|------------------------------------|-----|-----------------------|----------------------------------------------------|
| Terminal assignment                | Pin | Signal                | Designation                                        |
|                                    | 1   | 24 V <sub>SEN</sub>   | 24 V DC supply voltage for electronics and inputs  |
|                                    | 2   | 24 V <sub>VAL</sub>   | 24 V DC load voltage supply for valves and outputs |
|                                    | 3   | 0 V <sub>SEN</sub>    | 0 V DC supply voltage for electronics and sensors  |
|                                    | 4   | C/Q <sub>I-Port</sub> | Communication signal C/Q, data transmission line   |
|                                    | 5   | 0 V <sub>VALVES</sub> | 0 V DC load voltage supply for valves and outputs  |

## Datasheet – IO-Link<sup>®</sup> interface

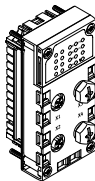
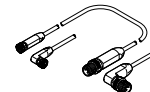
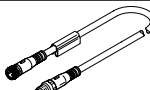
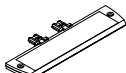
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



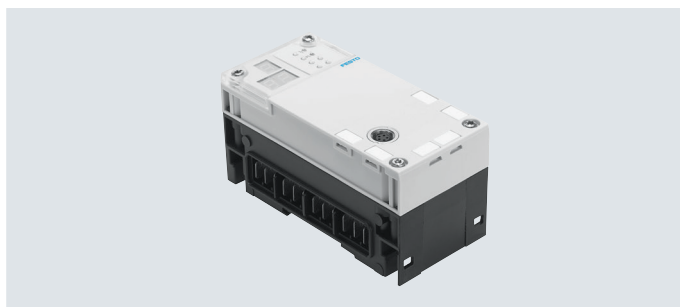
| Type                   | B1    | B2    | B3    | H1   | L1 |
|------------------------|-------|-------|-------|------|----|
| CPX-CTEL-2-M12-5POL-LK | 108.1 | 118.9 | 124.9 | 55.1 | 50 |

## Datasheet – IO-Link® interface

| Ordering data                                                                     |                                                                                                                           |                                                           |       |          |                              |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------|----------|------------------------------|
| Designation                                                                       |                                                                                                                           |                                                           |       | Part no. | Type                         |
| CPX CTEL master, IO-Link®                                                         |                                                                                                                           |                                                           |       |          |                              |
|   | Interface for max. 2 I/O modules and valve terminals with IO-Link® interface (devices)                                    |                                                           |       | 2900543  | CPX-CTEL-2-M12-5POL-LK       |
| Bus connection                                                                    |                                                                                                                           |                                                           |       |          |                              |
|   | Cover cap                                                                                                                 | M12                                                       |       | 165592   | ISK-M12                      |
|   | Modular system for a choice of connecting cables                                                                          |                                                           |       | –        | NEBA-...<br>→ Internet: neba |
|   | Connecting cable M12-M12, 5-pin <ul style="list-style-type: none"><li>• Straight socket</li><li>• Straight plug</li></ul> | Cable characteristic: suitable for use with energy chains | 5 m   | 574321   | NEBU-M12G5-E-5-Q8N-M12G5     |
|                                                                                   |                                                                                                                           |                                                           | 7.5 m | 574322   | NEBU-M12G5-E-7.5-Q8N-M12G5   |
|                                                                                   |                                                                                                                           |                                                           | 10 m  | 574323   | NEBU-M12G5-E-10-Q8N-M12G5    |
|   | Inscription label holder for connection block                                                                             |                                                           |       | 536593   | CPX-ST-1                     |
| User documentation                                                                |                                                                                                                           |                                                           |       |          |                              |
|  | User documentation CPX CTEL master                                                                                        | German                                                    |       | 8034115  | CPX-CTEL-2-M12-5POLLK-DE     |
|                                                                                   |                                                                                                                           | English                                                   |       | 8034116  | CPX-CTEL-2-M12-5POLLK-EN     |

## Datasheet – Axis controller for 1 electric axis

The axis controller CPX-CMAX is intended exclusively for use in valve terminals CPX.



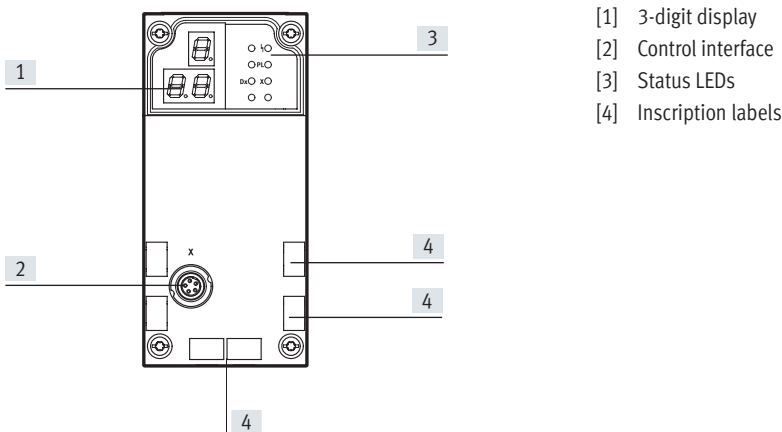
| General technical data                           |         |        |                             |
|--------------------------------------------------|---------|--------|-----------------------------|
| Operating voltage                                |         |        |                             |
| Operating voltage range                          |         | [V DC] | 18 ... 30                   |
| Nominal operating voltage                        |         | [V DC] | 24                          |
| Current consumption at nominal operating voltage |         | [mA]   | 200                         |
| Fuse protection (short circuit)                  |         |        | Electronic                  |
| Power failure buffering                          |         | [ms]   | 10                          |
| Load voltage                                     |         |        |                             |
| Load voltage range                               |         | [V DC] | 20 ... 30                   |
| Nominal load voltage                             |         | [V DC] | 24                          |
| Permissible load current                         |         | [A]    | 2.5                         |
| Fuse protection (short circuit)                  |         |        | Electronic                  |
| No. of axis strings                              |         |        | 1                           |
| Axes per string                                  |         |        | 1                           |
| Length of connecting cable to axis               |         | [m]    | ≤ 30                        |
| Max. number of modules                           |         |        | 7                           |
| Indicator                                        |         |        | 7-segment display           |
| Assigned addresses                               | Outputs | [bit]  | 8x8                         |
|                                                  | Inputs  | [bit]  | 8x8                         |
| Operating modes                                  |         |        | Record mode                 |
|                                                  |         |        | Direct mode                 |
| Controller types                                 |         |        | Position control            |
|                                                  |         |        | Force control               |
| Diagnostics                                      |         |        | Module-orientated           |
|                                                  |         |        | Via local 7-segment display |
| Status indicator                                 |         |        | Module status               |
|                                                  |         |        | Power load                  |
|                                                  |         |        | Display/Error Axis X        |
|                                                  |         |        | MC Axis X                   |
| Control interface                                |         |        |                             |
| Data                                             |         |        | CAN bus with Festo protocol |
|                                                  |         |        | Digital                     |
| Electrical connection                            |         |        | 5-pin                       |
|                                                  |         |        | M9                          |
|                                                  |         |        | Socket                      |
| Materials: Housing                               |         |        | Reinforced PA               |
| Note on materials                                |         |        | RoHs-compliant              |
| LABS (PWIS) conformity                           |         |        | VDMA24364-B2-L              |
| Product weight                                   |         | [g]    | 240                         |
| Dimensions                                       | Length  | [mm]   | 107                         |
|                                                  | Width   | [mm]   | 50                          |
|                                                  | Height  | [mm]   | 55                          |



Datasheet – Axis controller for 1 electric axis

| Operating and environmental conditions |      |                          |
|----------------------------------------|------|--------------------------|
| Ambient temperature                    | [°C] | –5 ... +50               |
| Relative humidity                      | [%]  | 5 ... 95, non-condensing |
| Degree of protection to IEC 60529      |      | IP65                     |

Connection and indicator components

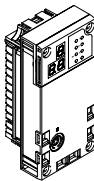
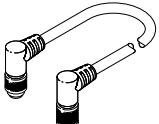
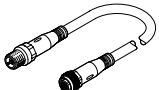
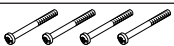
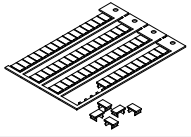


| Pin assignment – Control interface |         |           |                           |
|------------------------------------|---------|-----------|---------------------------|
|                                    | Pin     | Signal    | Designation               |
|                                    | 1       | +24 V     | Nominal operating voltage |
|                                    | 2       | +24 V     | Load voltage              |
|                                    | 3       | 0 V       | Ground                    |
|                                    | 4       | CAN_H     | CAN High                  |
|                                    | 5       | CAN_L     | CAN low                   |
|                                    | Housing | Shielding | Cable shield              |

| Permitted bus nodes/CEC |                         |                             |
|-------------------------|-------------------------|-----------------------------|
| Bus node/CEC            | Protocol                | Max. number of CMAX modules |
| CPX-CEC...              | –                       | 8                           |
| CPX-FB11                | DeviceNet <sup>1)</sup> | 8                           |
| CPX-FB13                | PROFIBUS <sup>2)</sup>  | 8                           |
| CPX-FB23-24             | CC-Link <sup>®</sup>    | 4 (as function module F23)  |
|                         |                         | 8 (as function module F24)  |
| CPX-FB36                | EtherNet/IP             | 8                           |
| CPX-FB37                | EtherCAT <sup>®</sup>   | 8                           |
| CPX-FB39                | Sercos III              | 8                           |
| CPX-FB40                | POWERLINK               | 8                           |
| CPX-FB43                | PROFINET RT, M12        | 8                           |
| CPX-M-FB44              | PROFINET RT, RJ45       | 8                           |
| CPX-M-FB45              | PROFINET RT, SCRJ       | 8                           |

1) As of revision 20 (R20)  
2) As of revision 23 (R23)

## Datasheet – Axis controller for 1 electric axis

| Ordering data                                                                       |                                                         | Brief description |        | Part no.            | Type |
|-------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------|--------|---------------------|------|
| Axis controller                                                                     |                                                         |                   |        |                     |      |
|    | Order code in CPX configurator: T21                     |                   | 548932 | CPX-CMAX-C1-1       |      |
| Connecting cables                                                                   |                                                         |                   |        |                     |      |
|    | Connecting cable with angled plug and angled socket     | 0.25 m            | 540327 | KVI-CP-3-WS-WD-0.25 |      |
|                                                                                     |                                                         | 0.5 m             | 540328 | KVI-CP-3-WS-WD-0.5  |      |
|                                                                                     |                                                         | 2 m               | 540329 | KVI-CP-3-WS-WD-2    |      |
|                                                                                     |                                                         | 5 m               | 540330 | KVI-CP-3-WS-WD-5    |      |
|                                                                                     |                                                         | 8 m               | 540331 | KVI-CP-3-WS-WD-8    |      |
|    | Connecting cable with straight plug and straight socket | 2 m               | 540332 | KVI-CP-3-GS-GD-2    |      |
|                                                                                     |                                                         | 5 m               | 540333 | KVI-CP-3-GS-GD-5    |      |
|                                                                                     |                                                         | 8 m               | 540334 | KVI-CP-3-GS-GD-8    |      |
|    | Connecting component for cabinet through feed           |                   | 543252 | KVI-CP-3-SSD        |      |
| Screws                                                                              |                                                         |                   |        |                     |      |
|   | For mounting on the metal interlinking block            |                   | 550219 | CPX-M-M3X22-4X      |      |
| Inscription labels                                                                  |                                                         |                   |        |                     |      |
|  | Inscription labels 6x10, in frames                      | Pack of 64        | 18576  | IBS-6X10            |      |
| User documentation                                                                  |                                                         |                   |        |                     |      |
|  | Description axis controller CPX-CMAX1)                  | German            | 559750 | CPX-CMAX-C1-1-DE    |      |
|                                                                                     |                                                         | English           | 559751 | CPX-CMAX-C1-1-EN    |      |
|                                                                                     |                                                         | German            | 559756 | CPX-CMAX-C1-1-DE    |      |
|                                                                                     |                                                         | English           | 559757 | CPX-CMAX-C1-1-EN    |      |

1) User documentation in paper form is not included in the scope of delivery.

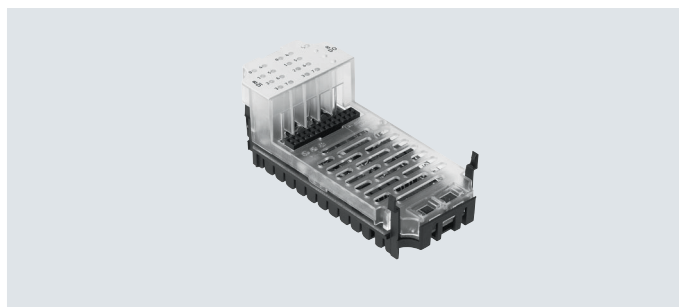
## Datasheet – Input module, digital

### Function

Digital input modules enable the connection of two-wire and three-wire sensors (proximity switches, inductive or capacitive sensors, etc.). Depending on the connection block selected, the module supports various connection concepts with different numbers of sockets (single or double allocation).

### Application area

- Input modules for 24 V DC sensor supply voltage
- PNP or NPN logic
- Supports connection blocks with M12, M8, Sub-D and terminal connection
- Module features can be parameterised
- The input module receives the voltage supply for the electronics and the sensors from the interlinking block
- Module protection and diagnostics through integrated electronic fuse

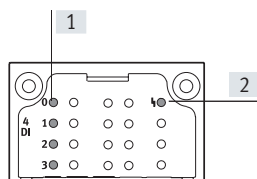


| General technical data                                                   |                        |        |                                                                                                                                                                                |                                     |                                      |                                     |
|--------------------------------------------------------------------------|------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|
| Type                                                                     |                        |        | CPX-4DE                                                                                                                                                                        | CPX-8DE                             | CPX-8DE-D                            | CPX-8NDE                            |
| Number of inputs                                                         |                        |        | 4                                                                                                                                                                              | 8                                   | 8                                    | 8                                   |
| Max. total current of inputs per module                                  | [A]                    |        | 0.7                                                                                                                                                                            | 1                                   | 0.7                                  | 0.7                                 |
| Fuse protection                                                          |                        |        | Internal electronic fuse per module                                                                                                                                            | Internal electronic fuse per module | Internal electronic fuse per channel | Internal electronic fuse per module |
| Intrinsic current consumption at operating voltage                       | [mA]                   |        | Typ. 15                                                                                                                                                                        |                                     |                                      |                                     |
| Operating voltage                                                        | Nominal width          | [V DC] | 24                                                                                                                                                                             |                                     |                                      |                                     |
|                                                                          | Permissible range      | [V DC] | 18 ... 30                                                                                                                                                                      |                                     |                                      |                                     |
| Galvanic isolation                                                       | Channel – channel      |        | No                                                                                                                                                                             |                                     |                                      |                                     |
|                                                                          | Channel – internal bus |        | No                                                                                                                                                                             |                                     |                                      |                                     |
| Switching level                                                          | Signal 0               | [V DC] | ≤ 5                                                                                                                                                                            |                                     |                                      |                                     |
|                                                                          | Signal 1               | [V DC] | ≥ 11                                                                                                                                                                           |                                     |                                      |                                     |
| Input debounce time                                                      | [ms]                   |        | 3 (0.1, 10, 20 parameterisable)                                                                                                                                                |                                     |                                      |                                     |
| Input characteristic                                                     |                        |        | IEC 1131-T2                                                                                                                                                                    |                                     |                                      |                                     |
| Switching logic                                                          |                        |        | Positive logic (PNP)                                                                                                                                                           |                                     |                                      |                                     |
| LED indicators                                                           | Group diagnostics      |        | 1                                                                                                                                                                              | 1                                   | 1                                    | 1                                   |
|                                                                          | Channel diagnostics    |        | –                                                                                                                                                                              | –                                   | 8                                    | –                                   |
|                                                                          | Channel status         |        | 4                                                                                                                                                                              | 8                                   | 8                                    | 8                                   |
| Diagnostics                                                              |                        |        | Short circuit/overload per channel                                                                                                                                             |                                     |                                      |                                     |
| Parameterisation                                                         |                        |        | <ul style="list-style-type: none"> <li>• Module monitoring</li> <li>• Behaviour after short circuit</li> <li>• Input debounce time</li> <li>• Signal extension time</li> </ul> |                                     |                                      |                                     |
| Degree of protection to EN 60529                                         |                        |        | Depending on connection block                                                                                                                                                  |                                     |                                      |                                     |
| Temperature range                                                        | Operation              | [°C]   | –5 ... +50                                                                                                                                                                     |                                     |                                      |                                     |
|                                                                          | Storage/transport      | [°C]   | –20 ... +70                                                                                                                                                                    |                                     |                                      |                                     |
| Materials                                                                |                        |        | Reinforced PA, PC                                                                                                                                                              |                                     |                                      |                                     |
| LABS (PWIS) conformity                                                   |                        |        | VDMA24364-B2-L                                                                                                                                                                 |                                     |                                      |                                     |
| Grid dimension                                                           | [mm]                   |        | 50                                                                                                                                                                             |                                     |                                      |                                     |
| Dimensions (including interlinking block and connection block) W x L x H | [mm]                   |        | 50 x 107 x 50                                                                                                                                                                  |                                     |                                      |                                     |
| Product weight                                                           | [g]                    |        | 39                                                                                                                                                                             | 39                                  | 45                                   | 40                                  |

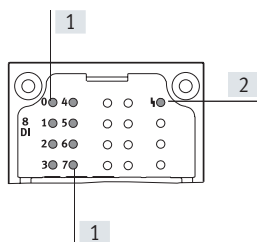
# Datasheet – Input module, digital

## Connection and indicator components

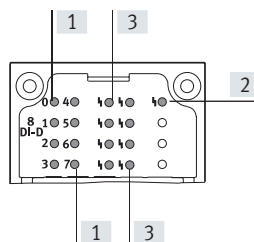
CPX-4DE



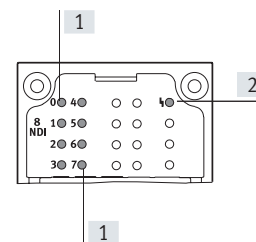
CPX-8DE



CPX-8DE-D



CPX-8NDE



[1] Status LEDs (green)

[2] Error LED (red; module error)

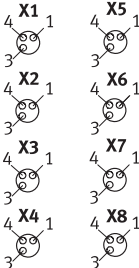
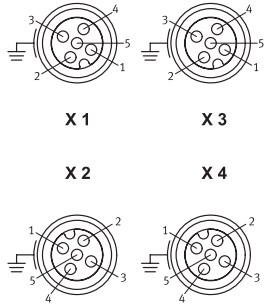
[3] Channel-related error LEDs (red)

For assigning to inputs  
→ Pin assignment of the module

## Combinations of connection blocks and digital input modules

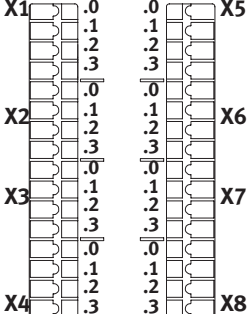
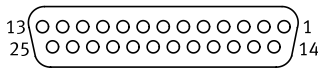
| Connection blocks     | Part no. | Digital input modules |         |           |          |
|-----------------------|----------|-----------------------|---------|-----------|----------|
|                       |          | CPX-4DE               | CPX-8DE | CPX-8DE-D | CPX-8NDE |
| CPX-AB-8-M8-3POL      | 195706   | ■                     | ■       | ■         | ■        |
| CPX-AB-4-M12X2-5POL   | 195704   | ■                     | ■       | ■         | ■        |
| CPX-AB-4-M12X2-5POL-R | 541254   | ■                     | ■       | ■         | ■        |
| CPX-AB-8-KL-4POL      | 195708   | ■                     | ■       | ■         | ■        |
| CPX-AB-1-SUB-BU-25POL | 525676   | ■                     | ■       | ■         | ■        |
| CPX-M-AB-4-M12X2-5POL | 549367   | ■                     | ■       | ■         | ■        |

## Pin assignment

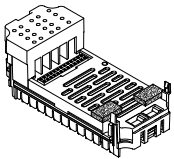
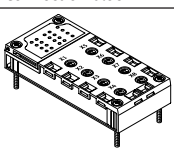
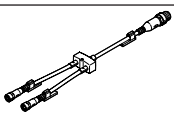
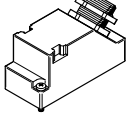
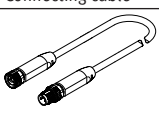
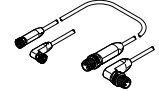
| Connection block inputs                                                             |                                                                                                                                                                                                                                                                                                                   | CPX-4DE                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                    | CPX-8DE, CPX-8DE-D and CPX-8NDE                                                                                                                                                                                                                                                                                                                          |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CPX-AB-8-M8-3POL                                                                    |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                          |  |
|  | X1.1: 24 V <sub>SEN</sub><br>X1.3: 0 V <sub>SEN</sub><br>X1.4: Input x<br><br>X2.1: 24 V <sub>SEN</sub><br>X2.3: 0 V <sub>SEN</sub><br>X2.4: Input x+1<br><br>X3.1: 24 V <sub>SEN</sub><br>X3.3: 0 V <sub>SEN</sub><br>X3.4: Input x+1<br><br>X4.1: 24 V <sub>SEN</sub><br>X4.3: 0 V <sub>SEN</sub><br>X4.4: n.c. | X5.1: 24 V <sub>SEN</sub><br>X5.3: 0 V <sub>SEN</sub><br>X5.4: Input x+2<br><br>X6.1: 24 V <sub>SEN</sub><br>X6.3: 0 V <sub>SEN</sub><br>X6.4: Input x+3<br><br>X7.1: 24 V <sub>SEN</sub><br>X7.3: 0 V <sub>SEN</sub><br>X7.4: Input x+3<br><br>X8.1: 24 V <sub>SEN</sub><br>X8.3: 0 V <sub>SEN</sub><br>X8.4: n.c. | X1.1: 24 V <sub>SEN x</sub><br>X1.3: 0 V <sub>SEN x</sub><br>X1.4: Input x<br><br>X2.1: 24 V <sub>SEN x+1</sub><br>X2.3: 0 V <sub>SEN x+1</sub><br>X2.4: Input x+1<br><br>X3.1: 24 V <sub>SEN x+2</sub><br>X3.3: 0 V <sub>SEN x+2</sub><br>X3.4: Input x+2<br><br>X4.1: 24 V <sub>SEN x+3</sub><br>X4.3: 0 V <sub>SEN x+3</sub><br>X4.4: Input x+3 | X5.1: 24 V <sub>SEN x+4</sub><br>X5.3: 0 V <sub>SEN x+4</sub><br>X5.4: Input x+4<br><br>X6.1: 24 V <sub>SEN x+5</sub><br>X6.3: 0 V <sub>SEN x+5</sub><br>X6.4: Input x+5<br><br>X7.1: 24 V <sub>SEN x+6</sub><br>X7.3: 0 V <sub>SEN x+6</sub><br>X7.4: Input x+6<br><br>X8.1: 24 V <sub>SEN x+7</sub><br>X8.3: 0 V <sub>SEN x+7</sub><br>X8.4: Input x+7 |  |
| CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R <sup>1)</sup> and CPX-M-AB-4-M12X2-5POL  |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                          |  |
|  | X1.1: 24 V <sub>SEN</sub><br>X1.2: Input x+1<br>X1.3: 0 V <sub>SEN</sub><br>X1.4: Input x<br>X1.5: FE<br><br>X2.1: 24 V <sub>SEN</sub><br>X2.2: n.c.<br>X2.3: 0 V <sub>SEN</sub><br>X2.4: Input x+1<br>X2.5: FE                                                                                                   | X3.1: 24 V <sub>SEN</sub><br>X3.2: Input x+3<br>X3.3: 0 V <sub>SEN</sub><br>X3.4: Input x+2<br>X3.5: FE<br><br>X4.1: 24 V <sub>SEN</sub><br>X4.2: n.c.<br>X4.3: 0 V <sub>SEN</sub><br>X4.4: Input x+3<br>X4.5: FE                                                                                                   | X1.1: 24 V <sub>SEN x</sub><br>X1.2: Input x+1<br>X1.3: 0 V <sub>SEN x</sub><br>X1.4: Input x<br>X1.5: FE<br><br>X2.1: 24 V <sub>SEN x+2</sub><br>X2.2: Input x+3<br>X2.3: 0 V <sub>SEN x+2</sub><br>X2.4: Input x+2<br>X2.5: FE                                                                                                                   | X3.1: 24 V <sub>SEN x+4</sub><br>X3.2: Input x+5<br>X3.3: 0 V <sub>SEN x+4</sub><br>X3.4: Input x+4<br>X3.5: FE<br><br>X4.1: 24 V <sub>SEN x+6</sub><br>X4.2: Input x+7<br>X4.3: 0 V <sub>SEN x+6</sub><br>X4.4: Input x+6<br>X4.5: FE                                                                                                                   |  |

1) Speedcon quick lock, additional shielding on metal thread

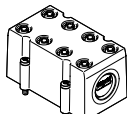
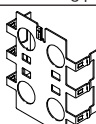
## Datasheet – Input module, digital

| Pin assignment                                                                     |                           |                           |                                 |
|------------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------------|
| Connection block inputs                                                            |                           | CPX-4DE                   | CPX-8DE, CPX-8DE-D and CPX-8NDE |
| <b>CPX-AB-8-KL-4POL</b>                                                            |                           |                           |                                 |
|   | X1.0: 24 V <sub>SEN</sub> | X5.0: 24 V <sub>SEN</sub> | X1.0: 24 V <sub>SEN</sub> x     |
|                                                                                    | X1.1: 0 V <sub>SEN</sub>  | X5.1: 0 V <sub>SEN</sub>  | X1.1: 0 V <sub>SEN</sub> x      |
|                                                                                    | X1.2: Input x             | X5.2: Input x+2           | X1.2: Input x                   |
|                                                                                    | X1.3: FE                  | X5.3: FE                  | X1.3: FE                        |
|                                                                                    | X2.0: 24 V <sub>SEN</sub> | X6.0: 24 V <sub>SEN</sub> | X2.0: 24 V <sub>SEN</sub> x+1   |
|                                                                                    | X2.1: 0 V <sub>SEN</sub>  | X6.1: 0 V <sub>SEN</sub>  | X2.1: 0 V <sub>SEN</sub> x+1    |
|                                                                                    | X2.2: Input x+1           | X6.2: Input x+3           | X2.2: Input x+1                 |
|                                                                                    | X2.3: FE                  | X6.3: FE                  | X2.3: FE                        |
|                                                                                    | X3.0: 24 V <sub>SEN</sub> | X7.0: 24 V <sub>SEN</sub> | X3.0: 24 V <sub>SEN</sub> x+2   |
|                                                                                    | X3.1: 0 V <sub>SEN</sub>  | X7.1: 0 V <sub>SEN</sub>  | X3.1: 0 V <sub>SEN</sub> x+2    |
|                                                                                    | X3.2: Input x+1           | X7.2: Input x+3           | X3.2: Input x+2                 |
|                                                                                    | X3.3: FE                  | X7.3: FE                  | X3.3: FE                        |
|                                                                                    | X4.0: 24 V <sub>SEN</sub> | X8.0: 24 V <sub>SEN</sub> | X4.0: 24 V <sub>SEN</sub> x+3   |
|                                                                                    | X4.1: 0 V <sub>SEN</sub>  | X8.1: 0 V <sub>SEN</sub>  | X4.1: 0 V <sub>SEN</sub> x+3    |
|                                                                                    | X4.2: n.c.                | X8.2: n.c.                | X4.2: Input x+3                 |
|                                                                                    | X4.3: FE                  | X8.3: FE                  | X4.3: FE                        |
| <b>CPX-AB-1-SUB-BU-25POL</b>                                                       |                           |                           |                                 |
|  | 1: Input x                | 14: Input x+2             | 1: Input x                      |
|                                                                                    | 2: Input x+1              | 15: Input x+3             | 2: Input x+1                    |
|                                                                                    | 3: Input x+1              | 16: Input x+3             | 3: Input x+2                    |
|                                                                                    | 4: n.c.                   | 17: n.c.                  | 4: Input x+3                    |
|                                                                                    | 5: 24 V <sub>SEN</sub>    | 18: 24 V <sub>SEN</sub>   | 5: 24 V <sub>SEN</sub> x+1      |
|                                                                                    | 6: 0 V <sub>SEN</sub>     | 19: 24 V <sub>SEN</sub>   | 6: 0 V <sub>SEN</sub> x+1       |
|                                                                                    | 7: 24 V <sub>SEN</sub>    | 20: 24 V <sub>SEN</sub>   | 7: 24 V <sub>SEN</sub> x+3      |
|                                                                                    | 8: 0 V <sub>SEN</sub>     | 21: 24 V <sub>SEN</sub>   | 8: 0 V <sub>SEN</sub> x+3       |
|                                                                                    | 9: 24 V <sub>SEN</sub>    | 22: 0 V <sub>SEN</sub>    | 9: 24 V <sub>SEN</sub> x        |
|                                                                                    | 10: 24 V <sub>SEN</sub>   | 23: 0 V <sub>SEN</sub>    | 10: 24 V <sub>SEN</sub> x+2     |
|                                                                                    | 11: 0 V <sub>SEN</sub>    | 24: 0 V <sub>SEN</sub>    | 11: 0 V <sub>SEN</sub> x        |
|                                                                                    | 12: 0 V <sub>SEN</sub>    | 25: FE                    | 12: 0 V <sub>SEN</sub> x+2      |
|                                                                                    | 13: FE                    | Housing: FE               | 13: FE                          |
|                                                                                    |                           |                           | 14: Input x+4                   |
|                                                                                    |                           |                           | 15: Input x+5                   |
|                                                                                    |                           |                           | 16: Input x+6                   |
|                                                                                    |                           |                           | 17: Input x+7                   |
|                                                                                    |                           |                           | 18: 24 V <sub>SEN</sub> x+4     |
|                                                                                    |                           |                           | 19: 24 V <sub>SEN</sub> x+5     |
|                                                                                    |                           |                           | 20: 24 V <sub>SEN</sub> x+6     |
|                                                                                    |                           |                           | 21: 24 V <sub>SEN</sub> x+7     |
|                                                                                    |                           |                           | 22: 0 V <sub>SEN</sub> x+2 u. 3 |
|                                                                                    |                           |                           | 23: 0 V <sub>SEN</sub> x+2 u. 3 |
|                                                                                    |                           |                           | 24: 0 V <sub>SEN</sub> x+2 u. 3 |
|                                                                                    |                           |                           | 25: FE                          |
|                                                                                    |                           |                           | Housing: FE                     |

## Datasheet – Input module, digital

| Ordering data                                                                       |                                                                      |                                                  |          |                                  |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------|----------|----------------------------------|
| Designation                                                                         |                                                                      |                                                  | Part no. | Type                             |
| Input module, digital                                                               |                                                                      |                                                  |          |                                  |
|    | 4 digital inputs, positive logic (PNP)                               |                                                  | 195752   | CPX-4DE                          |
|                                                                                     | 8 digital inputs, positive logic (PNP)                               |                                                  | 195750   | CPX-8DE                          |
|                                                                                     | 8 digital inputs, positive logic (PNP), enhanced diagnostic function |                                                  | 541480   | CPX-8DE-D                        |
|                                                                                     | 8 digital inputs, negative logic (NPN)                               |                                                  | 543813   | CPX-8NDE                         |
| Connection block                                                                    |                                                                      |                                                  |          |                                  |
|    | Polymer                                                              | 8x socket M8, 3-pin                              | 195706   | CPX-AB-8-M8-3POL                 |
|                                                                                     |                                                                      | 4x socket M12, 5-pin                             | 195704   | CPX-AB-4-M12X2-5POL              |
|                                                                                     |                                                                      | 4x socket, M12 with quick-lock technology, 5-pin | 541254   | CPX-AB-4-M12X2-5POL-R            |
|                                                                                     |                                                                      | Spring-loaded terminal, 32-pin                   | 195708   | CPX-AB-8-KL-4POL                 |
|                                                                                     |                                                                      | 1x socket, Sub-D, 25-pin                         | 525676   | CPX-AB-1-SUB-BU-25POL            |
|                                                                                     | Metal                                                                | 4x socket M12, 5-pin                             | 549367   | CPX-M-AB-4-M12X2-5POL            |
| Distributor                                                                         |                                                                      |                                                  |          |                                  |
|    | Modular system for all types of sensor/actuator distributor          |                                                  | –        | NEDY-...<br>→ Internet: nedy     |
|    | 1x plug M12, 4-pin                                                   | 2x socket M8, 3-pin                              | 8005311  | NEDY-L2R1-V1-M8G3-N-M12G4        |
|                                                                                     |                                                                      | 2x socket M12, 5-pin                             | 8005310  | NEDY-L2R1-V1-M12G5-N-M12G4       |
| Plug                                                                                |                                                                      |                                                  |          |                                  |
|  | M8, 3-pin                                                            | Screw terminal                                   | 8162298  | NECB-S-M8G3-C2                   |
|                                                                                     | M12, 4-pin                                                           | For cable Ø 2.1 ... 7 mm                         | 8162294  | NECB-S-M12G4-C2                  |
|                                                                                     |                                                                      | For 2x cable Ø 2.1 ... 5.6 mm                    | 8162295  | NECB-S-M12G4-C2-D                |
|                                                                                     | M12, 5-pin                                                           | For cable Ø 2.1 ... 7 mm                         | 8162296  | NECB-S-M12G5-C2                  |
|                                                                                     |                                                                      | For 2x cable Ø 2.1 ... 5.6 mm                    | 8162297  | NECB-S-M12G5-C2-D                |
|  | Sub-D plug, 25-pin                                                   |                                                  | 527522   | SD-SUB-D-ST25                    |
| Connecting cable                                                                    |                                                                      |                                                  |          |                                  |
|  | 1x socket M8, 3-pin                                                  | 1x plug M8, 3-pin                                | 0.5 m    | ★ 8078282 NEBA-M8G3-U-0.5-N-M8G3 |
|                                                                                     |                                                                      |                                                  | 1.0 m    | ★ 8078283 NEBA-M8G3-U-1-N-M8G3   |
|                                                                                     |                                                                      |                                                  | 2.5 m    | ★ 8078286 NEBA-M8G3-U-2.5-N-M8G3 |
|                                                                                     |                                                                      |                                                  | 5.0 m    | ★ 8078287 NEBA-M8G3-U-5-N-M8G3   |
|  | Modular system for a choice of connecting cables                     |                                                  | –        | NEBA-...<br>→ Internet: neba     |

## Datasheet – Input module, digital

| Ordering data                                                                    |                                                                                                                                                                              |         |          |                       |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|-----------------------|
| Designation                                                                      |                                                                                                                                                                              |         | Part no. | Type                  |
| Covering                                                                         |                                                                                                                                                                              |         |          |                       |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |         | 538219   | AK-8KL                |
|                                                                                  | Fittings kit                                                                                                                                                                 |         | 538220   | VG-K-M9               |
| Screening plate                                                                  |                                                                                                                                                                              |         |          |                       |
|  | Screening plate for M12 connections                                                                                                                                          |         | 526184   | CPX-AB-S-4-M12        |
| User documentation                                                               |                                                                                                                                                                              |         |          |                       |
|  | User documentation                                                                                                                                                           | German  | 526439   | CPX-_DE_DA/CPX-_DE-DE |
|                                                                                  |                                                                                                                                                                              | English | 526440   | CPX-_DE_DA/CPX-_DE-EN |

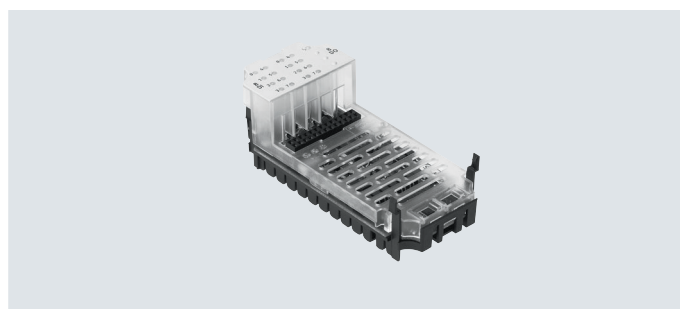
## Datasheet – Input module, digital, PROFIsafe

### Function

The PROFIsafe input module has 8 input channels whose signal status is detected for safety reasons, with the information transmitted to a suitable safety controller using the PROFIsafe safety protocol in combination with the appropriate fieldbus (PROFINET or PROFIBUS). This function is exclusively available for safety controllers using the PROFIsafe protocol, profile version 2.4.

### Application area

- Input module for 24 V DC sensor supply voltage
- Supports connection blocks with M12 and terminal connection
- Module features can be parameterised
- The input module receives the voltage supply for the electronics and the sensors from the interlinking block
- Module protection and diagnostics through integrated electronic fuse



### Description

#### Module-based passivation

While channel-based passivation is disabled, the input module, in accordance with PROFIsafe specification, switches all information in the input image to the safe status, even when there is only one channel error.

#### Channel-based passivation

In the case of channel-based passivation, when a channel error occurs, the input module switches the input information of the affected channel pair to 0, depending on the function mode.

- The input information for unaffected channel pairs does not change
- The input module remains integrated.
- The input module indicates the current channel error status to the control unit via the input image.

### Possible applications

The inputs on the PROFIsafe input module can be combined for multi-channel sensor applications. Every two inputs form a channel pair, which is set separately with one of 11 function modes.

The function mode has an influence on the evaluation of the input signals, and optionally on the generation of clock signals.

There are 5 independent clock outputs available for safe operation of passive sensors; the pulse patterns are used in some operating modes to detect cross-overs in the signal paths.

The entire input module is designed to ensure that the input channels provide either secure data or no data at all, even when an error is present in the system

### Application areas

- Use as an input module for a higher-order safety controller. Several input modules can be used together and these monitor mutually independent sensors
- Use of multi-channel sensor applications with up to 8 secure inputs, which can be grouped and are suitable for configuration with the help of 11 different function modes
- Connection of various switches and sensors within the safety chain
- Output of an identifier coded by DIL switch in the connection block CPX-AB-ID-P



#### Note

The safety integrity level, Performance Level and category for the system as a whole correspond to that of the component in the safety chain with the lowest characteristic value.

### Application examples

- Two-hand control device for starting a function
- Emergency stop switch for incidents
- Operating mode selector switch with four positions
- Rotary indexing table
- Light curtain
- Acknowledge button with request
- End-position switch
- Safety door with two N/O switches



## Datasheet – Input module, digital, PROFIsafe

| General technical data                                                   |                           |        |                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------|---------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                                     |                           |        | CPX-F8DE-P                                                                                                                                                                                                                                                                                             |
| Number of inputs                                                         |                           |        | 8                                                                                                                                                                                                                                                                                                      |
| Safety function                                                          |                           |        | Reliable detection and evaluation of input statuses                                                                                                                                                                                                                                                    |
| Maximum address volume                                                   | Inputs                    | [byte] | 6                                                                                                                                                                                                                                                                                                      |
|                                                                          | Outputs                   | [byte] | 7                                                                                                                                                                                                                                                                                                      |
| Maximum cable length                                                     |                           |        | [m] 200                                                                                                                                                                                                                                                                                                |
| Max. power supply                                                        | Per module                | [A]    | 3                                                                                                                                                                                                                                                                                                      |
| Current consumption of the module                                        |                           |        | [mA] Typ. 35 (power supply for electronics)                                                                                                                                                                                                                                                            |
| Operating voltage                                                        | Nominal width             | [V DC] | 24                                                                                                                                                                                                                                                                                                     |
|                                                                          | Permissible range         | [V DC] | 20.4 ... 28.8                                                                                                                                                                                                                                                                                          |
| Voltage drop per channel                                                 |                           |        | [V] 0.6                                                                                                                                                                                                                                                                                                |
| Residual ripple                                                          |                           |        | [Vss] 2 within voltage range                                                                                                                                                                                                                                                                           |
| Galvanic isolation                                                       | Channel – channel         |        | No                                                                                                                                                                                                                                                                                                     |
| Characteristic curve of inputs                                           |                           |        | To IEC 61131-2, type 2                                                                                                                                                                                                                                                                                 |
| Switching logic                                                          | Inputs                    |        | PNP (positive switching)                                                                                                                                                                                                                                                                               |
| Safety Integrity Level                                                   | As per EN 62061           |        | Reliable detection and evaluation of input statuses up to SIL CL3                                                                                                                                                                                                                                      |
|                                                                          | As per EN 61508           |        | Reliable detection and evaluation of input statuses up to SIL3                                                                                                                                                                                                                                         |
| Performance Level                                                        | As per ISO 13849          |        | Reliable detection and evaluation of input statuses up to Cat 4 and PL e                                                                                                                                                                                                                               |
| Failure rate per hour (PFH)                                              |                           |        | 1.0x 10-9                                                                                                                                                                                                                                                                                              |
| Certificate-issuing authority                                            |                           |        | 01/205/5444.01/21                                                                                                                                                                                                                                                                                      |
| LED indicators                                                           | Group diagnostics         |        | 1                                                                                                                                                                                                                                                                                                      |
|                                                                          | Channel diagnostics       |        | 8                                                                                                                                                                                                                                                                                                      |
|                                                                          | Channel status            |        | 8                                                                                                                                                                                                                                                                                                      |
|                                                                          | Fail-safe protocol active |        | 1                                                                                                                                                                                                                                                                                                      |
| Diagnostics                                                              |                           |        | <ul style="list-style-type: none"><li>• Short circuit per channel</li><li>• Undervoltage</li><li>• Overvoltage</li><li>• Excessive temperature</li><li>• Cross circuit per channel</li><li>• Wire break per channel</li><li>• Communication</li><li>• Process data error</li><li>• Self-test</li></ul> |
| Control elements                                                         |                           |        | DIL switches                                                                                                                                                                                                                                                                                           |
| Degree of protection to EN 60529                                         |                           |        | Dependent on the connection block                                                                                                                                                                                                                                                                      |
| Grid dimension                                                           |                           |        | [mm] 50                                                                                                                                                                                                                                                                                                |
| Dimensions (including interlinking block and connection block) W x L x H |                           |        | [mm] 50 x 107 x 55                                                                                                                                                                                                                                                                                     |
| Product weight                                                           |                           |        | [g] 46                                                                                                                                                                                                                                                                                                 |

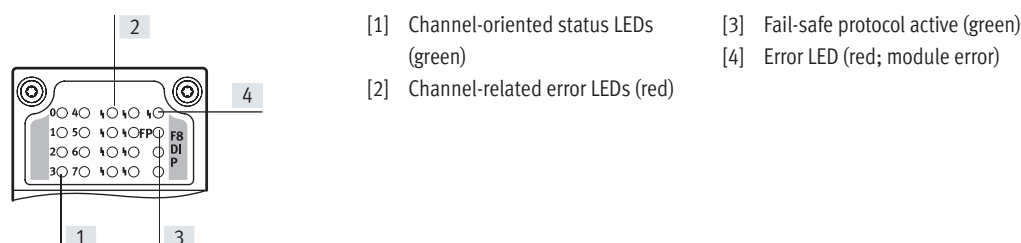
## Datasheet – Input module, digital, PROFIsafe

| Materials                                                  |      |                                          |
|------------------------------------------------------------|------|------------------------------------------|
| Note on materials                                          |      | RoHS-compliant                           |
| LABS (PWIS) conformity                                     |      | VDMA24364-B2-L                           |
| Operating and environmental conditions                     |      |                                          |
| Ambient temperature                                        | [°C] | –5 ... +50                               |
| Storage temperature                                        | [°C] | –20 ... +70                              |
| CE marking (see declaration of conformity) <sup>1)</sup>   |      | To EU Machinery Directive                |
|                                                            |      | To EU EMC Directive                      |
|                                                            |      | To EU RoHS Directive                     |
| UKCA marking (see declaration of conformity) <sup>1)</sup> |      | According to UK regulations for machines |
|                                                            |      | To UK EMC regulations                    |
|                                                            |      | To UK RoHS regulations                   |
| Certification                                              |      | c UL us – Recognized (OL)                |

1) More information [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

### Connection and indicator components

CPX-F8DE-P



### Combinations of bus nodes/control blocks with PROFIsafe input module

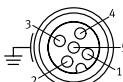
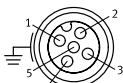
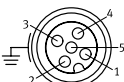
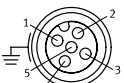
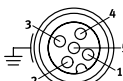
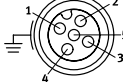
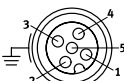
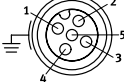
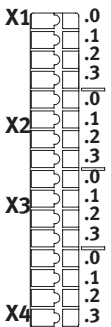
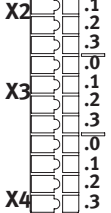
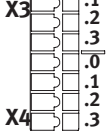
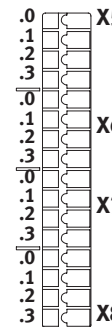
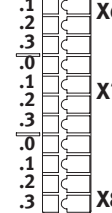
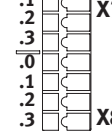
| Bus node/control block | Part no. | PROFIsafe input module |
|------------------------|----------|------------------------|
|                        |          | CPX-F8DE-P             |
| CPX-FB13               | 195740   | ■                      |
| CPX-FB43               | 8110369  | ■                      |
| CPX-M-FB44             | 8110370  | ■                      |
| CPX-M-FB45             | 8110371  | ■                      |

#### Note

The PROFIsafe input module CPX-F8DE-P can only be integrated as of software release 21 or release 30 (in the case of CPX-FB13).

## Datasheet – Input module, digital, PROFI-safe

| Combinations of connection blocks and PROFIsafe input module |          |                        |
|--------------------------------------------------------------|----------|------------------------|
| Connection blocks                                            | Part no. | PROFIsafe input module |
|                                                              |          | CPX-F8DE-P             |
| CPX-M-AB-4-M12X2-5POL                                        | 549367   | ■                      |
| CPX-M-AB-4-M12X2-5POL-T                                      | 2639560  | ■                      |
| CPX-AB-8-KL-4POL                                             | 195708   | ■                      |
| CPX-AB-ID-P                                                  | 2639571  | ■                      |

| Pin assignment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection block inputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CPX-F8DE-P                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                            |
| CPX-M-AB-4-M12X2-5POL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                            |
| <div><br/><b>X 1</b></div> <div><br/><b>X 2</b></div> <div><br/><b>X 3</b></div> <div><br/><b>X 4</b></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X1.1: 24 V <sub>SEN</sub><br>X1.2: Input x+1<br>X1.3: 0 V <sub>SEN</sub><br>X1.4: Input x<br>X1.5: FE<br><br>X2.1: 24 V <sub>SEN</sub><br>X2.2: Input x+3<br>X2.3: 0 V <sub>SEN</sub><br>X2.4: Input x+2<br>X2.5: FE                                                                                                                                                                   | X3.1: 24 V <sub>SEN</sub><br>X3.2: Input x+5<br>X3.3: 0 V <sub>SEN</sub><br>X3.4: Input x+4<br>X3.5: FE<br><br>X4.1: 24 V <sub>SEN</sub><br>X4.2: Input x+7<br>X4.3: 0 V <sub>SEN</sub><br>X4.4: Input x+6<br>X4.5: FE                                                                                                                                                                     |
| CPX-M-AB-4-M12X2-5POL-T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                            |
| <div><br/><b>X1-T</b></div> <div><br/><b>X2-T</b></div> <div><br/><b>X3-T</b></div> <div><br/><b>X4-T</b></div>                                                                                                                                                                                                                                                                                                                                                                                                                                             | X1-T.1: 24 V <sub>SEN x</sub><br>X1-T.2: Input x+1<br>X1-T.3: 0 V <sub>SEN</sub><br>X1-T.4: Input x<br>X1-T.5: 24 V <sub>SEN x+1</sub><br><br>X2-T.1: 24 V <sub>SEN x+2</sub><br>X2-T.2: Input x+3<br>X2-T.3: 0 V <sub>SEN</sub><br>X2-T.4: Input x+2<br>X2-T.5: 24 V <sub>SEN x+3</sub>                                                                                               | X3-T.1: 24 V <sub>SEN x+4</sub><br>X3-T.2: Input x+5<br>X3-T.3: 0 V <sub>SEN</sub><br>X3-T.4: Input x+4<br>X3-T.5: 24 V <sub>SEN x+5</sub><br><br>X4-T.1: 24 V <sub>SEN x+6</sub><br>X4-T.2: Input x+7<br>X4-T.3: 0 V <sub>SEN</sub><br>X4-T.4: Input x+6<br>X4-T.5: 24 V <sub>SEN x+7</sub>                                                                                               |
| CPX-AB-8-KL-4POL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                            |
| <div><br/><b>X1</b></div> <div><br/><b>X2</b></div> <div><br/><b>X3</b></div> <div><br/><b>X4</b></div> <div><br/><b>X5</b></div> <div><br/><b>X6</b></div> <div><br/><b>X7</b></div> <div><br/><b>X8</b></div> | X1.0: 24 V <sub>SEN</sub><br>X1.1: 0 V <sub>SEN</sub><br>X1.2: Input x<br>X1.3: FE<br><br>X2.0: 24 V <sub>SEN x</sub><br>X2.1: 24 V <sub>SEN x+1</sub><br>X2.2: Input x+1<br>X2.3: FE<br><br>X3.0: 24 V <sub>SEN</sub><br>X3.1: 0 V <sub>SEN</sub><br>X3.2: Input x+2<br>X3.3: FE<br><br>X4.0: 24 V <sub>SEN x+2</sub><br>X4.1: 24 V <sub>SEN x+3</sub><br>X4.2: Input x+3<br>X4.3: FE | X5.0: 24 V <sub>SEN</sub><br>X5.1: 0 V <sub>SEN</sub><br>X5.2: Input x+4<br>X5.3: FE<br><br>X6.0: 24 V <sub>SEN x+4</sub><br>X6.1: 24 V <sub>SEN x+5</sub><br>X6.2: Input x+5<br>X6.3: FE<br><br>X7.0: 24 V <sub>SEN</sub><br>X7.1: 0 V <sub>SEN</sub><br>X7.2: Input x+6<br>X7.3: FE<br><br>X8.0: 24 V <sub>SEN x+6</sub><br>X8.1: 24 V <sub>SEN x+7</sub><br>X8.2: Input x+7<br>X8.3: FE |

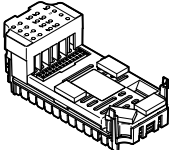
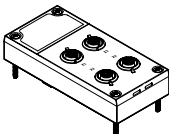
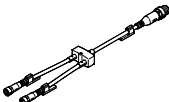
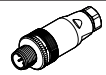
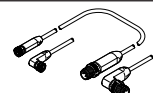
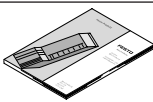
## Datasheet – Input module, digital, PROFIsafe

| General technical data           |                                                                                     |
|----------------------------------|-------------------------------------------------------------------------------------|
| Type                             | CPX-AB-ID-P                                                                         |
| Certificate-issuing authority    | 01/205/5444.00/15<br>German Technical Control Board (TÜV) Rh. UK 01/205U/5444.00/22 |
| Degree of protection to EN 60529 | IP65                                                                                |
| Housing material                 | PA<br>PC                                                                            |
| Note on materials                | RoHS-compliant                                                                      |
| LABS (PWIS) conformity           | VDMA24364-B2-L                                                                      |
| Corrosion resistance class CRC1) | 1                                                                                   |
| Product weight                   | [g] 57                                                                              |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

| Combinations of interlinking blocks and PROFIsafe input module |          |                        |
|----------------------------------------------------------------|----------|------------------------|
| Interlinking blocks                                            | Part no. | PROFIsafe input module |
|                                                                |          | CPX-F8DE-P             |
| CPX-GE-EV-S                                                    | 195746   | –                      |
| CPX-GE-EV-S-VL                                                 | 8022170  | –                      |
| CPX-GE-EV-S-7/8-4POL                                           | 541248   | –                      |
| CPX-GE-EV-S-7/8-5POL                                           | 541244   | –                      |
| CPX-GE-EV-S-7/8-5POL-VL                                        | 8022172  | –                      |
| CPX-M-GE-EV-S-7/8-CIP-4P                                       | 568956   | ■                      |
| CPX-M-GE-EV-S-7/8-5POL                                         | 550208   | ■                      |
| CPX-M-GE-EV-S-7/8-5POL-VL                                      | 8022165  | ■                      |
| CPX-M-GE-EV-S-M12-5POL                                         | 8098392  | ■                      |
| CPX-M-GE-EV-S-PP-5POL                                          | 563057   | ■                      |
| CPX-GE-EV                                                      | 195742   | –                      |
| CPX-M-GE-EV                                                    | 550206   | ■                      |
| CPX-M-GE-EV-FVO                                                | 567806   | –                      |
| CPX-GE-EV-Z                                                    | 195744   | –                      |
| CPX-GE-EV-Z-7/8-4POL                                           | 541250   | –                      |
| CPX-GE-EV-Z-7/8-5POL                                           | 541246   | –                      |
| CPX-M-GE-EV-Z-7/8-5POL                                         | 550210   | ■                      |
| CPX-M-GE-EV-Z-PP-5POL                                          | 563058   | ■                      |
| CPX-GE-EV-V                                                    | 533577   | –                      |
| CPX-M-GE-EV-W-M12-5POL                                         | 8098391  | ■                      |

## Datasheet – Input module, digital, PROFI-safe

| Ordering data                                                                      |                                                                                                 |                                |                        |                              |                         |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------|------------------------|------------------------------|-------------------------|
| Description                                                                        |                                                                                                 |                                | Part no.               | Type                         |                         |
| PROFIsafe input module                                                             |                                                                                                 |                                |                        |                              |                         |
|    | 8 digital inputs, positive logic (PNP), for reliable detection and evaluation of input statuses |                                | 2597424                | CPX-F8DE-P                   |                         |
| Connection block                                                                   |                                                                                                 |                                |                        |                              |                         |
|    | Polymer                                                                                         | Spring-loaded terminal, 32-pin | 195708                 | CPX-AB-8-KL-4POL             |                         |
|                                                                                    |                                                                                                 | DIL switch, 8-way              | 2639571                | CPX-AB-ID-P                  |                         |
|                                                                                    | Metal                                                                                           | 4x socket M12, 5-pin           | Unpulsed sensor supply | 549367                       | CPX-M-AB-4-M12X2-5POL   |
|                                                                                    |                                                                                                 |                                | Pulsed sensor supply   | 2639560                      | CPX-M-AB-4-M12X2-5POL-T |
| Distributor                                                                        |                                                                                                 |                                |                        |                              |                         |
|    | Modular system for all types of sensor/actuator distributor                                     |                                | –                      | NEDY-...<br>→ Internet: nedy |                         |
|    | 1x plug M12, 4-pin                                                                              | 2x socket M12, 5-pin           | 8005310                | NEDY-L2R1-V1-M12G5-N-M12G4   |                         |
| Plug                                                                               |                                                                                                 |                                |                        |                              |                         |
|  | M12, 4-pin                                                                                      | For cable Ø 2.1 ... 7 mm       | 8162294                | NECB-S-M12G4-C2              |                         |
|                                                                                    |                                                                                                 | For 2x cable Ø 2.1 ... 5.6 mm  | 8162295                | NECB-S-M12G4-C2-D            |                         |
|                                                                                    | M12, 5-pin                                                                                      | For cable Ø 2.1 ... 7 mm       | 8162296                | NECB-S-M12G5-C2              |                         |
|                                                                                    |                                                                                                 | For 2x cable Ø 2.1 ... 5.6 mm  | 8162297                | NECB-S-M12G5-C2-D            |                         |
| Connecting cable                                                                   |                                                                                                 |                                |                        |                              |                         |
|  | Modular system for a choice of connecting cables                                                |                                | –                      | NEBA-...<br>→ Internet: neba |                         |
| User documentation                                                                 |                                                                                                 |                                |                        |                              |                         |
|  | User documentation for PROFIsafe input module                                                   |                                | German                 | 8035496                      | CPX-F8DE-P-DE           |
|                                                                                    |                                                                                                 |                                | English                | 8035497                      | CPX-F8DE-P-EN           |

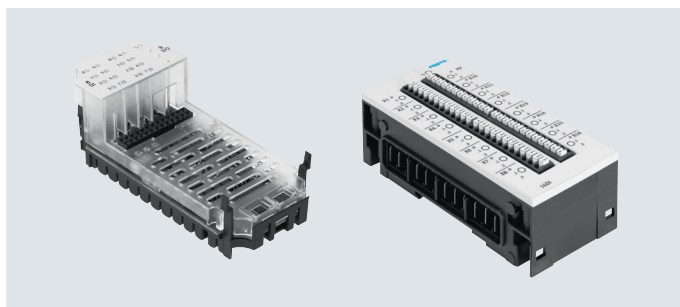
## Datasheet – Input module, digital, 16 inputs

### Function

Digital input modules enable the connection of two-wire and three-wire sensors (proximity switches, inductive or capacitive sensors, etc.). Depending on the connection block selected, the module supports various connection concepts with different numbers of sockets (single or double allocation).

### Application area

- Input modules for 24 V DC sensor supply voltage
- PNP logic
- Module features can be parameterised
- The input module receives the voltage supply for the electronics and the sensors from the interlinking block
- Module protection and diagnostics through integrated electronic fuse

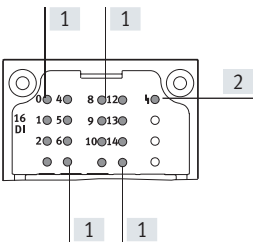


| General technical data                                                        |                        |                                                                                                                                                                           |                                                                   |                                     |
|-------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------|
| Type                                                                          |                        | CPX-16DE                                                                                                                                                                  | CPX-M-16DE-D                                                      | CPX-L-16DE                          |
| Number of inputs                                                              |                        | 16                                                                                                                                                                        | 16                                                                | 16                                  |
| Max. total current of inputs per module [A]                                   |                        | 1.8                                                                                                                                                                       | 1.8                                                               | 1.8                                 |
| Intrinsic current consumption at operating voltage [mA]                       |                        | Typ. 15                                                                                                                                                                   | Typ. 34                                                           | Typ. 15                             |
| Fuse protection                                                               |                        | Internal electronic fuse per module                                                                                                                                       | Internal electronic fuse per channel pair, additional safety fuse | Internal electronic fuse per module |
| Nominal operating voltage [V DC]                                              |                        | 24                                                                                                                                                                        | 24                                                                | 24                                  |
| Operating voltage range [V DC]                                                |                        | 18 ... 30                                                                                                                                                                 | 18 ... 30                                                         | 18 ... 30                           |
| Galvanic isolation                                                            | Channel – channel      | No                                                                                                                                                                        | No                                                                | No                                  |
|                                                                               | Channel – internal bus | No                                                                                                                                                                        | No                                                                | No                                  |
| Switching level                                                               | Signal 0 [V DC]        | ≤ 5                                                                                                                                                                       | ≤ 5                                                               | ≤ 5                                 |
|                                                                               | Signal 1 [V DC]        | ≥ 11                                                                                                                                                                      | ≥ 11                                                              | ≥ 15                                |
| Input debounce time [ms]                                                      |                        | 3 (0.1 ms, 10 ms, 20 ms parameterisable)                                                                                                                                  |                                                                   |                                     |
| Input characteristic                                                          |                        | IEC 1131-T2                                                                                                                                                               | IEC 1131-T2                                                       | IEC 1131-T2, type 01                |
| Switching logic                                                               |                        | Positive logic (PNP)                                                                                                                                                      | Positive logic (PNP)                                              | Positive logic (PNP)                |
| LED indicators                                                                | Group diagnostics      | 1                                                                                                                                                                         | 1                                                                 | 1                                   |
|                                                                               | Channel diagnostics    | –                                                                                                                                                                         | 16                                                                | –                                   |
|                                                                               | Channel status         | 16                                                                                                                                                                        | 16                                                                | 16                                  |
| Diagnostics                                                                   |                        | Short circuit/overload per channel                                                                                                                                        |                                                                   |                                     |
| Parameterisation                                                              |                        | <ul style="list-style-type: none"><li>• Module monitoring</li><li>• Behaviour after short circuit</li><li>• Input debounce time</li><li>• Signal extension time</li></ul> |                                                                   |                                     |
| Degree of protection to EN 60529                                              |                        | Dependent on the connection block                                                                                                                                         | Dependent on the connection block                                 | IP20                                |
| Temperature range                                                             | Operation [°C]         | –5 ... +50                                                                                                                                                                | –5 ... +50                                                        | –5 ... +50                          |
|                                                                               | Storage/transport [°C] | –20 ... +70                                                                                                                                                               | –20 ... +70                                                       | –20 ... +70                         |
| Certification                                                                 |                        | –                                                                                                                                                                         | –                                                                 | c UL us - Listed (OL)               |
| Materials                                                                     |                        | Reinforced PA, PC                                                                                                                                                         | Reinforced PA, PC                                                 | Reinforced PA                       |
| Note on materials                                                             |                        | –                                                                                                                                                                         | –                                                                 | RoHS-compliant                      |
| LABS (PWIS) conformity                                                        |                        | VDMA24364-B2-L                                                                                                                                                            | VDMA24364-B2-L                                                    | VDMA24364-B2-L                      |
| Grid dimension [mm]                                                           |                        | 50                                                                                                                                                                        | 50                                                                | 50                                  |
| Dimensions (including interlinking block and connection block) W x L x H [mm] |                        | 50 x 107 x 50                                                                                                                                                             | 50 x 107 x 50                                                     | 50 x 107 x 41                       |
| Product weight [g]                                                            |                        | 41                                                                                                                                                                        | 46                                                                | 167                                 |

Datasheet – Input module, digital, 16 inputs

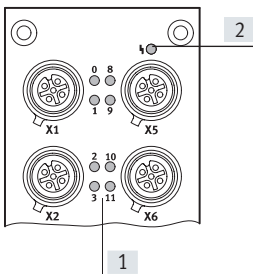
Connection and indicator components

CPX-16DE



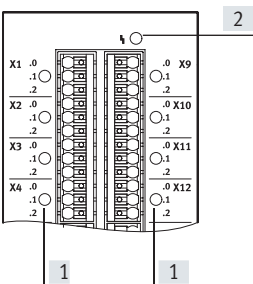
- [1] Status LEDs (green) Assignment to inputs → Pin assignment of the module
- [2] Error LED (red; module error)

CPX-M-16DE-D



- [1] Common status LEDs (green)/error LEDs (red) for each input signal
- [2] Error LED (red; module error)

CPX-L-16DE



- [1] Status LEDs (green) for each input signal
- [2] Error LED (red; module error)

| Combinations of connection blocks and digital input modules |          |                       |              |            |
|-------------------------------------------------------------|----------|-----------------------|--------------|------------|
| Connection blocks                                           | Part no. | Digital input modules |              |            |
|                                                             |          | CPX-16DE              | CPX-M-16DE-D | CPX-L-16DE |
| CPX-AB-8-M8X2-4POL                                          | 541256   | ■                     | —            | —          |
| CPX-AB-8-M12X2-5POL                                         | 3606900  | —                     | ■            | —          |
| CPX-AB-8-KL-4POL                                            | 195708   | ■                     | —            | —          |
| CPX-AB-1-SUB-BU-25POL                                       | 525676   | ■                     | —            | —          |
| CPX-M-AB-8-M12X2-5POL                                       | 549335   | —                     | ■            | —          |

## Datasheet – Input module, digital, 16 inputs

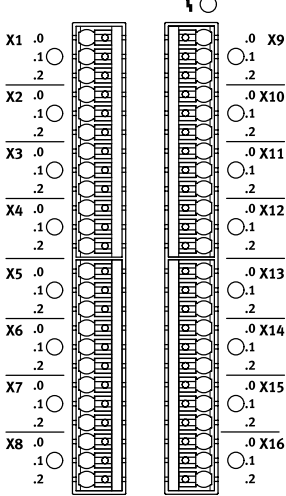
| Pin assignment          |                           | CPX-16DE                  |  |
|-------------------------|---------------------------|---------------------------|--|
| Connection block inputs |                           |                           |  |
| CPX-AB-8-M8x2-4POL      |                           |                           |  |
|                         | X1.1: 24 V <sub>SEN</sub> | X5.1: 24 V <sub>SEN</sub> |  |
|                         | X1.2: Input x+1           | X5.2: Input x+9           |  |
|                         | X1.3: 0 V <sub>SEN</sub>  | X5.3: 0 V <sub>SEN</sub>  |  |
|                         | X1.4: Input x             | X5.4: Input x+8           |  |
|                         | X2.1: 24 V <sub>SEN</sub> | X6.1: 24 V <sub>SEN</sub> |  |
|                         | X2.2: Input x+3           | X6.2: Input x+11          |  |
|                         | X2.3: 0 V <sub>SEN</sub>  | X6.3: 0 V <sub>SEN</sub>  |  |
|                         | X2.4: Input x+2           | X6.4: Input x+10          |  |
|                         | X3.1: 24 V <sub>SEN</sub> | X7.1: 24 V <sub>SEN</sub> |  |
|                         | X3.2: Input x+5           | X7.2: Input x+13          |  |
|                         | X3.3: 0 V <sub>SEN</sub>  | X7.3: 0 V <sub>SEN</sub>  |  |
|                         | X3.4: Input x+4           | X7.4: Input x+12          |  |
|                         | X4.1: 24 V <sub>SEN</sub> | X8.1: 24 V <sub>SEN</sub> |  |
|                         | X4.2: Input x+7           | X8.1: Input x+15          |  |
|                         | X4.3: 0 V <sub>SEN</sub>  | X8.3: 0 V <sub>SEN</sub>  |  |
|                         | X4.4: Input x+6           | X8.4: Input x+14          |  |
| CPX-AB-8-KL-4POL        |                           |                           |  |
|                         | X1.0: Input x+8           | X5.0: Input x+12          |  |
|                         | X1.1: 24 V <sub>SEN</sub> | X5.1: 0 V <sub>SEN</sub>  |  |
|                         | X1.2: Input x             | X5.2: Input x+4           |  |
|                         | X1.3: FE                  | X5.3: FE                  |  |
|                         | X2.0: Input x+9           | X6.0: Input x+13          |  |
|                         | X2.1: 24 V <sub>SEN</sub> | X6.1: 0 V <sub>SEN</sub>  |  |
|                         | X2.2: Input x+1           | X6.2: Input x+5           |  |
|                         | X2.3: FE                  | X6.3: FE                  |  |
|                         | X3.0: Input x+10          | X7.0: Input x+14          |  |
|                         | X3.1: 24 V <sub>SEN</sub> | X7.1: 0 V <sub>SEN</sub>  |  |
|                         | X3.2: Input x+2           | X7.2: Input x+6           |  |
|                         | X3.3: FE                  | X7.3: FE                  |  |
|                         | X4.0: Input x+11          | X8.0: Input x+15          |  |
|                         | X4.1: 24 V <sub>SEN</sub> | X8.1: 0 V <sub>SEN</sub>  |  |
|                         | X4.2: Input x+3           | X8.2: Input x+7           |  |
|                         | X4.3: FE                  | X8.3: FE                  |  |
| CPX-AB-1-SUB-BU-25POL   |                           |                           |  |
|                         | 1: Input x                | 14: Input x+4             |  |
|                         | 2: Input x+1              | 15: Input x+5             |  |
|                         | 3: Input x+2              | 16: Input x+6             |  |
|                         | 4: Input x+3              | 17: Input x+7             |  |
|                         | 5: Input x+9              | 18: Input x+12            |  |
|                         | 6: 24 V <sub>SEN</sub>    | 19: Input x+13            |  |
|                         | 7: Input x+11             | 20: Input x+14            |  |
|                         | 8: 24 V <sub>SEN</sub>    | 21: Input x+15            |  |
|                         | 9: Input x+8              | 22: 0 V <sub>SEN</sub>    |  |
|                         | 10: Input x+10            | 23: 0 V <sub>SEN</sub>    |  |
|                         | 11: 24 V <sub>SEN</sub>   | 24: 0 V <sub>SEN</sub>    |  |
|                         | 12: 24 V <sub>SEN</sub>   | 25: FE                    |  |
|                         | 13: FE                    | Housing: FE               |  |



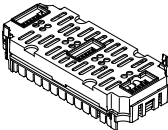
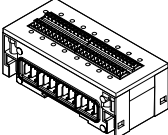
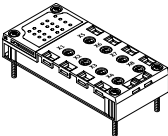
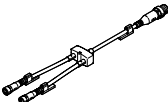
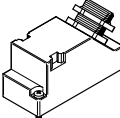
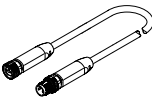
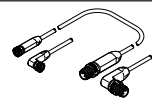
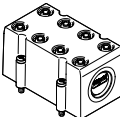
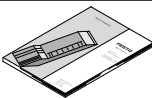
Datasheet – Input module, digital, 16 inputs

| Pin assignment                                                                    |                                                                                   | CPX-M-16DE-D                                                                                              |                                                                                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Connection block inputs                                                           |                                                                                   | CPX-M-AB-8-M12X2-5POL and CPX-AB-8-M12X2-5POL                                                             |                                                                                                               |
|  |  | X1.1: 24 V <sub>Sx</sub><br>X1.2: Input x+1<br>X1.3: 0 V <sub>Sx</sub><br>X1.4: Input x<br>X1.5: FE       | X5.1: 24 V <sub>Sx+8</sub><br>X5.2: Input x+9<br>X5.3: 0 V <sub>Sx+8</sub><br>X5.4: Input x+8<br>X5.5: FE     |
|  |  | X2.1: 24 V <sub>Sx+2</sub><br>X2.2: Input x+3<br>X2.3: 0 V <sub>Sx+2</sub><br>X2.4: Input x+2<br>X2.5: FE | X6.1: 24 V <sub>Sx+10</sub><br>X6.2: Input x+11<br>X6.3: 0 V <sub>Sx+10</sub><br>X6.4: Input x+10<br>X6.5: FE |
|  |  | X3.1: 24 V <sub>Sx+4</sub><br>X3.2: Input x+5<br>X3.3: 0 V <sub>Sx+4</sub><br>X3.4: Input x+4<br>X3.5: FE | X7.1: 24 V <sub>Sx+12</sub><br>X7.2: Input x+13<br>X7.3: 0 V <sub>Sx+12</sub><br>X7.4: Input x+12<br>X7.5: FE |
|  |  | X4.1: 24 V <sub>Sx+6</sub><br>X4.2: Input x+7<br>X4.3: 0 V <sub>Sx+6</sub><br>X4.4: Input x+6<br>X4.5: FE | X8.1: 24 V <sub>Sx+14</sub><br>X8.2: Input x+15<br>X8.3: 0 V <sub>Sx+14</sub><br>X8.4: Input x+14<br>X8.5: FE |

## Datasheet – Input module, digital, 16 inputs

| Pin assignment                                                                    |  | CPX-L-16DE                |                            |
|-----------------------------------------------------------------------------------|--|---------------------------|----------------------------|
| Connection block inputs                                                           |  |                           |                            |
|  |  | X1.0: 24 V <sub>SEN</sub> | X9.0: 24 V <sub>SEN</sub>  |
|                                                                                   |  | X1.1: Input x             | X9.1: Input x+8            |
|                                                                                   |  | X1.2: 0 V <sub>SEN</sub>  | X9.2: 0 V <sub>SEN</sub>   |
|                                                                                   |  | X2.0: 24 V <sub>SEN</sub> | X10.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X2.1: Input x+1           | X10.1: Input x+9           |
|                                                                                   |  | X2.2: 0 V <sub>SEN</sub>  | X10.2: 0 V <sub>SEN</sub>  |
|                                                                                   |  | X3.0: 24 V <sub>SEN</sub> | X11.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X3.1: Input x+2           | X11.1: Input x+10          |
|                                                                                   |  | X3.2: 0 V <sub>SEN</sub>  | X11.2: 0 V <sub>SEN</sub>  |
|                                                                                   |  | X4.0: 24 V <sub>SEN</sub> | X12.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X4.1: Input x+3           | X12.1: Input x+11          |
|                                                                                   |  | X4.2: 0 V <sub>SEN</sub>  | X12.2: 0 V <sub>SEN</sub>  |
|                                                                                   |  | X5.0: 24 V <sub>SEN</sub> | X13.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X5.1: Input x+4           | X13.1: Input x+12          |
|                                                                                   |  | X5.2: 0 V <sub>SEN</sub>  | X13.2: 0 V <sub>SEN</sub>  |
|                                                                                   |  | X6.0: 24 V <sub>SEN</sub> | X14.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X6.1: Input x+5           | X14.1: Input x+13          |
|                                                                                   |  | X6.2: 0 V <sub>SEN</sub>  | X14.2: 0 V <sub>SEN</sub>  |
|                                                                                   |  | X7.0: 24 V <sub>SEN</sub> | X15.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X7.1: Input x+6           | X15.1: Input x+14          |
|                                                                                   |  | X7.2: 0 V <sub>SEN</sub>  | X15.2: 0 V <sub>SEN</sub>  |
|                                                                                   |  | X8.0: 24 V <sub>SEN</sub> | X16.0: 24 V <sub>SEN</sub> |
|                                                                                   |  | X8.1: Input x+7           | X16.1: Input x+15          |
|                                                                                   |  | X8.2: 0 V <sub>SEN</sub>  | X16.2: 0 V <sub>SEN</sub>  |

## Datasheet – Input module, digital, 16 inputs

| Ordering data                                                                      |                                                                                                                                                                              |                                |          |                                  |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|----------------------------------|
| Designation                                                                        |                                                                                                                                                                              |                                | Part no. | Type                             |
| Input module, digital                                                              |                                                                                                                                                                              |                                |          |                                  |
|    | 16 digital inputs, internal electronic fuse per module                                                                                                                       |                                | 543815   | CPX-16DE                         |
|                                                                                    | 16 digital inputs, internal electronic fuse per channel pair, for CPX in metal                                                                                               |                                | 550202   | CPX-M-16DE-D                     |
|    | 16 digital inputs, internal electronic fuse per module, for CPX in polymer, including interlinking block and connection block with spring-loaded terminals                   |                                | 572606   | CPX-L-16DE-16-KL-3POL            |
| Connection block                                                                   |                                                                                                                                                                              |                                |          |                                  |
|    | Polymer                                                                                                                                                                      | 8x socket M8, 4-pin            | 541256   | CPX-AB-8-M8X2-4POL               |
|                                                                                    |                                                                                                                                                                              | 8x socket M12, 5-pin           | 3606900  | CPX-AB-8-M12X2-5POL              |
|                                                                                    |                                                                                                                                                                              | Spring-loaded terminal, 32-pin | 195708   | CPX-AB-8-KL-4POL                 |
|                                                                                    |                                                                                                                                                                              | 1x socket, Sub-D, 25-pin       | 525676   | CPX-AB-1-SUB-BU-25POL            |
|                                                                                    | Metal                                                                                                                                                                        | 8x socket M12, 5-pin           | 549335   | CPX-M-AB-8-M12X2-5POL            |
| Distributor                                                                        |                                                                                                                                                                              |                                |          |                                  |
|   | Modular system for all types of sensor/actuator distributor                                                                                                                  |                                | –        | NEDY-...<br>→ Internet: nedy     |
|  | 1x plug M8, 4-pin                                                                                                                                                            | 2x socket M8, 3-pin            | 8005312  | NEDY-L2R1-V1-M8G3-N-M8G4         |
| Plug                                                                               |                                                                                                                                                                              |                                |          |                                  |
|  | M8, 3-pin                                                                                                                                                                    | Screw terminal                 | 8162298  | NECB-S-M8G3-C2                   |
|  | Sub-D plug, 25-pin                                                                                                                                                           |                                | 527522   | SD-SUB-D-ST25                    |
| Connecting cable                                                                   |                                                                                                                                                                              |                                |          |                                  |
|  | 1x socket M8, 3-pin                                                                                                                                                          | 1x plug M8, 3-pin              | 0.5 m    | ★ 8078282 NEBA-M8G3-U-0.5-N-M8G3 |
|                                                                                    |                                                                                                                                                                              |                                | 1.0 m    | ★ 8078283 NEBA-M8G3-U-1-N-M8G3   |
|                                                                                    |                                                                                                                                                                              |                                | 2.5 m    | ★ 8078286 NEBA-M8G3-U-2.5-N-M8G3 |
|                                                                                    |                                                                                                                                                                              |                                | 5.0 m    | ★ 8078287 NEBA-M8G3-U-5-N-M8G3   |
|  | Modular system for a choice of connecting cables                                                                                                                             |                                | –        | NEBA-...<br>→ Internet: neba     |
| Covering                                                                           |                                                                                                                                                                              |                                |          |                                  |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |                                | 538219   | AK-8KL                           |
|                                                                                    | Fittings kit                                                                                                                                                                 |                                | 538220   | VG-K-M9                          |
| User documentation                                                                 |                                                                                                                                                                              |                                |          |                                  |
|  | User documentation                                                                                                                                                           | German                         | 526439   | CPX-_DE-DA/CPX-_DE-DE            |
|                                                                                    |                                                                                                                                                                              | English                        | 526440   | CPX-_DE-DA/CPX-_DE-EN            |

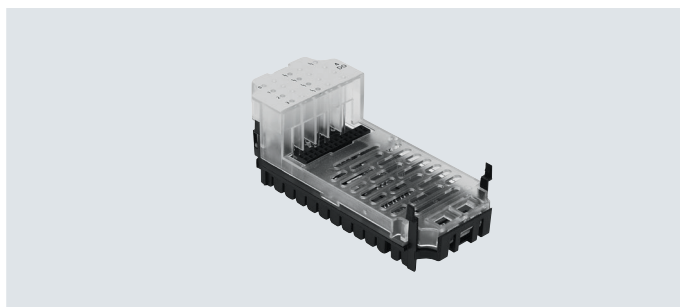
## Datasheet – Output module, digital

### Function

Digital outputs control actuators such as individual valves, hydraulic valves, heating controllers and many more. Separate circuits are created using additional power supply. By connecting the outputs of a module in parallel, consuming devices can be controlled with up to 4 A.

### Application area

- Output module for 24 V DC supply voltage
- PNP logic
- Module features can be parameterised
- The output module receives the voltage supply for the electronics and the outputs from the interlinking block
- Module protection and diagnostics through integrated electronic fuse in each channel



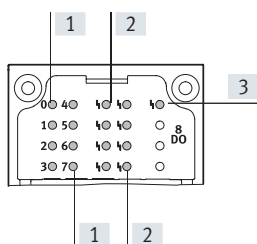
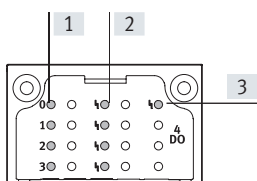
| General technical data                                                   |                        |        | CPX-4DA                                                                                                                                                                                                 | CPX-8DA                                                       | CPX-8DA-H                              |
|--------------------------------------------------------------------------|------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------|
| Type                                                                     |                        |        |                                                                                                                                                                                                         |                                                               |                                        |
| Number of outputs                                                        |                        |        | 4                                                                                                                                                                                                       | 8                                                             | 8                                      |
| Max. power supply                                                        | Per module             | [A]    | 4                                                                                                                                                                                                       |                                                               | 8.4                                    |
|                                                                          | Per channel            | [A]    | 1 (24 W lamp load, 4 channels can be connected in parallel)                                                                                                                                             | 0.5 (12 W lamp load, 8 channels can be connected in parallel) | 2.1 (50 W lamp load), per channel pair |
| Fuse protection (short circuit)                                          |                        |        | Internal electronic fuse per channel                                                                                                                                                                    |                                                               |                                        |
| Module current consumption (power supply for electronics)                |                        | [mA]   | Typically 16                                                                                                                                                                                            |                                                               |                                        |
| Operating voltage                                                        | Nominal width          | [V DC] | 24                                                                                                                                                                                                      |                                                               |                                        |
|                                                                          | Permissible range      | [V DC] | 18 ... 30                                                                                                                                                                                               |                                                               |                                        |
| Galvanic isolation                                                       | Channel – channel      |        | No                                                                                                                                                                                                      |                                                               |                                        |
|                                                                          | Channel – internal bus |        | Yes, with intermediate air supply                                                                                                                                                                       |                                                               |                                        |
| Output characteristic                                                    |                        |        | Based on IEC 1131-2                                                                                                                                                                                     |                                                               |                                        |
| Switching logic                                                          |                        |        | Positive logic (PNP)                                                                                                                                                                                    |                                                               |                                        |
| LED indicators                                                           | Group diagnostics      |        | 1                                                                                                                                                                                                       | 1                                                             | 1                                      |
|                                                                          | Channel diagnostics    |        | 4                                                                                                                                                                                                       | 8                                                             | 8                                      |
|                                                                          | Channel status         |        | 4                                                                                                                                                                                                       | 8                                                             | 8                                      |
| Diagnostics                                                              |                        |        | <ul style="list-style-type: none"> <li>• Short circuit/overload, channel x</li> <li>• Undervoltage of outputs</li> </ul>                                                                                |                                                               |                                        |
| Parameterisation                                                         |                        |        | <ul style="list-style-type: none"> <li>• Module monitoring</li> <li>• Behaviour after short circuit</li> <li>• Fail-safe channel x</li> <li>• Force channel x</li> <li>• Idle mode channel x</li> </ul> |                                                               |                                        |
| Degree of protection to EN 60529                                         |                        |        | Dependent on the connection block                                                                                                                                                                       |                                                               |                                        |
| Temperature range                                                        | Operation              | [°C]   | –5 ... +50                                                                                                                                                                                              |                                                               |                                        |
|                                                                          | Storage/transport      | [°C]   | –20 ... +70                                                                                                                                                                                             |                                                               |                                        |
| Materials                                                                |                        |        | Reinforced PA, PC                                                                                                                                                                                       |                                                               |                                        |
| LABS (PWIS) conformity                                                   |                        |        | VDMA24364-B2-L                                                                                                                                                                                          |                                                               |                                        |
| Grid dimension                                                           |                        | [mm]   | 50                                                                                                                                                                                                      |                                                               |                                        |
| Dimensions (including interlinking block and connection block) W x L x H |                        | [mm]   | 50 x 107 x 50                                                                                                                                                                                           |                                                               |                                        |
| Product weight                                                           |                        | [g]    | 42                                                                                                                                                                                                      | 49                                                            | 48                                     |

## Datasheet – Output module, digital

## Connection and indicator components

CPX-4DA

CPX-8DA



- [1] Status LEDs (yellow) Assignment to outputs → Pin assignment of the module  
 [2] Channel-related error LEDs (red)  
 [3] Error LED (red, module error)

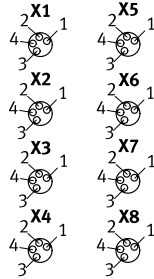
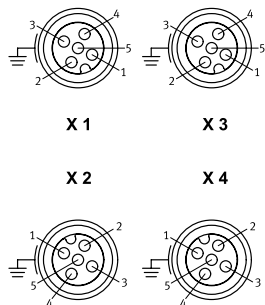
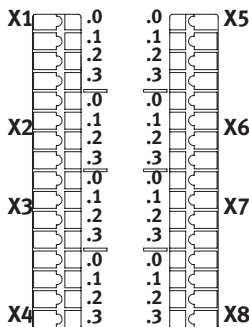
## Combinations of connection blocks and digital output module

| Connection blocks     | Part no. | Digital output module |         |           |
|-----------------------|----------|-----------------------|---------|-----------|
|                       |          | CPX-4DA               | CPX-8DA | CPX-8DA-H |
| CPX-AB-8-M8-3POL      | 195706   | ■                     | ■       | –         |
| CPX-AB-8-M8X2-4POL    | 541256   | ■                     | ■       | ■         |
| CPX-AB-4-M12X2-5POL   | 195704   | ■                     | ■       | –         |
| CPX-AB-4-M12X2-5POL-R | 541254   | ■                     | ■       | ■         |
| CPX-AB-8-KL-4POL      | 195708   | ■                     | ■       | ■         |
| CPX-AB-1-SUB-BU-25POL | 525676   | ■                     | ■       | ■         |
| CPX-M-AB-4-M12X2-5POL | 549367   | ■                     | ■       | ■         |

## Pin assignment

| Connection block outputs | CPX-4DA                  |                          | CPX-8DA                  |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>CPX-AB-8-M8-3POL</b>  |                          |                          |                          |                          |
|                          | X1.1: n.c.               | X5.1: n.c.               | X1.1: n.c.               | X5.1: n.c.               |
|                          | X1.3: 0 V <sub>OUT</sub> | X5.3: 0 V <sub>OUT</sub> | X1.3: 0 V <sub>OUT</sub> | X5.3: 0 V <sub>OUT</sub> |
|                          | X1.4: Output x           | X5.4: Output x+2         | X1.4: Output x           | X5.4: Output x+4         |
|                          | X2.1: n.c.               | X6.1: n.c.               | X2.1: n.c.               | X6.1: n.c.               |
|                          | X2.3: 0 V <sub>OUT</sub> | X6.3: 0 V <sub>OUT</sub> | X2.3: 0 V <sub>OUT</sub> | X6.3: 0 V <sub>OUT</sub> |
|                          | X2.4: Output x+1         | X6.4: Output x+3         | X2.4: Output x+1         | X6.4: Output x+5         |
|                          | X3.1: n.c.               | X7.1: n.c.               | X3.1: n.c.               | X7.1: n.c.               |
|                          | X3.3: 0 V <sub>OUT</sub> | X7.3: 0 V <sub>OUT</sub> | X3.3: 0 V <sub>OUT</sub> | X7.3: 0 V <sub>OUT</sub> |
|                          | X3.4: Output x+1         | X7.4: Output x+3         | X3.4: Output x+2         | X7.4: Output x+6         |
|                          | X4.1: n.c.               | X8.1: n.c.               | X4.1: n.c.               | X8.1: n.c.               |
|                          | X4.3: 0 V <sub>OUT</sub> | X8.3: 0 V <sub>OUT</sub> | X4.3: 0 V <sub>OUT</sub> | X8.3: 0 V <sub>OUT</sub> |
|                          | X4.4: n.c.               | X8.4: n.c.               | X4.4: Output x+3         | X8.4: Output x+7         |

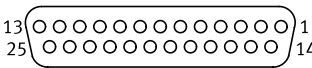
## Datasheet – Output module, digital

| Pin assignment                                                                      |                          | CPX-4DA                      |                          | CPX-8DA and CPX-8DA-H    |  |
|-------------------------------------------------------------------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--|
| Connection block outputs                                                            |                          |                              |                          |                          |  |
| CPX-AB-8-M8X2-4POL                                                                  |                          |                              |                          |                          |  |
|    | X1.1: 0 V <sub>OUT</sub> | X5.1: 0 V <sub>OUT</sub>     | X1.1: 0 V <sub>OUT</sub> | X5.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X1.2: Output x+1         | X5.2: n.c.                   | X1.2: Output x+1         | X5.2: n.c.               |  |
|                                                                                     | X1.3: 0 V <sub>OUT</sub> | X5.3: 0 V <sub>OUT</sub>     | X1.3: 0 V <sub>OUT</sub> | X5.3: 0 V <sub>OUT</sub> |  |
|                                                                                     | X1.4: Output x           | X5.4: n.c.                   | X1.4: Output x           | X5.4: n.c.               |  |
|                                                                                     | X2.1: 0 V <sub>OUT</sub> | X6.1: 0 V <sub>OUT</sub>     | X2.1: 0 V <sub>OUT</sub> | X6.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X2.2: n.c.               | X6.2: n.c.                   | X2.2: Output x+3         | X6.2: n.c.               |  |
|                                                                                     | X2.3: 0 V <sub>OUT</sub> | X6.3: 0 V <sub>OUT</sub>     | X2.3: 0 V <sub>OUT</sub> | X6.3: 0 V <sub>OUT</sub> |  |
|                                                                                     | X2.4: Output x+1         | X6.4: n.c.                   | X2.4: Output x+2         | X6.4: n.c.               |  |
|                                                                                     | X3.1: 0 V <sub>OUT</sub> | X7.1: 0 V <sub>OUT</sub>     | X3.1: 0 V <sub>OUT</sub> | X7.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X3.2: Output x+3         | X7.2: n.c.                   | X3.2: Output x+5         | X7.2: n.c.               |  |
|                                                                                     | X3.3: 0 V <sub>OUT</sub> | X7.3: 0 V <sub>OUT</sub>     | X3.3: 0 V <sub>OUT</sub> | X7.3: 0 V <sub>OUT</sub> |  |
|                                                                                     | X3.4: Output x+2         | X7.4: n.c.                   | X3.4: Output x+4         | X7.4: n.c.               |  |
|                                                                                     | X4.1: 0 V <sub>OUT</sub> | X8.1: 0 V <sub>OUT x+1</sub> | X4.1: 0 V <sub>OUT</sub> | X8.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X4.2: n.c.               | X8.2: n.c.                   | X4.2: Output x+7         | X8.2: n.c.               |  |
|                                                                                     | X4.3: 0 V <sub>OUT</sub> | X8.3: 0 V <sub>OUT x+3</sub> | X4.3: 0 V <sub>OUT</sub> | X8.3: 0 V <sub>OUT</sub> |  |
|                                                                                     | X4.4: Output x+3         | X8.4: n.c.                   | X4.4: Output x+6         | X8.4: n.c.               |  |
| CPX-AB-4-M12X2-5POL <sup>1)</sup> and CPX-AB-4-M12X2-5POL-R <sup>2)</sup>           |                          |                              |                          |                          |  |
|   | X1.1: n.c.               | X3.1: n.c.                   | X1.1: n.c.               | X3.1: n.c.               |  |
|                                                                                     | X1.2: Output x+1         | X3.2: Output x+3             | X1.2: Output x+1         | X3.2: Output x+5         |  |
|                                                                                     | X1.3: 0 V <sub>OUT</sub> | X3.3: 0 V <sub>OUT</sub>     | X1.3: 0 V <sub>OUT</sub> | X3.3: 0 V <sub>OUT</sub> |  |
|                                                                                     | X1.4: Output x           | X3.4: Output x+2             | X1.4: Output x           | X3.4: Output x+4         |  |
|                                                                                     | X1.5: FE                 | X3.5: FE                     | X1.5: FE                 | X3.5: FE                 |  |
|                                                                                     | X2.1: n.c.               | X4.1: n.c.                   | X2.1: n.c.               | X4.1: n.c.               |  |
|                                                                                     | X2.2: n.c.               | X4.2: n.c.                   | X2.2: Output x+3         | X4.2: Output x+7         |  |
|                                                                                     | X2.3: 0 V <sub>OUT</sub> | X4.3: 0 V <sub>OUT</sub>     | X2.3: 0 V <sub>OUT</sub> | X4.3: 0 V <sub>OUT</sub> |  |
|                                                                                     | X2.4: Output x+1         | X4.4: Output x+3             | X2.4: Output x+2         | X4.4: Output x+6         |  |
|                                                                                     | X2.5: FE                 | X4.5: FE                     | X2.5: FE                 | X4.5: FE                 |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     | CPX-AB-8-KL-4POL         |                              |                          |                          |  |
|  | X1.0: n.c.               | X5.0: n.c.                   | X1.0: n.c.               | X5.0: n.c.               |  |
|                                                                                     | X1.1: 0 V <sub>OUT</sub> | X5.1: 0 V <sub>OUT</sub>     | X1.1: 0 V <sub>OUT</sub> | X5.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X1.2: Output x           | X5.2: Output x+2             | X1.2: Output x           | X5.2: Output x+4         |  |
|                                                                                     | X1.3: FE                 | X5.3: FE                     | X1.3: FE                 | X5.3: FE                 |  |
|                                                                                     | X2.0: n.c.               | X6.0: n.c.                   | X2.0: n.c.               | X6.0: n.c.               |  |
|                                                                                     | X2.1: 0 V <sub>OUT</sub> | X6.1: 0 V <sub>OUT</sub>     | X2.1: 0 V <sub>OUT</sub> | X6.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X2.2: Output x+1         | X6.2: Output x+3             | X2.2: Output x+1         | X6.2: Output x+5         |  |
|                                                                                     | X2.3: FE                 | X6.3: FE                     | X2.3: FE                 | X6.3: FE                 |  |
|                                                                                     | X3.0: n.c.               | X7.0: n.c.                   | X3.0: n.c.               | X7.0: n.c.               |  |
|                                                                                     | X3.1: 0 V <sub>OUT</sub> | X7.1: 0 V <sub>OUT</sub>     | X3.1: 0 V <sub>OUT</sub> | X7.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X3.2: Output x+1         | X7.2: Output x+3             | X3.2: Output x+2         | X7.2: Output x+6         |  |
|                                                                                     | X3.3: FE                 | X7.3: FE                     | X3.3: FE                 | X7.3: FE                 |  |
|                                                                                     | X4.0: n.c.               | X8.0: n.c.                   | X4.0: n.c.               | X8.0: n.c.               |  |
|                                                                                     | X4.1: 0 V <sub>OUT</sub> | X8.1: 0 V <sub>OUT</sub>     | X4.1: 0 V <sub>OUT</sub> | X8.1: 0 V <sub>OUT</sub> |  |
|                                                                                     | X4.2: n.c.               | X8.2: n.c.                   | X4.2: Output x+3         | X8.2: Output x+7         |  |
|                                                                                     | X4.3: FE                 | X8.3: FE                     | X4.3: FE                 | X8.3: FE                 |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |
|                                                                                     |                          |                              |                          |                          |  |

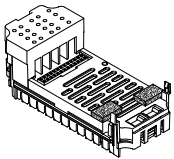
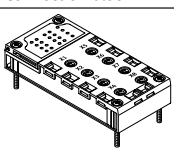
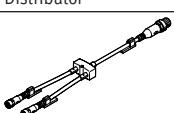
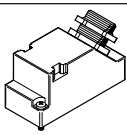
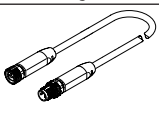
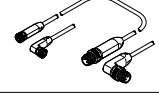
1) Not suitable for CPX-8DA-H.

2) Speedcon quick lock, additional shielding on metal thread

Datasheet – Output module, digital

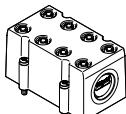
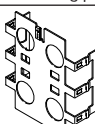
| Pin assignment                                                                    |     |                    |                       |                    |
|-----------------------------------------------------------------------------------|-----|--------------------|-----------------------|--------------------|
| Connection block outputs                                                          |     | CPX-4DA            | CPX-8DA and CPX-8DA-H |                    |
| CPX-AB-1-SUB-BU-25POL                                                             |     |                    |                       |                    |
|  | 1:  | Output x           | 14:                   | Output x+2         |
|                                                                                   | 2:  | Output x+1         | 15:                   | Output x+3         |
|                                                                                   | 3:  | Output x+1         | 16:                   | Output x+3         |
|                                                                                   | 4:  | n.c.               | 17:                   | n.c.               |
|                                                                                   | 5:  | n.c.               | 18:                   | n.c.               |
|                                                                                   | 6:  | 0 V <sub>OUT</sub> | 19:                   | n.c.               |
|                                                                                   | 7:  | n.c.               | 20:                   | n.c.               |
|                                                                                   | 8:  | 0 V <sub>OUT</sub> | 21:                   | n.c.               |
|                                                                                   | 9:  | n.c.               | 22:                   | 0 V <sub>OUT</sub> |
|                                                                                   | 10: | n.c.               | 23:                   | 0 V <sub>OUT</sub> |
|                                                                                   | 11: | 0 V <sub>OUT</sub> | 24:                   | 0 V <sub>OUT</sub> |
|                                                                                   | 12: | 0 V <sub>OUT</sub> | 25:                   | FE                 |
|                                                                                   | 13: | FE                 | Housing:              | FE                 |

## Datasheet – Output module, digital

| Ordering data                                                                       |                                                             |                                                  |                       |                                  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------|-----------------------|----------------------------------|
| Designation                                                                         |                                                             |                                                  | Part no.              | Type                             |
| Output module, digital                                                              |                                                             |                                                  |                       |                                  |
|    | 4 digital outputs, power supply 1 A per channel             |                                                  | 195754                | CPX-4DA                          |
|                                                                                     | 8 digital outputs, power supply 0.5 A per channel           |                                                  | 541482                | CPX-8DA                          |
|                                                                                     | 8 digital outputs, power supply 2.1 A per channel pair      |                                                  | 550204                | CPX-8DA-H                        |
| Connection block                                                                    |                                                             |                                                  |                       |                                  |
|    | Polymer                                                     | 8x socket M8, 3-pin                              | 195706                | CPX-AB-8-M8-3POL                 |
|                                                                                     |                                                             | 8x socket M8, 4-pin                              | 541256                | CPX-AB-8-M8X2-4POL               |
|                                                                                     |                                                             | 4x socket M12, 5-pin                             | 195704                | CPX-AB-4-M12X2-5POL              |
|                                                                                     |                                                             | 4x socket, M12 with quick-lock technology, 5-pin | 541254                | CPX-AB-4-M12X2-5POL-R            |
|                                                                                     |                                                             | Spring-loaded terminal, 32-pin                   | 195708                | CPX-AB-8-KL-4POL                 |
|                                                                                     | Metal                                                       | 1x socket, Sub-D, 25-pin                         | 525676                | CPX-AB-1-SUB-BU-25POL            |
| 4x socket M12, 5-pin                                                                |                                                             | 549367                                           | CPX-M-AB-4-M12X2-5POL |                                  |
| Distributor                                                                         |                                                             |                                                  |                       |                                  |
|    | Modular system for all types of sensor/actuator distributor |                                                  | –                     | NEDY-...<br>→ Internet: nedy     |
|   | 1x plug M8, 4-pin                                           | 2x socket M8, 3-pin                              | 8005312               | NEDY-L2R1-V1-M8G3-N-M8G4         |
|                                                                                     | 1x plug M12, 4-pin                                          | 2x socket M8, 3-pin                              | 8005311               | NEDY-L2R1-V1-M8G3-N-M12G4        |
|                                                                                     |                                                             | 2x socket M12, 5-pin                             | 8005310               | NEDY-L2R1-V1-M12G5-N-M12G4       |
| Plug                                                                                |                                                             |                                                  |                       |                                  |
|  | M8, 3-pin                                                   | Screw terminal                                   | 8162298               | NECB-S-M8G3-C2                   |
|                                                                                     | M12, 4-pin                                                  | For cable Ø 2.1 ... 7 mm                         | 8162294               | NECB-S-M12G4-C2                  |
|                                                                                     |                                                             | For 2x cable Ø 2.1 ... 5.6 mm                    | 8162295               | NECB-S-M12G4-C2-D                |
|                                                                                     | M12, 5-pin                                                  | For cable Ø 2.1 ... 7 mm                         | 8162296               | NECB-S-M12G5-C2                  |
|                                                                                     |                                                             | For 2x cable Ø 2.1 ... 5.6 mm                    | 8162297               | NECB-S-M12G5-C2-D                |
|  | Sub-D plug, 25-pin                                          |                                                  | 527522                | SD-SUB-D-ST25                    |
| Connecting cable                                                                    |                                                             |                                                  |                       |                                  |
|  | 1x socket M8, 3-pin                                         | 1x plug M8, 3-pin                                | 0.5 m                 | ★ 8078282 NEBA-M8G3-U-0.5-N-M8G3 |
|                                                                                     |                                                             |                                                  | 1.0 m                 | ★ 8078283 NEBA-M8G3-U-1-N-M8G3   |
|                                                                                     |                                                             |                                                  | 2.5 m                 | ★ 8078286 NEBA-M8G3-U-2.5-N-M8G3 |
|                                                                                     |                                                             |                                                  | 5.0 m                 | ★ 8078287 NEBA-M8G3-U-5-N-M8G3   |
|  | Modular system for a choice of connecting cables            |                                                  | –                     | NEBA-...<br>→ Internet: neba     |



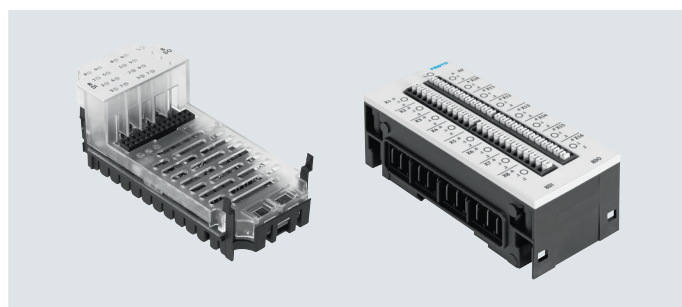
## Datasheet – Output module, digital

| Ordering data                                                                    |                                                                                                                                                                              |         |          |                       |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|-----------------------|
| Designation                                                                      |                                                                                                                                                                              |         | Part no. | Type                  |
| Covering                                                                         |                                                                                                                                                                              |         |          |                       |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |         | 538219   | AK-8KL                |
|                                                                                  | Fittings kit                                                                                                                                                                 |         | 538220   | VG-K-M9               |
| Screening plate                                                                  |                                                                                                                                                                              |         |          |                       |
|  | Screening plate for M12 connections                                                                                                                                          |         | 526184   | CPX-AB-S-4-M12        |
| User documentation                                                               |                                                                                                                                                                              |         |          |                       |
|  | User documentation                                                                                                                                                           | German  | 526439   | CPX-_DE_DA/CPX-_DE-DE |
|                                                                                  |                                                                                                                                                                              | English | 526440   | CPX-_DE_DA/CPX-_DE-EN |

## Datasheet – Input/output module, digital

### Application area

- Digital multi I/O module for 24 V DC supply voltage
- Supports connection blocks with Sub-D, terminal connection and M12 connection (8-pin)
- As CPX-L with connection via spring-loaded terminals
- Module features can be parameterised
- The inputs receive the voltage supply for the electronics and the sensors from the interlinking block
- The outputs receive the voltage supply for the electronics and the outputs from the interlinking block
- Module protection and diagnostics through integrated electronic fuse for the sensor power supply and integrated fuse protection in each output channel



| General technical data                                                           |                          |                                                                                                                                                                                                                                                                                 |                        |
|----------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Type                                                                             |                          | CPX-8DE-8DA                                                                                                                                                                                                                                                                     | CPX-L-8DE-8DA          |
| No. of                                                                           | Inputs                   | 8                                                                                                                                                                                                                                                                               | 8                      |
|                                                                                  | Outputs                  | 8                                                                                                                                                                                                                                                                               | 8                      |
| Max. power supply<br>Per module                                                  | Sensor supply [A]        | 0.7                                                                                                                                                                                                                                                                             | 1.8                    |
|                                                                                  | Outputs [A]              | 4                                                                                                                                                                                                                                                                               | 2                      |
| Max. power supply per channel [A]                                                |                          | 0.5 (12 W lamp load, channels A0 ... A03 can be connected in parallel to A4 ... A7)                                                                                                                                                                                             | 0.25 (6 W lamp load)   |
| Fuse protection (short circuit)                                                  |                          | Internal electronic fuse per channel                                                                                                                                                                                                                                            |                        |
| Intrinsic current consumption at nominal operating voltage [mA]                  |                          | Typ. 22                                                                                                                                                                                                                                                                         | Typ. 15                |
| Operating voltage                                                                | Nominal width [V DC]     | 24                                                                                                                                                                                                                                                                              | 24                     |
|                                                                                  | Permissible range [V DC] | 18 ... 30                                                                                                                                                                                                                                                                       | 18 ... 30              |
| Electrical isolation, inputs                                                     | Channel – channel        | No                                                                                                                                                                                                                                                                              | No                     |
|                                                                                  | Channel – internal bus   | No                                                                                                                                                                                                                                                                              | No                     |
| Electrical isolation, outputs                                                    | Channel – channel        | No                                                                                                                                                                                                                                                                              | No                     |
|                                                                                  | Channel – internal bus   | Yes, with intermediate air supply                                                                                                                                                                                                                                               | No                     |
| Characteristic curve                                                             | Inputs                   | IEC 1131-T2                                                                                                                                                                                                                                                                     | IEC 1131-T2, type 01   |
|                                                                                  | Outputs                  | IEC 1131-T2                                                                                                                                                                                                                                                                     | IEC 1131-T2            |
| Switching level, inputs                                                          | Signal 0 [V DC]          | ≤ 5                                                                                                                                                                                                                                                                             | ≤ 5                    |
|                                                                                  | Signal 1 [V DC]          | ≥ 11                                                                                                                                                                                                                                                                            | ≥ 15                   |
| Input debounce time [ms]                                                         |                          | 3 (0.1 ms, 10 ms, 20 ms parameterisable)                                                                                                                                                                                                                                        |                        |
| Switching logic                                                                  |                          | Positive logic (PNP)                                                                                                                                                                                                                                                            | Positive logic (PNP)   |
| LED indicators                                                                   | Group diagnostics        | 1                                                                                                                                                                                                                                                                               | 1                      |
|                                                                                  | Channel diagnostics      | –                                                                                                                                                                                                                                                                               | –                      |
|                                                                                  | Channel status           | 16                                                                                                                                                                                                                                                                              | 16                     |
| Diagnostics                                                                      |                          | <ul style="list-style-type: none"> <li>• Short circuit/overload per channel</li> <li>• Undervoltage of outputs</li> </ul>                                                                                                                                                       |                        |
| Parameterisation                                                                 |                          | <ul style="list-style-type: none"> <li>• Input debounce time</li> <li>• Fail-safe per channel</li> <li>• Forcing per channel</li> <li>• Idle mode per channel</li> <li>• Signal extension time</li> <li>• Module monitoring</li> <li>• Behaviour after short circuit</li> </ul> |                        |
| Degree of protection to EN 60529                                                 |                          | Depending on connection block                                                                                                                                                                                                                                                   | IP20                   |
| Temperature range                                                                | Operation [°C]           | –5 ... +50                                                                                                                                                                                                                                                                      | –5 ... +50             |
|                                                                                  | Storage/transport [°C]   | –20 ... +70                                                                                                                                                                                                                                                                     | –20 ... +70            |
| Certification                                                                    |                          | –                                                                                                                                                                                                                                                                               | c UL - Recognized (OL) |
| Materials                                                                        |                          | Reinforced PA, PC                                                                                                                                                                                                                                                               | Reinforced PA          |
| Note on materials                                                                |                          | –                                                                                                                                                                                                                                                                               | RoHS-compliant         |
| LABS (PWIS) conformity                                                           |                          | VDMA24364-B2-L                                                                                                                                                                                                                                                                  | VDMA24364-B2-L         |
| Grid dimension [mm]                                                              |                          | 50                                                                                                                                                                                                                                                                              | 50                     |
| Dimensions (including interlinking block and connection block)<br>W x L x H [mm] |                          | 50 x 107 x 50                                                                                                                                                                                                                                                                   | 50 x 107 x 41          |
| Product weight [g]                                                               |                          | 48                                                                                                                                                                                                                                                                              | 171                    |

Datasheet – Input/output module, digital

Connection and indicator components

CPX-8DE-8DA

CPX-L-8DE-8DA

Diagram of CPX-8DE-8DA terminal block showing 8 pins. Pin 1 is labeled '1', pin 2 is labeled '2', and pin 3 is labeled '3'.

[1] Status LEDs (green) Assignment to inputs → Pin assignment of the module

[2] Status LEDs (yellow) Assignment to outputs → Pin assignment of the module

[3] Error LED (red) (module error)

Diagram of CPX-L-8DE-8DA terminal block showing 12 pins. Pin 1 is labeled '1' and pin 2 is labeled '2'.

[1] Status LEDs (green) for each input signal

[2] Error LED (red; module error)

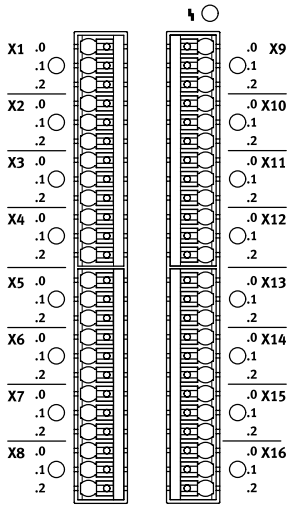
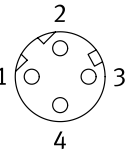
| Combinations of connection blocks amd digital I/O module |          |                    |               |
|----------------------------------------------------------|----------|--------------------|---------------|
| Connection blocks                                        | Part no. | Digital I/O module |               |
|                                                          |          | CPX-8DE-8DA        | CPX-L-8DE-8DA |
| CPX-AB-4-M12-8POL                                        | 526178   | ■                  | –             |
| CPX-AB-8-KL-4POL                                         | 195708   | ■                  | –             |
| CPX-AB-1-SUB-BU-25POL                                    | 525676   | ■                  | –             |

| Pin assignment                  |                           |                           |
|---------------------------------|---------------------------|---------------------------|
| Connection block inputs/outputs |                           | CPX-8DE-8DA               |
| CPX-AB-4-M12-8POL               |                           |                           |
|                                 | X1.1: 24 V <sub>SEN</sub> | X3.1: 24 V <sub>SEN</sub> |
|                                 | X1.2: Input x             | X3.2: Input x+4           |
|                                 | X1.3: Input x+1           | X3.3: Input x+5           |
|                                 | X1.4: 0 V <sub>SEN</sub>  | X3.4: 0 V <sub>SEN</sub>  |
|                                 | X1.5: Output x            | X3.5: Output x+4          |
|                                 | X1.6: Output x+1          | X3.6: Output x+5          |
|                                 | X1.7: Input x+4           | X3.7: n.c.                |
|                                 | X1.8: 0 V <sub>OUT</sub>  | X3.8: 0 V <sub>OUT</sub>  |
|                                 | X2.1: 24 V <sub>SEN</sub> | X4.1: 24 V <sub>SEN</sub> |
|                                 | X2.2: Input x+2           | X4.2: Input x+6           |
|                                 | X2.3: Input x+3           | X4.3: Input x+7           |
|                                 | X2.4: 0 V <sub>SEN</sub>  | X4.4: 0 V <sub>SEN</sub>  |
|                                 | X2.5: Output x+2          | X4.5: Output x+6          |
|                                 | X2.6: Output x+3          | X4.6: Output x+7          |
|                                 | X2.7: Input x+6           | X4.7: n.c.                |
|                                 | X2.8: 0 V <sub>OUT</sub>  | X4.8: 0 V <sub>OUT</sub>  |

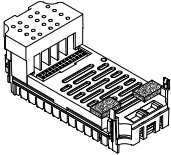
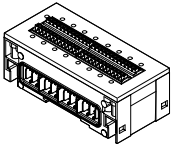
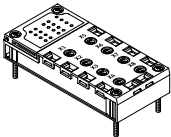
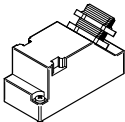
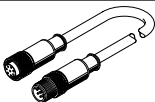
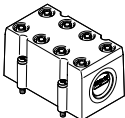
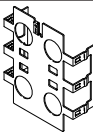
## Datasheet – Input/output module, digital

| Pin assignment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| Connection block inputs/outputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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Output x+3<br>X8.3: FE |  |
| CPX-AB-1-SUB-BU-25POL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Datasheet – Input/output module, digital

| Pin assignment                                                                      |  | CPX-L-8DE-8DA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection block inputs                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    |  | X1.0: 24 V <sub>SEN</sub><br>X1.1: Input x<br>X1.2: 0 V <sub>SEN</sub> +out<br>X2.0: 24 V <sub>SEN</sub><br>X2.1: Input x+1<br>X2.2: 0 V <sub>SEN</sub> +out<br>X3.0: 24 V <sub>SEN</sub><br>X3.1: Input x+2<br>X3.2: 0 V <sub>SEN</sub> +out<br>X4.0: 24 V <sub>SEN</sub><br>X4.1: Input x+3<br>X4.2: 0 V <sub>SEN</sub> +out<br>X5.0: 24 V <sub>SEN</sub><br>X5.1: Input x+4<br>X5.2: 0 V <sub>SEN</sub> +out<br>X6.0: 24 V <sub>SEN</sub><br>X6.1: Input x+5<br>X6.2: 0 V <sub>SEN</sub> +out<br>X7.0: 24 V <sub>SEN</sub><br>X7.1: Input x+6<br>X7.2: 0 V <sub>SEN</sub> +out<br>X8.0: 24 V <sub>SEN</sub><br>X8.1: Input x+7<br>X8.2: 0 V <sub>SEN</sub> +out | X9.0: 24 V <sub>SEN</sub><br>X9.1: Output x<br>X9.2: 0 V <sub>SEN</sub> +out<br>X10.0: 24 V <sub>SEN</sub><br>X10.1: Output x+1<br>X10.2: 0 V <sub>SEN</sub> +out<br>X11.0: 24 V <sub>SEN</sub><br>X11.1: Output x+2<br>X11.2: 0 V <sub>SEN</sub> +out<br>X12.0: 24 V <sub>SEN</sub><br>X12.1: Output x+3<br>X12.2: 0 V <sub>SEN</sub> +out<br>X13.0: 24 V <sub>SEN</sub><br>X13.1: Output x+4<br>X13.2: 0 V <sub>SEN</sub> +out<br>X14.0: 24 V <sub>SEN</sub><br>X14.1: Output x+5<br>X14.2: 0 V <sub>SEN</sub> +out<br>X15.0: 24 V <sub>SEN</sub><br>X15.1: Output x+6<br>X15.2: 0 V <sub>SEN</sub> +out<br>X16.0: 24 V <sub>S7</sub><br>X16.1: Output x+7<br>X16.2: 0 V <sub>SEN</sub> +out |
| Interlinking block                                                                  |  | CPX-L-8DE-8DA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|  |  | The module combines the 0 V potential of the power supply for electronics and sensors with the 0 V potential of the power supply for outputs in the CPX interlinking module.<br><br>If all pins of the outputs of an output module connected to the right of the input/output module are to be switched off, an appropriate interlinking block with additional supply for outputs must be used to the right of the input/output module.                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Datasheet – Input/output module, digital

| Ordering data                                                                       |                                                                                                                                                                              |                                | Part no. | Type                     |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|--------------------------|
| Designation                                                                         |                                                                                                                                                                              |                                |          |                          |
| Input/output module, digital                                                        |                                                                                                                                                                              |                                |          |                          |
|    | 8 digital inputs, 8 digital outputs                                                                                                                                          |                                | 526257   | CPX-8DE-8DA              |
|    | 8 digital inputs, 8 digital outputs, for CPX in polymer, including interlinking block and connection block with spring-loaded terminals                                      |                                | 572607   | CPX-L-8DE-8DA-16-KL-3POL |
| Connection block                                                                    |                                                                                                                                                                              |                                |          |                          |
|    | Polymer                                                                                                                                                                      | 4x socket M12, 8-pin           | 526178   | CPX-AB-4-M12-8POL        |
|                                                                                     |                                                                                                                                                                              | Spring-loaded terminal, 32-pin | 195708   | CPX-AB-8-KL-4POL         |
|                                                                                     |                                                                                                                                                                              | 1x socket, Sub-D, 25-pin       | 525676   | CPX-AB-1-SUB-BU-25POL    |
| Plug                                                                                |                                                                                                                                                                              |                                |          |                          |
|   | Sub-D plug, 25-pin                                                                                                                                                           |                                | 527522   | SD-SUB-D-ST25            |
| Connecting cable                                                                    |                                                                                                                                                                              |                                |          |                          |
|  | Connecting cable M12                                                                                                                                                         |                                | 525617   | KM12-8GD8GS-2-PU         |
| Covering                                                                            |                                                                                                                                                                              |                                |          |                          |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |                                | 538219   | AK-8KL                   |
|                                                                                     | Fittings kit                                                                                                                                                                 |                                | 538220   | VG-K-M9                  |
| Screening plate                                                                     |                                                                                                                                                                              |                                |          |                          |
|  | Screening plate for M12 connections                                                                                                                                          |                                | 526184   | CPX-AB-S-4-M12           |
| User documentation                                                                  |                                                                                                                                                                              |                                |          |                          |
|  | User documentation                                                                                                                                                           | German                         | 526439   | CPX-_DE_DA/CPX-_DE-DE    |
|                                                                                     |                                                                                                                                                                              | English                        | 526440   | CPX-_DE_DA/CPX-_DE-EN    |

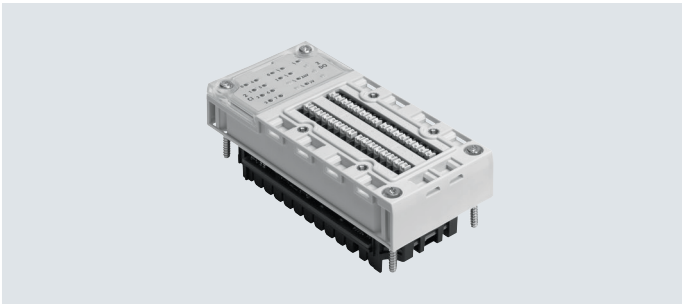
Datasheet – Counter module, digital

Function

The counter module has two channels. Depending on the parameterisation, these can independently be used as counter inputs or as incremental value encoder inputs or SSI. The counter module additionally has one output per channel. The outputs can either be controlled by a counter channel or an incremental value encoder channel, i.e. through an event such as "Comparative value reached". Alternatively, outputs can also be controlled via process data.

Application area

- Continuous counting
- One-off counting up to count limit
- One-off counting to count limit, return to load value
- Periodic counting
- Measuring frequencies
- Measuring rotational speeds
- Measuring duty cycle
- Measuring position
- Measuring speed
- Measuring with pulse generators
- Measurement with pulse generators and direction encoders
- Measurement with incremental encoders
- Measurement with SSI absolute encoders



| Description                                                                                                                                                                                                                                     |                                                                                                                                                                                                                              |                                                                                                                                                                                 |                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Possible applications                                                                                                                                                                                                                           |                                                                                                                                                                                                                              |                                                                                                                                                                                 |                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"><li>• Recording travel and speed of a conveyor</li><li>• Position and speed synchronisation of conveyors and pick &amp; place applications</li><li>• Counting goods e.g. in packaging installations</li></ul> | <ul style="list-style-type: none"><li>• Systems for filling by weight and volume</li><li>• Monitoring motor speeds</li><li>• Measuring equipment for determining the position of axis systems (linear, rotational)</li></ul> | <ul style="list-style-type: none"><li>• Controlling fast-switching valves</li><li>• Controlling the opening time of a valve</li><li>• Activating semiconductor relays</li></ul> | <ul style="list-style-type: none"><li>• Temperature monitoring and rotational speed control for drives</li><li>• Change of direction in fast drives</li><li>• Control of motors with pulse-width modulation (PWM)</li></ul> |
| Supported devices                                                                                                                                                                                                                               |                                                                                                                                                                                                                              |                                                                                                                                                                                 |                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"><li>• 5 V incremental encoder, single-ended or differential, with two 90° phase offset tracks</li></ul>                                                                                                       | <ul style="list-style-type: none"><li>• 24 V incremental encoder, single-ended, with two 90° phase offset tracks</li></ul>                                                                                                   | <ul style="list-style-type: none"><li>• 24 V pulse generator with or without direction level</li><li>• 24 V direct current motors</li></ul>                                     | <ul style="list-style-type: none"><li>• Absolute encoder with SSI interface (13 bits to 25 bits)</li></ul>                                                                                                                  |

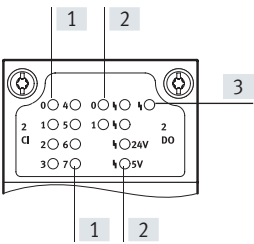
## Datasheet – Counter module, digital

| General technical data                                                      |                        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------|------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                                        |                        |        | CPX-2ZE2DA                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| No. of                                                                      | Inputs                 |        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                             | Outputs                |        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Max. power supply<br>Per module                                             | Inputs                 | [A]    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                             | Outputs                | [A]    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Max. power supply per channel                                               |                        | [A]    | 5 (adjustable, 20 W lamp load)                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Max. cable length                                                           |                        | [m]    | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Fuse protection (short circuit)                                             |                        |        | Internal electronic fuse per channel                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Intrinsic current consumption at nominal operating voltage                  |                        | [mA]   | typ. 35                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Operating voltage                                                           | Nominal width          | [V DC] | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                             | Permissible range      | [V DC] | 18 ... 30                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Electrical isolation, inputs                                                | Channel – channel      |        | No                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                             | Channel – internal bus |        | No                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Electrical isolation, outputs                                               | Channel – channel      |        | No                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                             | Channel – internal bus |        | Yes, with intermediate air supply                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Characteristic curve                                                        | Inputs                 |        | To IEC 1131-2, type 02                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                             | Outputs                |        | IEC 1131-T2                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Switching level                                                             | Signal 0               | [V DC] | ≤ 5                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                             | Signal 1               | [V DC] | ≥ 11                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Input debounce time                                                         |                        | [μs]   | 0.1 (0.2 μs, 0.4 μs, 0.8 μs, 1 μs, 2 μs, 4 μs, 8 μs, 10 μs, 50 μs, 100 μs, 500 μs, 1 ms, 3 ms, 10 ms, 20 ms parameterisable)                                                                                                                                                                                                                                                                                                                                |
| Switching logic                                                             | Inputs                 |        | Positive logic (PNP)                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                             | Outputs                |        | <ul style="list-style-type: none"> <li>Negative logic (NPN)</li> <li>Positive logic (PNP)</li> <li>Push-pull driver</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| LED indicators                                                              | Group diagnostics      |        | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                             | Channel diagnostics    |        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                             | Channel status         |        | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                             | Module diagnostics     |        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Diagnostics                                                                 |                        |        | Operating mode-dependent diagnostics                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Parameterisation                                                            |                        |        | <ul style="list-style-type: none"> <li>Switch-on/off delay</li> <li>Frequency output</li> <li>Speed measurement</li> <li>Pulse output</li> <li>Pulse train</li> <li>Rotational speed measurement</li> <li>Frequency measurement</li> <li>Measurement duration period</li> <li>Motor operating mode</li> <li>Determine position</li> <li>Pulse-width modulation</li> <li>One-off counting</li> <li>Continuous counting</li> <li>Periodic counting</li> </ul> |
| Degree of protection to EN 60529                                            |                        |        | IP65, IP67                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Temperature range                                                           | Operation              | [°C]   | –5 ... +50                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                             | Storage/transport      | [°C]   | –20 ... +70                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Certification                                                               |                        |        | UL – Recognized (OL)                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Information on housing materials                                            |                        |        | Polymer                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Note on materials                                                           |                        |        | RoHS-compliant                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| LABS (PWIS) conformity                                                      |                        |        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Grid dimension                                                              |                        | [mm]   | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dimensions (including interlinking block and connection block)<br>W x L x H |                        | [mm]   | 50 x 107 x 50                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Product weight                                                              |                        | [g]    | 130                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



Datasheet – Counter module, digital

Connection and indicator components  
CPX-2ZE2DA



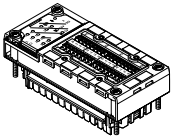
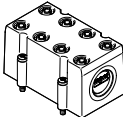
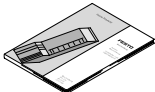
- [1] Status LEDs (green) Assignment to inputs → Pin assignment of the module
- [2] Status LEDs (yellow, red) Assignment to outputs → Pin assignment of the module
- [3] Error LED (red) (module error)

| Pin assignment |    | CPX-2ZE2DA                         |                                    |
|----------------|----|------------------------------------|------------------------------------|
| Inputs/outputs |    |                                    |                                    |
|                |    | Duct 0                             | Duct 1                             |
| X1             | .0 | X1.0: Input                        | X5.0: Input                        |
|                | .1 | X1.1: Input                        | X5.1: Input                        |
|                | .2 | X1.2: Input                        | X5.2: Input                        |
|                | .3 | X1.3: Input                        | X5.3: Input                        |
| X2             | .0 | X2.0: Input                        | X6.0: Input                        |
|                | .1 | X2.1: Input                        | X6.1: Input                        |
|                | .2 | X2.2: 5 V DC                       | X6.2: 5 V DC                       |
|                | .3 | X2.3: 0 V                          | X6.3: 0 V                          |
| X3             | .0 | X3.0: 24 V DC                      | X7.0: 24 V DC                      |
|                | .1 | X3.1: 0 V                          | X7.1: 0 V                          |
|                | .2 | X3.2: 24 V DC for digital input DI | X7.2: 24 V DC for digital input DI |
|                | .3 | X3.3: Digital input DI             | X7.3: Digital input DI             |
| X4             | .0 | X4.0: 0 V for digital input DI     | X8.0: 0 V for digital input DI     |
|                | .1 | X4.1: Digital output DO            | X8.1: Digital output DO            |
|                | .2 | X4.2: Reference potential for DO   | X8.2: Reference potential for DO   |
|                | .3 | X4.3: FE                           | X8.3: FE                           |

**Note**

The assignment and designation of inputs differs fundamentally depending on which type of encoder is connected. Appropriate assignment diagrams can be found in the user documentation for the counter module.

## Datasheet – Counter module, digital

| Ordering data                                                                     |                                                                                                                      |          |                       |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------|-----------------------|
| Designation                                                                       |                                                                                                                      | Part no. | Type                  |
| Counter module, digital                                                           |                                                                                                                      |          |                       |
|  | 2 digital inputs, 2 digital outputs                                                                                  | 576046   | CPX-2ZE2DA            |
| Covering                                                                          |                                                                                                                      |          |                       |
|  | Covering hood for CPX-2ZE2DA (IP65, IP67)<br>• 8 cable through-feeds M9<br>• 1 cable through-feed for multi-pin plug | 538219   | AK-8KL                |
|                                                                                   | Fittings kit                                                                                                         | 538220   | VG-K-M9               |
| User documentation                                                                |                                                                                                                      |          |                       |
|  | User documentation for counter module CPX-2ZE2DA                                                                     | German   | 8035733 CPX-2ZE2DA-DE |
|                                                                                   |                                                                                                                      | English  | 8035734 CPX-2ZE2DA-EN |

## Datasheet – Input module, analogue

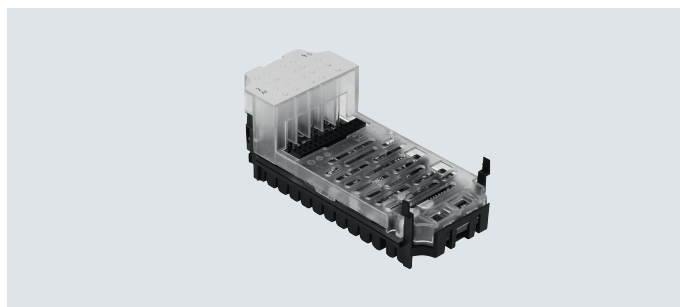
### Function

Analogue modules are used to control devices with a standardised analogue interface such as pressure switches, temperature, flow rate, filling level, etc.

Depending on the connection block selected, the analogue module supports various connection concepts with different numbers of sockets or terminals.

### Application area

- Analogue module for 0 ... 10 V, 0 ... 20 mA or 4 ... 20 mA
- Supports connection blocks with Sub-D, terminal connection and M12 connection
- Analogue module features can be parameterised
- Different data formats available
- Operation with and without galvanic isolation possible
- The analogue module receives the voltage supply for the electronics and the sensors from the inter-linking block
- Module protection and diagnostics of the analogue module via integrated electronic fuse



| General technical data                                                      |     |                          |                            |                                                         |                                              |                            |
|-----------------------------------------------------------------------------|-----|--------------------------|----------------------------|---------------------------------------------------------|----------------------------------------------|----------------------------|
| Type                                                                        |     | CPX-2AE-U-I156           |                            | CPX-4AE-U-I                                             |                                              | CPX-4AE-I                  |
|                                                                             |     | Voltage input            | Current input              | Voltage input                                           | Current input                                | Current input              |
| Number of analogue inputs                                                   |     | 2                        |                            | 4                                                       |                                              | 4                          |
| Max. power supply per module [A]                                            |     | 0.7                      |                            |                                                         |                                              |                            |
| Fuse protection                                                             |     | Internal electronic fuse |                            |                                                         |                                              |                            |
| Current consumption from 24 V sensor supply (quiescent current) [mA]        |     | Typically 50             |                            |                                                         |                                              |                            |
| Current consumption from 24 V sensor supply (at full load) [A]              |     | Max. 0.7                 |                            |                                                         |                                              |                            |
| Nominal operating voltage for load voltage [V DC]                           |     | 24 ±2%                   |                            |                                                         |                                              |                            |
| Nominal operating voltage [V DC]                                            |     | 24                       |                            |                                                         |                                              |                            |
| Operating voltage range [V DC]                                              |     | 18 ... 30                |                            |                                                         |                                              |                            |
| Signal range (parameterisable for each channel with DIL switch or software) |     | 0 ... 10 V               | 0 ... 20 mA<br>4 ... 20 mA | 1 ... 5 V<br>0 ... 10 V<br>–5 ... +5 V<br>–10 ... +10 V | 0 ... 20 mA<br>4 ... 20 mA<br>–20 ... +20 mA | 0 ... 20 mA<br>4 ... 20 mA |
| Operational error limit                                                     | [%] | ±0.5                     | –                          | ±0.3                                                    | ±0.3                                         | ±0.6                       |
| Basic error limit (at 25 °C)                                                | [%] | ±0.3                     | –                          | ±0.2                                                    | ±0.2                                         | ±0.5                       |
| Repetition accuracy (at 25 °C)                                              | [%] | 0.15                     | 0.15                       | 0.1                                                     | 0.1                                          | 0.15                       |
| Input resistance                                                            |     | 100 kΩ                   | ≤ 100 Ω                    | 100 kΩ                                                  | ≤ 100 Ω                                      | ≤ 100 Ω                    |
| Max. permissible input voltage [V DC]                                       |     | 30                       | –                          | –30 ... +30                                             | –                                            | –                          |
| Max. permissible input current [mA]                                         |     | –                        | 40                         | –                                                       | internally limited to 60                     | 40                         |
| Conversion time per channel [ μs]                                           |     | Typically 150            |                            |                                                         |                                              |                            |
| Cycle time (module) [ms]                                                    |     | ≤ 4                      |                            | ≤ 0.5                                                   |                                              | ≤ 10                       |
| Data format                                                                 |     | 12 bits + prefix         |                            | 15 bits + prefix                                        |                                              | 12 bits + prefix           |
|                                                                             |     | Scalable to 15 bits      |                            | Scalable to 15 bits                                     |                                              | Scalable to 15 bits        |
| Cable length [m]                                                            |     | Max. 30 (shielded)       |                            |                                                         |                                              |                            |

## Datasheet – Input module, analogue

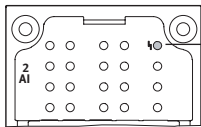
| General technical data                                                   |                        |                                             |                                   |                                             |    |
|--------------------------------------------------------------------------|------------------------|---------------------------------------------|-----------------------------------|---------------------------------------------|----|
| Type                                                                     |                        | CPX-2AE-U-I                                 | CPX-4AE-U-I                       | CPX-4AE-I                                   |    |
| Galvanic isolation                                                       | Channel – channel      | No                                          |                                   |                                             |    |
|                                                                          | Channel – internal bus | Yes, with external sensor supply            |                                   |                                             |    |
| LED displays                                                             | Group diagnostics      | 1                                           |                                   |                                             |    |
|                                                                          | Channel diagnostics    | Via flashing frequency of group diagnostics | 4                                 | Via flashing frequency of group diagnostics |    |
| Diagnostics                                                              |                        | Wire break per channel                      |                                   |                                             |    |
|                                                                          |                        | Limit value violation per channel           |                                   |                                             |    |
|                                                                          |                        | Parameterisation error                      |                                   |                                             |    |
|                                                                          |                        | Short circuit input signal                  | Overload at input                 | Short circuit input signal                  |    |
|                                                                          |                        | –                                           | Overflow/underflow                | –                                           |    |
|                                                                          |                        | –                                           | Short circuit in sensor supply    | –                                           |    |
| Parameterisation                                                         |                        | Data format                                 |                                   |                                             |    |
|                                                                          |                        | Forcing per channel                         |                                   |                                             |    |
|                                                                          |                        | Limit value monitoring per channel          |                                   |                                             |    |
|                                                                          |                        | Measured value smoothing                    |                                   |                                             |    |
|                                                                          |                        | Signal range per channel                    |                                   |                                             |    |
|                                                                          |                        | Monitoring wire break per channel           |                                   |                                             |    |
|                                                                          |                        | Behaviour after short circuit               |                                   |                                             |    |
|                                                                          |                        | –                                           | Behaviour after overload at input | –                                           |    |
|                                                                          |                        | –                                           | Sensor supply active              | –                                           |    |
| Degree of protection to EN 60529                                         |                        | Depending on connection block               |                                   |                                             |    |
| Temperature range                                                        | Operation              | [°C]                                        | –5 ... +50                        |                                             |    |
|                                                                          | Storage/transport      | [°C]                                        | –20 ... +70                       |                                             |    |
| Materials                                                                |                        | Reinforced PA, PC                           |                                   |                                             |    |
| Note on materials                                                        |                        | –                                           | RoHS-compliant                    | –                                           |    |
| LABS (PWIS) conformity                                                   |                        | VDMA24364-B2-L                              | VDMA24364-B2-L                    | VDMA24364-B2-L                              |    |
| Grid dimension                                                           |                        | [mm]                                        | 50                                |                                             |    |
| Dimensions (including interlinking block and connection block) W x L x H |                        | [mm]                                        | 50 x 107 x 50                     |                                             |    |
| Product weight                                                           |                        | [g]                                         | 48                                | 46                                          | 47 |

## Datasheet – Input module, analogue

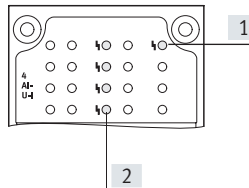
## Connection and indicator components

CPX-2AE-U-I and CPX-4AE-I

CPX-4AE-U-I



[1] Error LED (red; module error)



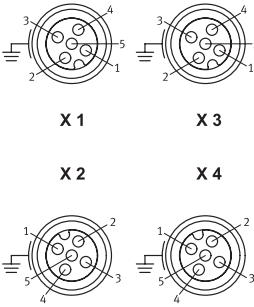
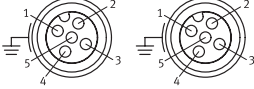
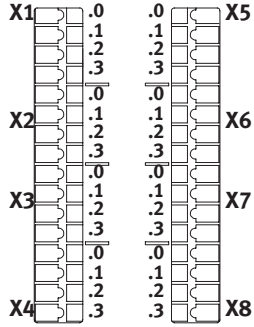
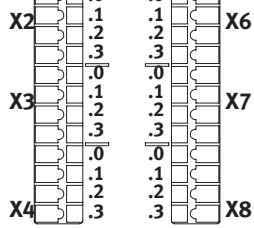
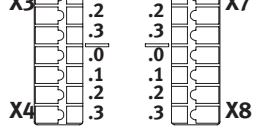
[1] Error LED (red; module error)

[2] Channel-related error LEDs (red)

## Combinations of connection blocks and analogue module

| Connection blocks     | Part no.      | Analogue module |             |           |
|-----------------------|---------------|-----------------|-------------|-----------|
|                       |               | CPX-2AE-U-I     | CPX-4AE-U-I | CPX-4AE-I |
| CPX-AB-4-M12X2-5POL   | <b>195704</b> | ■               | ■           | ■         |
| CPX-AB-4-M12X2-5POL-R | <b>541254</b> | ■               | ■           | ■         |
| CPX-AB-8-KL-4POL      | <b>195708</b> | ■               | ■           | ■         |
| CPX-AB-1-SUB-BU-25POL | <b>525676</b> | ■               | ■           | ■         |
| CPX-M-AB-4-M12X2-5POL | <b>549367</b> | ■               | ■           | ■         |

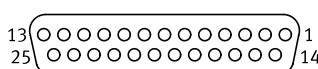
## Pin assignment

| Connection block inputs                                                             |                                                                                                                       | CPX-2AE-U-I                                                                                                           | CPX-4AE-U-I                                                                                                         | CPX-4AE-I                                                                                                           |                                                                                                                       |                                                                                                                       |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R <sup>1)</sup> and CPX-M-AB-4-M12X2-5POL  |                                                                                                                       |                                                                                                                       |                                                                                                                     |                                                                                                                     |                                                                                                                       |                                                                                                                       |
|   | X1.1: 24 V <sub>SEN</sub><br>X1.2: Input U0+<br>X1.3: 0 V <sub>SEN</sub><br>X1.4: Input U0–<br>X1.5: FE <sup>2)</sup> | X3.1: 24 V <sub>SEN</sub><br>X3.2: Input U1+<br>X3.3: 0 V <sub>SEN</sub><br>X3.4: Input U1–<br>X3.5: FE <sup>2)</sup> | X1.1: 24 V <sub>SEN</sub><br>X1.2: Input 0+<br>X1.3: 0 V <sub>SEN</sub><br>X1.4: Input 0–<br>X1.5: FE <sup>2)</sup> | X3.1: 24 V <sub>SEN</sub><br>X3.2: Input 2+<br>X3.3: 0 V <sub>SEN</sub><br>X3.4: Input 2–<br>X3.5: FE <sup>2)</sup> | X1.1: 24 V <sub>SEN</sub><br>X1.2: Input I0+<br>X1.3: 0 V <sub>SEN</sub><br>X1.4: Input I0–<br>X1.5: FE <sup>2)</sup> | X3.1: 24 V <sub>SEN</sub><br>X3.2: Input I2+<br>X3.3: 0 V <sub>SEN</sub><br>X3.4: Input I2–<br>X3.5: FE <sup>2)</sup> |
|  | X2.1: 24 V <sub>SEN</sub><br>X2.2: Input I0+<br>X2.3: 0 V <sub>SEN</sub><br>X2.4: Input I0–<br>X2.5: FE <sup>2)</sup> | X4.1: 24 V <sub>SEN</sub><br>X4.2: Input I1+<br>X4.3: 0 V <sub>SEN</sub><br>X4.4: Input I1–<br>X4.5: FE <sup>2)</sup> | X2.1: 24 V <sub>SEN</sub><br>X2.2: Input 1+<br>X2.3: 0 V <sub>SEN</sub><br>X2.4: Input 1–<br>X2.5: FE <sup>2)</sup> | X4.1: 24 V <sub>SEN</sub><br>X4.2: Input 3+<br>X4.3: 0 V <sub>SEN</sub><br>X4.4: Input 3–<br>X4.5: FE <sup>2)</sup> | X2.1: 24 V <sub>SEN</sub><br>X2.2: Input I1+<br>X2.3: 0 V <sub>SEN</sub><br>X2.4: Input I1–<br>X2.5: FE <sup>2)</sup> | X4.1: 24 V <sub>SEN</sub><br>X4.2: Input I3+<br>X4.3: 0 V <sub>SEN</sub><br>X4.4: Input I3–<br>X4.5: FE <sup>2)</sup> |
| CPX-AB-8-KL-4POL                                                                    |                                                                                                                       |                                                                                                                       |                                                                                                                     |                                                                                                                     |                                                                                                                       |                                                                                                                       |
|   | X1.0: 24 V <sub>SEN</sub><br>X1.1: 0 V <sub>SEN</sub><br>X1.2: Input U0–<br>X1.3: FE                                  | X5.0: 24 V <sub>SEN</sub><br>X5.1: 0 V <sub>SEN</sub><br>X5.2: Input U1–<br>X5.3: FE                                  | X1.0: 24 V <sub>SEN</sub><br>X1.1: 0 V <sub>SEN</sub><br>X1.2: Input 0–<br>X1.3: FE                                 | X5.0: 24 V <sub>SEN</sub><br>X5.1: 0 V <sub>SEN</sub><br>X5.2: Input 2–<br>X5.3: FE                                 | X1.0: 24 V <sub>SEN</sub><br>X1.1: 0 V <sub>SEN</sub><br>X1.2: Input I0–<br>X1.3: FE                                  | X5.0: 24 V <sub>SEN</sub><br>X5.1: 0 V <sub>SEN</sub><br>X5.2: Input I2–<br>X5.3: FE                                  |
|   | X2.0: n.c.<br>X2.1: n.c.<br>X2.2: Input U0+<br>X2.3: FE                                                               | X6.0: n.c.<br>X6.1: n.c.<br>X6.2: Input U1+<br>X6.3: FE                                                               | X2.0: n.c.<br>X2.1: n.c.<br>X2.2: Input 0+<br>X2.3: FE                                                              | X6.0: n.c.<br>X6.1: n.c.<br>X6.2: Input 2+<br>X6.3: FE                                                              | X2.0: n.c.<br>X2.1: n.c.<br>X2.2: Input I0+<br>X2.3: FE                                                               | X6.0: n.c.<br>X6.1: n.c.<br>X6.2: Input I2+<br>X6.3: FE                                                               |
|   | X3.0: 24 V <sub>SEN</sub><br>X3.1: 0 V <sub>SEN</sub><br>X3.2: Input I0–<br>X3.3: FE                                  | X7.0: 24 V <sub>SEN</sub><br>X7.1: 0 V <sub>SEN</sub><br>X7.2: Input I1–<br>X7.3: FE                                  | X3.0: 24 V <sub>SEN</sub><br>X3.1: 0 V <sub>SEN</sub><br>X3.2: Input 1–<br>X3.3: FE                                 | X7.0: 24 V <sub>SEN</sub><br>X7.1: 0 V <sub>SEN</sub><br>X7.2: Input 3–<br>X7.3: FE                                 | X3.0: 24 V <sub>SEN</sub><br>X3.1: 0 V <sub>SEN</sub><br>X3.2: Input I1–<br>X3.3: FE                                  | X7.0: 24 V <sub>SEN</sub><br>X7.1: 0 V <sub>SEN</sub><br>X7.2: Input I3–<br>X7.3: FE                                  |
|   | X4.0: n.c.<br>X4.1: n.c.<br>X4.2: Input I0+<br>X4.3: FE                                                               | X8.0: n.c.<br>X8.1: n.c.<br>X8.2: Input I1+<br>X8.3: FE                                                               | X4.0: n.c.<br>X4.1: n.c.<br>X4.2: Input 1+<br>X4.3: FE                                                              | X8.0: n.c.<br>X8.1: n.c.<br>X8.2: Input 3+<br>X8.3: FE                                                              | X4.0: n.c.<br>X4.1: n.c.<br>X4.2: Input I1+<br>X4.3: FE                                                               | X8.0: n.c.<br>X8.1: n.c.<br>X8.2: Input I3+<br>X8.3: FE                                                               |

1) Speedcon quick lock, additional shielding on metal thread

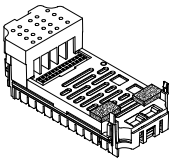
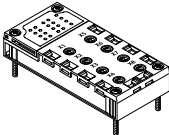
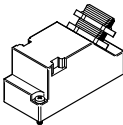
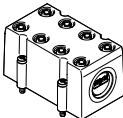
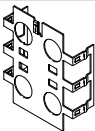
2) FE/shield additionally on metal thread

## Datasheet – Input module, analogue

| Pin assignment                                                                    |     | CPX-2AE-U-I         |             | CPX-4AE-U-I         |     | CPX-4AE-I           |             |                     |
|-----------------------------------------------------------------------------------|-----|---------------------|-------------|---------------------|-----|---------------------|-------------|---------------------|
| Connection block inputs                                                           |     |                     |             |                     |     |                     |             |                     |
| CPX-AB-1-SUB-BU-25POL                                                             |     |                     |             |                     |     |                     |             |                     |
|  | 1:  | Input U0–           | 14:         | Input U1–           | 1:  | Input 0–            | 14:         | Input 2–            |
|                                                                                   | 2:  | Input U0+           | 15:         | Input U1+           | 2:  | Input 0+            | 15:         | Input 2+            |
|                                                                                   | 3:  | Input I0–           | 16:         | Input I1–           | 3:  | Input 1–            | 16:         | Input 3–            |
|                                                                                   | 4:  | Input I1+           | 17:         | Input I1+           | 4:  | Input 1+            | 17:         | Input 3+            |
|                                                                                   | 5:  | n.c.                | 18:         | 24 V <sub>SEN</sub> | 5:  | n.c.                | 18:         | 24 V <sub>SEN</sub> |
|                                                                                   | 6:  | n.c.                | 19:         | n.c.                | 6:  | n.c.                | 19:         | n.c.                |
|                                                                                   | 7:  | n.c.                | 20:         | 24 V <sub>SEN</sub> | 7:  | n.c.                | 20:         | 24 V <sub>SEN</sub> |
|                                                                                   | 8:  | n.c.                | 21:         | n.c.                | 8:  | n.c.                | 21:         | n.c.                |
|                                                                                   | 9:  | 24 V <sub>SEN</sub> | 22:         | 0 V <sub>SEN</sub>  | 9:  | 24 V <sub>SEN</sub> | 22:         | 0 V <sub>SEN</sub>  |
|                                                                                   | 10: | 24 V <sub>SEN</sub> | 23:         | 0 V <sub>SEN</sub>  | 10: | 24 V <sub>SEN</sub> | 23:         | 0 V <sub>SEN</sub>  |
|                                                                                   | 11: | 0 V <sub>SEN</sub>  | 24:         | 0 V <sub>SEN</sub>  | 11: | 0 V <sub>SEN</sub>  | 24:         | 0 V <sub>SEN</sub>  |
|                                                                                   | 12: | 0 V <sub>SEN</sub>  | 25:         | FE                  | 12: | 0 V <sub>SEN</sub>  | 25:         | FE                  |
|                                                                                   | 13: | Shielding1)         | Housing: FE |                     | 13: | Shielding1)         | Housing: FE |                     |

1) Connect shield to functional earth FE

## Datasheet – Input module, analogue

| Ordering data                                                                      |                                                                                                                                                                          |                                                  | Part no. | Type                  |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------|-----------------------|
| Input module, analogue                                                             |                                                                                                                                                                          |                                                  |          |                       |
|    | 2 analogue current or voltage inputs                                                                                                                                     |                                                  | 526168   | CPX-2AE-U-I           |
|                                                                                    | 4 analogue current or voltage inputs                                                                                                                                     |                                                  | 573710   | CPX-4AE-U-I           |
|                                                                                    | 4 analogue current inputs                                                                                                                                                |                                                  | 541484   | CPX-4AE-I             |
| Connection block                                                                   |                                                                                                                                                                          |                                                  |          |                       |
|    | Polymer                                                                                                                                                                  | 4x socket M12, 5-pin                             | 195704   | CPX-AB-4-M12X2-5POL   |
|                                                                                    |                                                                                                                                                                          | 4x socket, M12 with quick-lock technology, 5-pin | 541254   | CPX-AB-4-M12X2-5POL-R |
|                                                                                    |                                                                                                                                                                          | Spring-loaded terminal, 32-pin                   | 195708   | CPX-AB-8-KL-4POL      |
|                                                                                    |                                                                                                                                                                          | 1x socket, Sub-D, 25-pin                         | 525676   | CPX-AB-1-SUB-BU-25POL |
|                                                                                    | Metal                                                                                                                                                                    | 4x socket M12, 5-pin                             | 549367   | CPX-M-AB-4-M12X2-5POL |
| Plug                                                                               |                                                                                                                                                                          |                                                  |          |                       |
|    | M12, 5-pin                                                                                                                                                               | For cable Ø 2.1 ... 7 mm                         | 8162296  | NECB-S-M12G5-C2       |
|    | Sub-D plug, 25-pin                                                                                                                                                       |                                                  | 527522   | SD-SUB-D-ST25         |
| Covering                                                                           |                                                                                                                                                                          |                                                  |          |                       |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>8 cable through-feeds M9</li><li>1 cable through-feed for multi-pin plug</li></ul> |                                                  | 538219   | AK-8KL                |
|                                                                                    | Fittings kit                                                                                                                                                             |                                                  | 538220   | VG-K-M9               |
| Screening plate                                                                    |                                                                                                                                                                          |                                                  |          |                       |
|  | Screening plate for M12 connections                                                                                                                                      |                                                  | 526184   | CPX-AB-S-4-M12        |
| User documentation                                                                 |                                                                                                                                                                          |                                                  |          |                       |
|  | User documentation                                                                                                                                                       | German                                           | 526415   | CPX-_AA/-_AE-DE       |
|                                                                                    |                                                                                                                                                                          | English                                          | 526416   | CPX-_AA/-_AE-EN       |

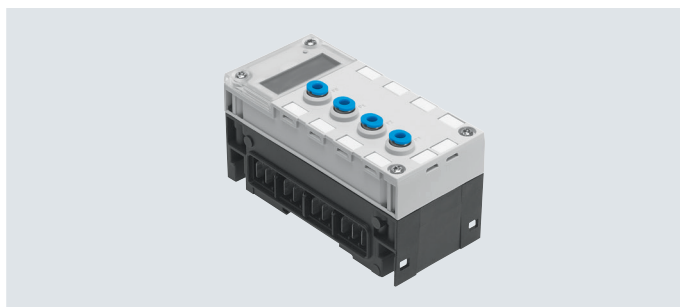
## Datasheet – Input module, analogue, with pressure sensors

### Function

With the pressure input modules, a maximum of 4 pressures can be processed. The internal measured value of the sensor (analogue value with 10-bit resolution) is converted into an internal numerical format as appropriate to the parameterisation and made available to the bus node as a process image. It is also possible to combine 2 channels in each case to form a differential pressure channel.

### Application area

- Measuring range: 0 ... 10 bar or –1 ... +1 bar
- Choice of units of measurement
- Processing a maximum of 4 pressures per module
- Pressure indication via LCD display
- Direct connection via QS4 push-in connectors
- Error message via CPX
- Channel-oriented diagnostics



| General technical data                              |             |        |                                                                                                                                                                                                                                                                                                                                      |               |
|-----------------------------------------------------|-------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Type                                                |             |        | CPX-4AE-P-B2                                                                                                                                                                                                                                                                                                                         | CPX-4AE-P-D10 |
| Number of analogue inputs                           |             |        | 4                                                                                                                                                                                                                                                                                                                                    |               |
| Pneumatic connection                                |             |        | QS-4                                                                                                                                                                                                                                                                                                                                 |               |
| Nominal operating voltage                           |             | [V DC] | 24                                                                                                                                                                                                                                                                                                                                   |               |
| Operating voltage range                             |             | [V DC] | 18 ... 30                                                                                                                                                                                                                                                                                                                            |               |
| Intrinsic current consumption                       |             | [mA]   | Typically 50                                                                                                                                                                                                                                                                                                                         |               |
| Measured variable                                   |             |        | 4x relative or 2x differential pressure measurement                                                                                                                                                                                                                                                                                  |               |
| Displayable units                                   |             |        | <ul style="list-style-type: none"><li>• kPa</li><li>• mbar</li><li>• psi</li></ul>                                                                                                                                                                                                                                                   |               |
| Pressure measuring range                            | Start value | [bar]  | −1                                                                                                                                                                                                                                                                                                                                   | 0             |
|                                                     | End value   | [bar]  | 1                                                                                                                                                                                                                                                                                                                                    | 10            |
| Internal cycle time                                 |             | [ms]   | 5                                                                                                                                                                                                                                                                                                                                    |               |
| Data format                                         |             |        | <ul style="list-style-type: none"><li>• 15 bits + prefix</li><li>• Binary notation in mbar, kPa, psi</li></ul>                                                                                                                                                                                                                       |               |
| LED displays                                        |             |        | Group diagnostics                                                                                                                                                                                                                                                                                                                    |               |
| Diagnostics                                         |             |        | <ul style="list-style-type: none"><li>• Limit value violation per channel</li><li>• Parameterisation error</li><li>• Sensor limit per channel</li></ul>                                                                                                                                                                              |               |
| Parameterisation                                    |             |        | <ul style="list-style-type: none"><li>• Diagnostics delay per channel</li><li>• Hysteresis per module</li><li>• Unit of measurement</li><li>• Measured value smoothing per channel</li><li>• Limit value monitoring per channel</li><li>• Sensor limit per channel</li><li>• Measurement of relative/differential pressure</li></ul> |               |
| Degree of protection to EN 60529                    |             |        | IP65, IP67                                                                                                                                                                                                                                                                                                                           |               |
| Operating medium                                    |             |        | Compressed air to ISO 8573-1:2010 [7:4:4]                                                                                                                                                                                                                                                                                            |               |
| Note on the operating/pilot medium                  |             |        | Lubricated operation possible (in which case lubricated operation will always be required)                                                                                                                                                                                                                                           |               |
| Ambient temperature                                 |             | [°C]   | −5 ... 50                                                                                                                                                                                                                                                                                                                            |               |
| Storage temperature                                 |             | [°C]   | −20 ... 70                                                                                                                                                                                                                                                                                                                           |               |
| Temperature of medium                               |             | [°C]   | 0 ... 50                                                                                                                                                                                                                                                                                                                             |               |
| Materials                                           |             |        | Reinforced PA, PC                                                                                                                                                                                                                                                                                                                    |               |
| Note on materials                                   |             |        | RoHS-compliant                                                                                                                                                                                                                                                                                                                       |               |
| LABS (PWIS) conformity                              |             |        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                       |               |
| Grid dimension                                      |             | [mm]   | 50                                                                                                                                                                                                                                                                                                                                   |               |
| Dimensions (including interlinking block) W x L x H |             | [mm]   | 50 x 107 x 55                                                                                                                                                                                                                                                                                                                        |               |
| Product weight                                      |             | [g]    | 115                                                                                                                                                                                                                                                                                                                                  |               |



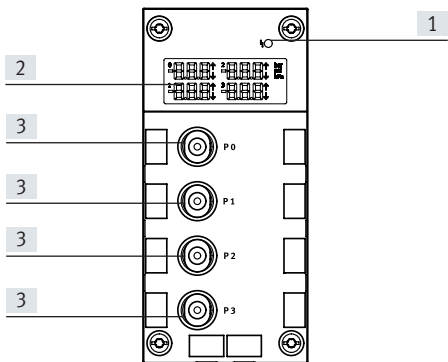
### Note

Extreme pneumatic conditions, e.g. high cycle rate with high pressure amplitudes, can damage the sensors.

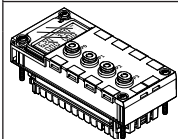
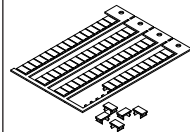


Datasheet – Input module, analogue, with pressure sensors

Connection and indicator components



- [1] Error LED (red; module error)
- [2] LCD display with permanent display of the four measured pressures, unit of measurement and if applicable limit value violation
- [3] QS connections

| Ordering data                                                                      |                                                          |          |                         |
|------------------------------------------------------------------------------------|----------------------------------------------------------|----------|-------------------------|
| Designation                                                                        |                                                          | Part no. | Type                    |
| Input module, analogue                                                             |                                                          |          |                         |
|    | 4 analogue pressure inputs, pressure range –1 ... +1 bar | 560361   | CPX-4AE-P-B2            |
|                                                                                    | 4 analogue pressure inputs, pressure range 0 ... 10 bar  | 560362   | CPX-4AE-P-D10           |
| Inscription labels                                                                 |                                                          |          |                         |
|  | Inscription labels 6x10 mm, 64 pieces, in a frame        | 18576    | IBS-6x10                |
| User documentation                                                                 |                                                          |          |                         |
|  | User documentation                                       | German   | 526415 CPX- AA/- _AE-DE |
|                                                                                    |                                                          | English  | 526416 CPX- AA/- _AE-EN |

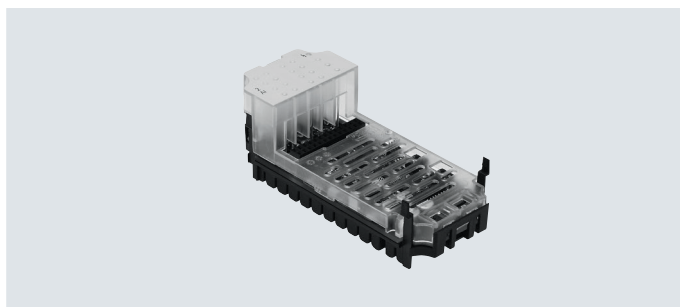
## Datasheet – Input module, analogue, for temperature inputs

### Function

The CPX-PT100 analogue input module with 4 channels for temperature measurement enables the connection of up to 4 temperature sensors of the type PT100-PT1000, Ni100-Ni1000, etc. The temperature module supports various connection concepts with different numbers of sockets or terminals as appropriate to the connection block selected.

### Application area

- Temperature module for temperature sensors PT100, PT200, PT500, PT1000, Ni100, Ni120, Ni500, Ni1000
- Supports connection blocks with M12 and terminal connection
- Temperature module features can be parameterised
- 2-conductor, 3-conductor and 4-conductor connection
- The temperature module is provided with voltage supply for the electronics and the sensors via the interlinking block
- Temperature module protection and diagnostics through integrated electronic fuse



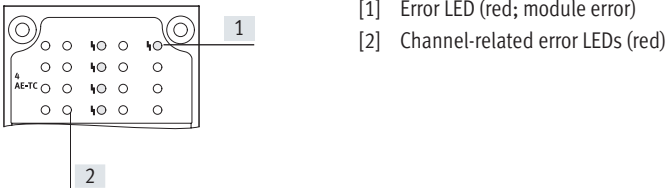
| General technical data                                          |             |                                                            |               |
|-----------------------------------------------------------------|-------------|------------------------------------------------------------|---------------|
| Type                                                            |             | CPX-4AE-T                                                  |               |
|                                                                 |             | Temperature input                                          |               |
| Number of analogue inputs                                       |             | Choice of 2 or 4                                           |               |
| Max. power supply per module                                    |             | [A]                                                        | 0.7           |
| Fuse protection                                                 |             | Internal electronic fuse for sensor supply                 |               |
| Current consumption from 24 V sensor supply (quiescent current) |             | [mA]                                                       | Typically 50  |
| Supply voltage for sensors                                      |             | [V DC]                                                     | 24 ±25%       |
| Sensor type (parameterisable for each channel with DIL switch)  |             | PT100, PT200, PT500, PT1000<br>Ni100, Ni120, Ni500, Ni1000 |               |
| Temperature range                                               | Pt standard | [°C]                                                       | –200 ... +850 |
|                                                                 | Pt climate  | [°C]                                                       | –120 ... +130 |
|                                                                 | Ni          | [°C]                                                       | –60 ... +180  |
| Sensor connection technology                                    |             | 2-, 3- and 4-conductor technology                          |               |
| Resolution                                                      |             | 15 bits + prefix                                           |               |
| Operating error limit related to input range                    |             | [%]                                                        | ±0.06         |
| Basic error limit (25 °C)                                       | Standard    | [K]                                                        | ±0.6          |
|                                                                 | Pt climate  | [K]                                                        | ±0.2          |
| Temperature error relative to input range                       |             | [%]                                                        | ±0.001        |
| Linearity error (no software scaling)                           |             | [%]                                                        | ±0.02         |
| Repetition accuracy (at 25 °C)                                  |             | [%]                                                        | ±0.05         |
| Max. line resistance per conductor                              |             | [Ω]                                                        | 10            |
| Max. permissible input voltage                                  |             | [V]                                                        | ±30           |
| Cycle time (module)                                             |             | [ms]                                                       | ≤ 250         |

Datasheet – Input module, analogue, for temperature inputs

| General technical data                                                   |                        |                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |
|--------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Data format                                                              |                        | 15 bits + prefix, complement of two, binary notation in tenths of a degree                                                                                                                                                                                                                                                                                                                                        |                     |
| Cable length                                                             |                        | [m]                                                                                                                                                                                                                                                                                                                                                                                                               | Max. 200 (shielded) |
| Galvanic isolation                                                       | Channel – channel      |                                                                                                                                                                                                                                                                                                                                                                                                                   | No                  |
|                                                                          | Channel – internal bus |                                                                                                                                                                                                                                                                                                                                                                                                                   | Yes                 |
| LED displays                                                             | Group diagnostics      |                                                                                                                                                                                                                                                                                                                                                                                                                   | 1                   |
|                                                                          | Channel diagnostics    |                                                                                                                                                                                                                                                                                                                                                                                                                   | 4                   |
| Diagnostics                                                              |                        | <ul style="list-style-type: none"><li>• Short circuit/overload, channel</li><li>• Parameterisation error</li><li>• Value falling below nominal range/scaling end value</li><li>• Value exceeding nominal range/full-scale value</li><li>• Wire break</li></ul>                                                                                                                                                    |                     |
| Parameterisation                                                         |                        | <ul style="list-style-type: none"><li>• Unit of measurement and interference frequency suppression</li><li>• Diagnostic message in the event of a wire break or short circuit</li><li>• Limit value monitoring per channel</li><li>• Sensor connection technology</li><li>• Sensor type/temperature coefficient, temperature range</li><li>• Limit value per channel</li><li>• Measured value smoothing</li></ul> |                     |
| Degree of protection to EN 60529                                         |                        | Depending on connection block                                                                                                                                                                                                                                                                                                                                                                                     |                     |
| Temperature range                                                        | Operation              |                                                                                                                                                                                                                                                                                                                                                                                                                   | [°C] –5 ... +50     |
|                                                                          | Storage/transport      |                                                                                                                                                                                                                                                                                                                                                                                                                   | [°C] –20 ... +70    |
| Materials                                                                |                        | Reinforced PA, PC                                                                                                                                                                                                                                                                                                                                                                                                 |                     |
| LABS (PWIS) conformity                                                   |                        | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| Grid dimension                                                           |                        | [mm]                                                                                                                                                                                                                                                                                                                                                                                                              | 50                  |
| Dimensions (including interlinking block and connection block) W x L x H |                        | [mm]                                                                                                                                                                                                                                                                                                                                                                                                              | 50 x 107 x 50       |
| Product weight                                                           |                        | [g]                                                                                                                                                                                                                                                                                                                                                                                                               | 47                  |

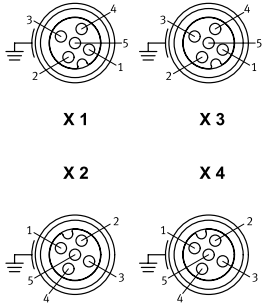
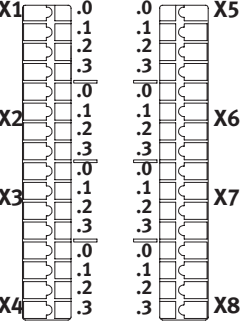
Connection and indicator components

CPX-4AE-T



| Combinations of connection blocks and analogue module |          |                    |
|-------------------------------------------------------|----------|--------------------|
| Connection blocks                                     | Part no. | Temperature module |
|                                                       |          | CPX-4AE-T          |
| CPX-AB-4-M12X2-5POL                                   | 195704   | ■                  |
| CPX-AB-4-M12X2-5POL-R                                 | 541254   | ■                  |
| CPX-AB-8-KL-4POL                                      | 195708   | ■                  |
| CPX-M-AB-4-M12X2-5POL                                 | 549367   | ■                  |

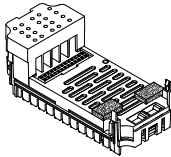
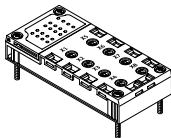
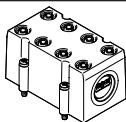
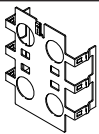
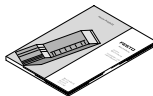
## Datasheet – Input module, analogue, for temperature inputs

| Pin assignment                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------------|------------------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|------------------------|------------------------|-----------------|-----------------|----------|----------|------------|------------|------------|------------|-----------------|-----------------|----------|----------|
| Connection block inputs                                                                                                                                                                                            | CPX-4AE-T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| <b>CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R<sup>1)</sup> and CPX-M-AB-4-M12X2-5POL</b>                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
|  <p><b>X 1</b>      <b>X 3</b></p> <p><b>X 2</b>      <b>X 4</b></p>                                                              | <table> <tr> <td>X1.1: Input I0+</td><td>X3.1: Input I2+</td></tr> <tr> <td>X1.2: Input U0+</td><td>X3.2: Input U2+</td></tr> <tr> <td>X1.3: Input I0–</td><td>X3.3: Input I2–</td></tr> <tr> <td>X1.4: Input U0–</td><td>X3.4: Input U2–</td></tr> <tr> <td>X1.5: FE<sup>2)</sup></td><td>X3.5: FE<sup>2)</sup></td></tr> <tr> <td>X2.1: Input I1+</td><td>X4.1: Input I3+</td></tr> <tr> <td>X2.2: Input U1+</td><td>X4.2: Input U3+</td></tr> <tr> <td>X2.3: Input I1–</td><td>X4.3: Input I3–</td></tr> <tr> <td>X2.4: Input U1–</td><td>X4.4: Input U3–</td></tr> <tr> <td>X2.5: FE<sup>2)</sup></td><td>X4.5: FE<sup>2)</sup></td></tr> </table>                                                                                                                                                                                                                                            | X1.1: Input I0+ | X3.1: Input I2+ | X1.2: Input U0+ | X3.2: Input U2+ | X1.3: Input I0– | X3.3: Input I2– | X1.4: Input U0– | X3.4: Input U2– | X1.5: FE <sup>2)</sup> | X3.5: FE <sup>2)</sup> | X2.1: Input I1+ | X4.1: Input I3+ | X2.2: Input U1+ | X4.2: Input U3+  | X2.3: Input I1– | X4.3: Input I3– | X2.4: Input U1– | X4.4: Input U3– | X2.5: FE <sup>2)</sup> | X4.5: FE <sup>2)</sup> |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.1: Input I0+                                                                                                                                                                                                    | X3.1: Input I2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.2: Input U0+                                                                                                                                                                                                    | X3.2: Input U2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.3: Input I0–                                                                                                                                                                                                    | X3.3: Input I2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.4: Input U0–                                                                                                                                                                                                    | X3.4: Input U2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.5: FE <sup>2)</sup>                                                                                                                                                                                             | X3.5: FE <sup>2)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.1: Input I1+                                                                                                                                                                                                    | X4.1: Input I3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.2: Input U1+                                                                                                                                                                                                    | X4.2: Input U3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.3: Input I1–                                                                                                                                                                                                    | X4.3: Input I3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.4: Input U1–                                                                                                                                                                                                    | X4.4: Input U3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.5: FE <sup>2)</sup>                                                                                                                                                                                             | X4.5: FE <sup>2)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| <b>CPX-AB-8-KL-4POL</b>                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
|  <p><b>X1</b>      <b>X5</b></p> <p><b>X2</b>      <b>X6</b></p> <p><b>X3</b>      <b>X7</b></p> <p><b>X4</b>      <b>X8</b></p> | <table> <tr> <td>X1.0: Input I0+</td><td>X5.0: Input I2+</td></tr> <tr> <td>X1.1: Input I0–</td><td>X5.1: Input I2–</td></tr> <tr> <td>X1.2: Input U0–</td><td>X5.2: Input U2–</td></tr> <tr> <td>X1.3: FE</td><td>X5.3: FE</td></tr> <tr> <td>X2.0: n.c.</td><td>X6.0: n.c.</td></tr> <tr> <td>X2.1: n.c.</td><td>X6.1: n.c.</td></tr> <tr> <td>X2.2: Input U0+</td><td>X6.2: Input U12+</td></tr> <tr> <td>X2.3: FE</td><td>X6.3: FE</td></tr> <tr> <td>X3.0: Input I1+</td><td>X7.0: Input I3+</td></tr> <tr> <td>X3.1: Input I1–</td><td>X7.1: Input I3–</td></tr> <tr> <td>X3.2: Input U1–</td><td>X7.2: Input U3–</td></tr> <tr> <td>X3.3: FE</td><td>X7.3: FE</td></tr> <tr> <td>X4.0: n.c.</td><td>X8.0: n.c.</td></tr> <tr> <td>X4.1: n.c.</td><td>X8.1: n.c.</td></tr> <tr> <td>X4.2: Input U1+</td><td>X8.2: Input U3+</td></tr> <tr> <td>X4.3: FE</td><td>X8.3: FE</td></tr> </table> | X1.0: Input I0+ | X5.0: Input I2+ | X1.1: Input I0– | X5.1: Input I2– | X1.2: Input U0– | X5.2: Input U2– | X1.3: FE        | X5.3: FE        | X2.0: n.c.             | X6.0: n.c.             | X2.1: n.c.      | X6.1: n.c.      | X2.2: Input U0+ | X6.2: Input U12+ | X2.3: FE        | X6.3: FE        | X3.0: Input I1+ | X7.0: Input I3+ | X3.1: Input I1–        | X7.1: Input I3–        | X3.2: Input U1– | X7.2: Input U3– | X3.3: FE | X7.3: FE | X4.0: n.c. | X8.0: n.c. | X4.1: n.c. | X8.1: n.c. | X4.2: Input U1+ | X8.2: Input U3+ | X4.3: FE | X8.3: FE |
| X1.0: Input I0+                                                                                                                                                                                                    | X5.0: Input I2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.1: Input I0–                                                                                                                                                                                                    | X5.1: Input I2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.2: Input U0–                                                                                                                                                                                                    | X5.2: Input U2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X1.3: FE                                                                                                                                                                                                           | X5.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.0: n.c.                                                                                                                                                                                                         | X6.0: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.1: n.c.                                                                                                                                                                                                         | X6.1: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.2: Input U0+                                                                                                                                                                                                    | X6.2: Input U12+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X2.3: FE                                                                                                                                                                                                           | X6.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X3.0: Input I1+                                                                                                                                                                                                    | X7.0: Input I3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X3.1: Input I1–                                                                                                                                                                                                    | X7.1: Input I3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X3.2: Input U1–                                                                                                                                                                                                    | X7.2: Input U3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X3.3: FE                                                                                                                                                                                                           | X7.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X4.0: n.c.                                                                                                                                                                                                         | X8.0: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X4.1: n.c.                                                                                                                                                                                                         | X8.1: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X4.2: Input U1+                                                                                                                                                                                                    | X8.2: Input U3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |
| X4.3: FE                                                                                                                                                                                                           | X8.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                 |                 |                 |                 |                 |                 |                        |                        |                 |                 |                 |                  |                 |                 |                 |                 |                        |                        |                 |                 |          |          |            |            |            |            |                 |                 |          |          |

1) Speedcon quick lock, additional shielding on metal thread

2) FE/shield additionally on metal thread

## Datasheet – Input module, analogue, for temperature inputs

| Ordering data                                                                      |                                                                                                                                                                              |                                                  |          |                       |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------|-----------------------|
| Designation                                                                        |                                                                                                                                                                              |                                                  | Part no. | Type                  |
| Input module, analogue                                                             |                                                                                                                                                                              |                                                  |          |                       |
|    | 2 or 4 analogue temperature inputs                                                                                                                                           |                                                  | 541486   | CPX-4AE-T             |
| Connection block                                                                   |                                                                                                                                                                              |                                                  |          |                       |
|    | Polymer                                                                                                                                                                      | 4x socket M12, 5-pin                             | 195704   | CPX-AB-4-M12X2-5POL   |
|                                                                                    |                                                                                                                                                                              | 4x socket, M12 with quick-lock technology, 5-pin | 541254   | CPX-AB-4-M12X2-5POL-R |
|                                                                                    |                                                                                                                                                                              | Spring-loaded terminal, 32-pin                   | 195708   | CPX-AB-8-KL-4POL      |
|                                                                                    | Metal                                                                                                                                                                        | 4x socket M12, 5-pin                             | 549367   | CPX-M-AB-4-M12X2-5POL |
| Plug                                                                               |                                                                                                                                                                              |                                                  |          |                       |
|    | M12, 5-pin                                                                                                                                                                   | For cable Ø 2.1 ... 7 mm                         | 8162296  | NECB-S-M12G5-C2       |
| Covering                                                                           |                                                                                                                                                                              |                                                  |          |                       |
|   | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |                                                  | 538219   | AK-8KL                |
|                                                                                    | Fittings kit                                                                                                                                                                 |                                                  | 538220   | VG-K-M9               |
| Screening plate                                                                    |                                                                                                                                                                              |                                                  |          |                       |
|  | Screening plate for M12 connections                                                                                                                                          |                                                  | 526184   | CPX-AB-S-4-M12        |
| User documentation                                                                 |                                                                                                                                                                              |                                                  |          |                       |
|  | User documentation                                                                                                                                                           | German                                           | 526415   | CPX-AA/-_AE-DE        |
|                                                                                    |                                                                                                                                                                              | English                                          | 526416   | CPX-AA/-_AE-EN        |

## Datasheet – Input module, analogue, for thermocouple

### Function

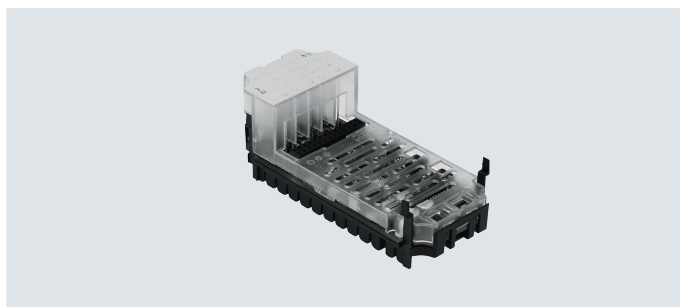
The CPX-4AE-TC analogue input module with 4 channels for temperature measurement enables up to 4 thermocouple sensors to be connected.

The channels feature wire break and short circuit detection.

If no cold junction compensation sensor is being used, an internal theoretical value of 25 °C can be used (accuracy is impaired).

### Application area

- Supports connection blocks with M12 and terminal connection
- Temperature module features can be parameterised
- 2-conductor connection
- 2-conductor connection for a PT1000 sensor for cold junction compensation
- The temperature module is provided with voltage supply for the electronics and the sensors via the interlinking block
- Temperature module protection and diagnostics through integrated electronic fuse



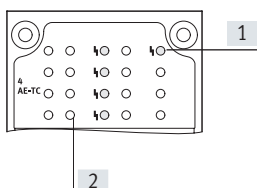
| General technical data                                       |        |  | CPX-4AE-TC                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------|--------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                         |        |  | Temperature input                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of analogue inputs                                    |        |  | 4                                                                                                                                                                                                                                                                                                                                                                                                               |
| Fuse protection (short circuit)                              |        |  | Internal electronic fuse per channel                                                                                                                                                                                                                                                                                                                                                                            |
| Nominal operating voltage                                    | [V DC] |  | 24                                                                                                                                                                                                                                                                                                                                                                                                              |
| Operating voltage range                                      | [V DC] |  | 18 ... 30                                                                                                                                                                                                                                                                                                                                                                                                       |
| Sensor type (parameterisable for each channel with software) |        |  | <ul style="list-style-type: none"> <li>• Type B +400 ... +1820 °C, 8 ÷V/°C</li> <li>• Type E –270 ... +900 °C, 60 ÷V/°C</li> <li>• Type J –200 ... +1200 °C, 51 ÷V/°C</li> <li>• Type K –200 ... +1370 °C, 40 ÷V/°C</li> <li>• Type N –200 ... +1300 °C, 38 ÷V/°C</li> <li>• Type R 0 ... +1760 °C, 12 ÷V/°C</li> <li>• Type S 0 ... +1760 °C, 11 ÷V/°C</li> <li>• Type T –200 ... +400 °C, 40 ÷V/°C</li> </ul> |
| Sensor connection technology                                 |        |  | 2-conductor technology                                                                                                                                                                                                                                                                                                                                                                                          |
| Operating error limit related to ambient temperature         | [%]    |  | Max. ±0.6                                                                                                                                                                                                                                                                                                                                                                                                       |
| Basic error limit (at 25 °C)                                 | [%]    |  | Max. ±0.4                                                                                                                                                                                                                                                                                                                                                                                                       |
| Repetition accuracy (at 25 °C)                               | [%]    |  | ±0.05                                                                                                                                                                                                                                                                                                                                                                                                           |
| Max. line resistance per conductor                           | [Ω]    |  | 10                                                                                                                                                                                                                                                                                                                                                                                                              |
| Max. total current per module                                | [mA]   |  | 30                                                                                                                                                                                                                                                                                                                                                                                                              |
| Max. permissible input voltage                               | [V]    |  | ±30                                                                                                                                                                                                                                                                                                                                                                                                             |
| Internal cycle time (module)                                 | [ms]   |  | 250                                                                                                                                                                                                                                                                                                                                                                                                             |

## Datasheet – Input module, analogue, for thermocouple

| General technical data                                                   |                        |                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data format                                                              |                        | <ul style="list-style-type: none"> <li>• 15 bits + prefix, complement of two</li> <li>• Binary notation in tenths of a degree</li> </ul>                                                                                                                                        |
| Cable length                                                             | [m]                    | Max. 50 (shielded)                                                                                                                                                                                                                                                              |
| Galvanic isolation                                                       | Channel – channel      | No                                                                                                                                                                                                                                                                              |
|                                                                          | Channel – internal bus | Yes                                                                                                                                                                                                                                                                             |
| LED displays                                                             | Group diagnostics      | 1                                                                                                                                                                                                                                                                               |
|                                                                          | Channel diagnostics    | 4                                                                                                                                                                                                                                                                               |
| Diagnostics                                                              |                        | <ul style="list-style-type: none"> <li>• Parameterisation error</li> <li>• Wire break per channel</li> <li>• Limit value violation per channel</li> </ul>                                                                                                                       |
| Parameterisation                                                         |                        | <ul style="list-style-type: none"> <li>• Monitoring wire break per channel</li> <li>• Unit of measurement</li> <li>• Cold-junction compensation</li> <li>• Sensor type per channel</li> <li>• Limit value monitoring per channel</li> <li>• Measured value smoothing</li> </ul> |
| Degree of protection to EN 60529                                         |                        | Depending on connection block                                                                                                                                                                                                                                                   |
| Temperature range                                                        | Operation              | [°C] –5 ... +50                                                                                                                                                                                                                                                                 |
|                                                                          | Storage/transport      | [°C] –20 ... +70                                                                                                                                                                                                                                                                |
| Materials                                                                |                        | Reinforced PA, PC                                                                                                                                                                                                                                                               |
| LABS (PWIS) conformity                                                   |                        | VDMA24364-B2-L                                                                                                                                                                                                                                                                  |
| Grid dimension                                                           | [mm]                   | 50                                                                                                                                                                                                                                                                              |
| Dimensions (including interlinking block and connection block) W x L x H | [mm]                   | 50 x 107 x 50                                                                                                                                                                                                                                                                   |
| Product weight                                                           | [g]                    | 46                                                                                                                                                                                                                                                                              |

## Connection and indicator components

CPX-4AE-TC

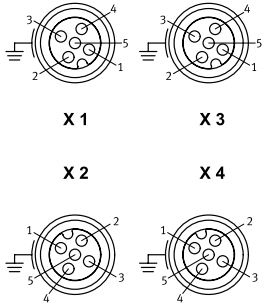
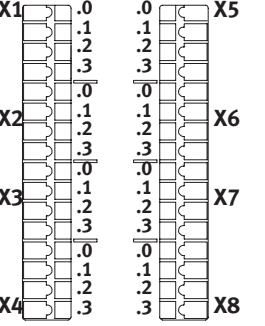


- [1] Error LED (red; module error)  
 [2] Channel-related error LEDs (red)

## Combinations of connection blocks and analogue module

| Connection blocks     | Part no.      | Temperature module |
|-----------------------|---------------|--------------------|
|                       |               | CPX-4AE-TC         |
| CPX-AB-4-M12X2-5POL   | <b>195704</b> | ■                  |
| CPX-AB-4-M12X2-5POL-R | <b>541254</b> | ■                  |
| CPX-AB-8-KL-4POL      | <b>195708</b> | ■                  |
| CPX-M-AB-4-M12X2-5POL | <b>549367</b> | ■                  |

## Datasheet – Input module, analogue, for thermocouple

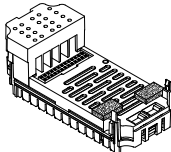
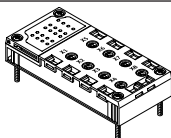
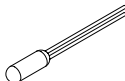
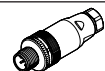
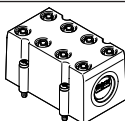
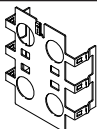
| Pin assignment                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------------------|-------------------------------------|------------------------|------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------|------------------------|----------|----------|------------|------------|------------|------------|------------------------|------------------------|----------|----------|
| Connection block inputs                                                                  | CPX-4AE-TC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| <b>CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R<sup>1)</sup> and CPX-M-AB-4-M12X2-5POL</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
|         | <table> <tr> <td>X1.1: Cold junction compensation 0+</td><td>X3.1: Cold junction compensation 2+</td></tr> <tr> <td>X1.2: Input signal U0+</td><td>X3.2: Input signal U2+</td></tr> <tr> <td>X1.3: Cold junction compensation 0–</td><td>X3.3: Cold junction compensation 2–</td></tr> <tr> <td>X1.4: Input signal U0–</td><td>X3.4: Input signal U2–</td></tr> <tr> <td>X1.5: FE<sup>2)</sup></td><td>X3.5: FE<sup>2)</sup></td></tr> <tr> <td>X2.1: Cold junction compensation 1+</td><td>X4.1: Cold junction compensation 3+</td></tr> <tr> <td>X2.2: Input signal U1+</td><td>X4.2: Input signal U3+</td></tr> <tr> <td>X2.3: Cold junction compensation 1–</td><td>X4.3: Cold junction compensation 3–</td></tr> <tr> <td>X2.4: Input signal U1–</td><td>X4.4: Input signal U3–</td></tr> <tr> <td>X2.5: FE<sup>2)</sup></td><td>X4.5: FE<sup>2)</sup></td></tr> </table>                                                                                                                                                                                                                                           | X1.1: Cold junction compensation 0+ | X3.1: Cold junction compensation 2+ | X1.2: Input signal U0+              | X3.2: Input signal U2+              | X1.3: Cold junction compensation 0– | X3.3: Cold junction compensation 2– | X1.4: Input signal U0– | X3.4: Input signal U2– | X1.5: FE <sup>2)</sup> | X3.5: FE <sup>2)</sup> | X2.1: Cold junction compensation 1+ | X4.1: Cold junction compensation 3+ | X2.2: Input signal U1+ | X4.2: Input signal U3+ | X2.3: Cold junction compensation 1– | X4.3: Cold junction compensation 3– | X2.4: Input signal U1–              | X4.4: Input signal U3–              | X2.5: FE <sup>2)</sup>              | X4.5: FE <sup>2)</sup>              |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.1: Cold junction compensation 0+                                                      | X3.1: Cold junction compensation 2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.2: Input signal U0+                                                                   | X3.2: Input signal U2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.3: Cold junction compensation 0–                                                      | X3.3: Cold junction compensation 2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.4: Input signal U0–                                                                   | X3.4: Input signal U2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.5: FE <sup>2)</sup>                                                                   | X3.5: FE <sup>2)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.1: Cold junction compensation 1+                                                      | X4.1: Cold junction compensation 3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.2: Input signal U1+                                                                   | X4.2: Input signal U3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.3: Cold junction compensation 1–                                                      | X4.3: Cold junction compensation 3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.4: Input signal U1–                                                                   | X4.4: Input signal U3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.5: FE <sup>2)</sup>                                                                   | X4.5: FE <sup>2)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| <b>CPX-AB-8-KL-4POL</b>                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
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| X1.0: Cold junction compensation 0+                                                      | X5.0: Cold junction compensation 2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.1: Cold junction compensation 0–                                                      | X5.1: Cold junction compensation 2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.2: Input signal U0–                                                                   | X5.2: Input signal U2–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X1.3: FE                                                                                 | X5.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.0: n.c.                                                                               | X6.0: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.1: n.c.                                                                               | X6.1: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.2: Input signal U0+                                                                   | X6.2: Input signal U2+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X2.3: FE                                                                                 | X6.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X3.0: Cold junction compensation 1+                                                      | X7.0: Cold junction compensation 3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X3.1: Cold junction compensation 1–                                                      | X7.1: Cold junction compensation 3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X3.2: Input signal U1–                                                                   | X7.2: Input signal U3–                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X3.3: FE                                                                                 | X7.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X4.0: n.c.                                                                               | X8.0: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X4.1: n.c.                                                                               | X8.1: n.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X4.2: Input signal U1+                                                                   | X8.2: Input signal U3+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |
| X4.3: FE                                                                                 | X8.3: FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |                        |                        |                                     |                                     |                        |                        |                                     |                                     |                                     |                                     |                                     |                                     |                        |                        |          |          |            |            |            |            |                        |                        |          |          |

1) Speedcon quick lock, additional shielding on metal thread

2) FE/shield additionally on metal thread



## Datasheet – Input module, analogue, for thermocouple

| Ordering data                                                                      |                                                                                                                                                                              |                                                  |          |                       |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------|-----------------------|
| Designation                                                                        |                                                                                                                                                                              |                                                  | Part no. | Type                  |
| Input module, analogue                                                             |                                                                                                                                                                              |                                                  |          |                       |
|    | 4 analogue temperature inputs, with 2-conductor connection for a PT1000 sensor for cold junction compensation                                                                |                                                  | 553594   | CPX-4AE-TC            |
| Connection block                                                                   |                                                                                                                                                                              |                                                  |          |                       |
|    | Polymer                                                                                                                                                                      | 4x socket M12, 5-pin                             | 195704   | CPX-AB-4-M12X2-5POL   |
|                                                                                    |                                                                                                                                                                              | 4x socket, M12 with quick-lock technology, 5-pin | 541254   | CPX-AB-4-M12X2-5POL-R |
|                                                                                    |                                                                                                                                                                              | Spring-loaded terminal, 32-pin                   | 195708   | CPX-AB-8-KL-4POL      |
|                                                                                    | Metal                                                                                                                                                                        | 4x socket M12, 5-pin                             | 549367   | CPX-M-AB-4-M12X2-5POL |
| Cold junction compensation                                                         |                                                                                                                                                                              |                                                  |          |                       |
|    | PT1000 temperature sensor for cold junction compensation                                                                                                                     |                                                  | 553596   | CPX-W-PT1000          |
| Plug                                                                               |                                                                                                                                                                              |                                                  |          |                       |
|    | M12, 5-pin                                                                                                                                                                   | For cable Ø 2.1 ... 7 mm                         | 8162296  | NECB-S-M12G5-C2       |
| Covering                                                                           |                                                                                                                                                                              |                                                  |          |                       |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |                                                  | 538219   | AK-8KL                |
|                                                                                    | Fittings kit                                                                                                                                                                 |                                                  | 538220   | VG-K-M9               |
| Screening plate                                                                    |                                                                                                                                                                              |                                                  |          |                       |
|  | Screening plate for M12 connections                                                                                                                                          |                                                  | 526184   | CPX-AB-S-4-M12        |
| User documentation                                                                 |                                                                                                                                                                              |                                                  |          |                       |
|  | User documentation                                                                                                                                                           | German                                           | 526415   | CPX-_AA/-_AE-DE       |
|                                                                                    |                                                                                                                                                                              | English                                          | 526416   | CPX-_AA/-_AE-EN       |

## Datasheet – Output module, analogue

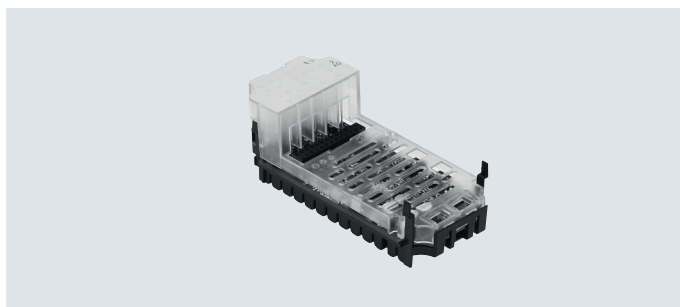
### Function

Analogue modules are used to control devices with a standard analogue interface such as proportional valves, etc.

Depending on the connection block selected, the analogue module supports various connection concepts with different numbers of sockets or terminals.

### Application area

- Analogue module for 0 ... 10 V, 0 ... 20 mA or 4 ... 20 mA
- Supports connection blocks with Sub-D, terminal connection and M12 connection
- Analogue module features can be parameterised
- Different data formats available
- Operation with and without galvanic isolation possible
- The analogue module receives the voltage supply for the electronics and the actuators from the inter-linking block
- Module protection and diagnostics of the analogue module via integrated electronic fuse



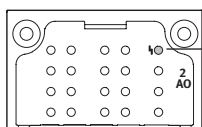
| General technical data                                                      |                                                             |            |                                              |                            |
|-----------------------------------------------------------------------------|-------------------------------------------------------------|------------|----------------------------------------------|----------------------------|
| Type                                                                        |                                                             |            | CPX-2AA-U-I                                  |                            |
|                                                                             |                                                             |            | Voltage output                               | Current output             |
| Number of analogue outputs                                                  |                                                             |            | 2                                            |                            |
| Max. actuator supply per module [A]                                         |                                                             |            | 2.8                                          |                            |
| Fuse protection                                                             |                                                             |            | Internal electronic fuse for actuator supply |                            |
| Current consumption from 24 V sensor supply (at full load) [mA]             |                                                             |            | Max. 150                                     |                            |
| Current consumption from 24 V actuator supply (at full load) [A]            |                                                             |            | 4 ... 10                                     |                            |
| Supply voltage for actuators [V DC]                                         |                                                             |            | 24 ±25%                                      |                            |
| Signal range (parameterisable for each channel with DIL switch or software) |                                                             |            | 0 ... 10 V DC                                | 0 ... 20 mA<br>4 ... 20 mA |
| Resolution [bit]                                                            |                                                             |            | 12                                           |                            |
| Number of units                                                             |                                                             |            | 4096                                         |                            |
| Absolute accuracy [%]                                                       |                                                             |            | ±0.6                                         |                            |
| Linearity error (no software scaling) [%]                                   |                                                             |            | ±0.1                                         |                            |
| Repetition accuracy (at 25 °C) [%]                                          |                                                             |            | 0.05                                         |                            |
| Encoder selection                                                           | Load resistance for ohmic load [kΩ]                         | Min. 1     | Max. 0.5                                     |                            |
|                                                                             | Load resistance for capacitive load [μF]                    | Max. 1     | –                                            |                            |
|                                                                             | Load resistance for inductive load [mH]                     | –          | Max. 1                                       |                            |
|                                                                             | Short-circuit protection analogue output                    |            | Yes                                          | –                          |
|                                                                             | Short-circuit current of analogue output [mA]               | Approx. 20 | –                                            |                            |
|                                                                             | Open circuit voltage [V DC]                                 | –          | 18                                           |                            |
|                                                                             | Destruction limit against externally applied voltage [V DC] | 15         |                                              |                            |
|                                                                             | Actuator connection                                         |            | 2 conductors                                 |                            |
| Cycle time (module) [ms]                                                    |                                                             |            | ≤ 4                                          |                            |

## Datasheet – Output module, analogue

| General technical data                                                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
|--------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Type                                                                     |                     | CPX-2AA-U-I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |
|                                                                          |                     | Voltage output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Current output     |
| Settling time                                                            | For ohmic load      | [ms]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.1                |
|                                                                          | For capacitive load | [ms]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.7                |
|                                                                          | For inductive load  | [ms]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | –                  |
| Data format                                                              |                     | 15 bits + prefix, linear scaling<br>12 bits right-justified<br>12 bits left-justified, S7 compatible<br>12 bits left-justified, S5 compatible                                                                                                                                                                                                                                                                                                                                                                                            |                    |
| Cable length                                                             |                     | [m]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Max. 30 (shielded) |
| LED displays                                                             | Group diagnostics   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |
|                                                                          | Channel diagnostics | Yes, via flashing frequency of group diagnostics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |
| Diagnostics                                                              |                     | <ul style="list-style-type: none"> <li>• Short circuit/overload, actuator supply</li> <li>• Parameterisation error</li> <li>• Value falling below nominal range/scaling end value</li> <li>• Value exceeding nominal range/full-scale value</li> <li>• Wire break</li> </ul>                                                                                                                                                                                                                                                             |                    |
| Parameterisation                                                         |                     | <ul style="list-style-type: none"> <li>• Short circuit monitoring, actuator supply</li> <li>• Short circuit monitoring, analogue output</li> <li>• Behaviour after short circuit in actuator supply</li> <li>• Data format</li> <li>• Lower limit value/full-scale value</li> <li>• Upper limit value/full-scale value</li> <li>• Monitoring value falling below nominal range/full-scale value</li> <li>• Monitoring value exceeding nominal range/full-scale value</li> <li>• Monitoring wire break</li> <li>• Signal range</li> </ul> |                    |
| Degree of protection to EN 60529                                         |                     | Depending on connection block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |
| Temperature range                                                        | Operation           | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | –5 ... +50         |
|                                                                          | Storage/transport   | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | –20 ... +70        |
| Materials                                                                |                     | Reinforced PA, PC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |
| LABS (PWIS) conformity                                                   |                     | VDMA24364-B2-L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |
| Grid dimension                                                           |                     | [mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 50                 |
| Dimensions (including interlinking block and connection block) W x L x H |                     | [mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 50 x 107 x 50      |
| Product weight                                                           |                     | [g]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 49                 |

## Connection and indicator components

CPX-2AA-U-I

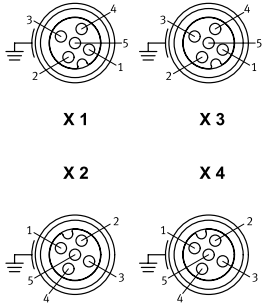
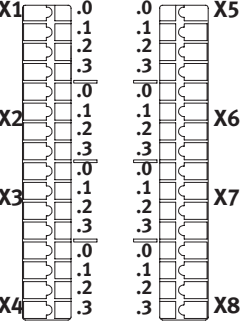
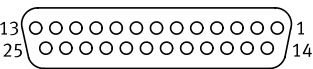


[1] Error LED (red; module error)

## Combinations of connection blocks and analogue module

| Connection blocks     | Part no. | Analogue module |   |
|-----------------------|----------|-----------------|---|
|                       |          | CPX-2AA-U-I     |   |
| CPX-AB-4-M12X2-5POL   | 195704   |                 | ■ |
| CPX-AB-4-M12X2-5POL-R | 541254   |                 | ■ |
| CPX-AB-8-KL-4POL      | 195708   |                 | ■ |
| CPX-AB-1-SUB-BU-25POL | 525676   |                 | ■ |
| CPX-M-AB-4-M12X2-5POL | 549367   |                 | ■ |

## Datasheet – Output module, analogue

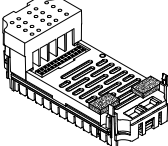
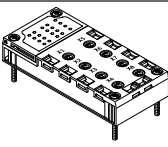
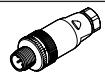
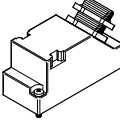
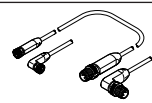
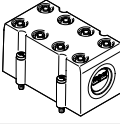
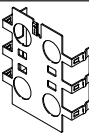
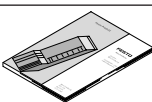
| Pin assignment                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection block outputs                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                       | CPX-2AA-U-I                                                                                                                                                                                                                                                                                                                                                           |
| <b>CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R<sup>1)</sup>, CPX-M-AB-4-M12X2-5POL</b>                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                       |
|  <p><b>X 1</b>      <b>X 3</b></p> <p><b>X 2</b>      <b>X 4</b></p>                                                              | <p>X1.1: 24 V<sub>OUT</sub></p> <p>X1.2: Output U0+</p> <p>X1.3: 0 V<sub>OUT</sub></p> <p>X1.4: Output GND</p> <p>X1.5: FE<sup>2)</sup></p> <p>X2.1: 24 V<sub>OUT</sub></p> <p>X2.2: Output I0+</p> <p>X2.3: 0 V<sub>OUT</sub></p> <p>X2.4: Output GND</p> <p>X2.5: FE<sup>2)</sup></p>                                                                               | <p>X3.1: 24 V<sub>OUT</sub></p> <p>X3.2: Output U1+</p> <p>X3.3: 0 V<sub>OUT</sub></p> <p>X3.4: Output GND</p> <p>X3.5: FE<sup>2)</sup></p> <p>X4.1: 24 V<sub>OUT</sub></p> <p>X4.2: Output I1+</p> <p>X4.3: 0 V<sub>OUT</sub></p> <p>X4.4: Output GND</p> <p>X4.5: FE<sup>2)</sup></p>                                                                               |
| <b>CPX-AB-8-KL-4POL</b>                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                       |
|  <p><b>X1</b>      <b>X5</b></p> <p><b>X2</b>      <b>X6</b></p> <p><b>X3</b>      <b>X7</b></p> <p><b>X4</b>      <b>X8</b></p> | <p>X1.0: 24 V<sub>OUT</sub></p> <p>X1.1: 0 V<sub>OUT</sub></p> <p>X1.2: Output GND</p> <p>X1.3: FE</p> <p>X2.0: n.c.</p> <p>X2.1: n.c.</p> <p>X2.2: Output U0+</p> <p>X2.3: FE</p> <p>X3.0: 24 V<sub>OUT</sub></p> <p>X3.1: 0 V<sub>OUT</sub></p> <p>X3.2: Output GND</p> <p>X3.3: FE</p> <p>X4.0: n.c.</p> <p>X4.1: n.c.</p> <p>X4.2: Output I0+</p> <p>X4.3: FE</p> | <p>X5.0: 24 V<sub>OUT</sub></p> <p>X5.1: 0 V<sub>OUT</sub></p> <p>X5.2: Output GND</p> <p>X5.3: FE</p> <p>X6.0: n.c.</p> <p>X6.1: n.c.</p> <p>X6.2: Output U1+</p> <p>X6.3: FE</p> <p>X7.0: 24 V<sub>OUT</sub></p> <p>X7.1: 0 V<sub>OUT</sub></p> <p>X7.2: Output GND</p> <p>X7.3: FE</p> <p>X8.0: n.c.</p> <p>X8.1: n.c.</p> <p>X8.2: Output I1+</p> <p>X8.3: FE</p> |
| <b>CPX-AB-1-SUB-BU-25POL</b>                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                 | <p>1: Output GND</p> <p>2: Output U0+</p> <p>3: Output GND</p> <p>4: Output I0+</p> <p>5: n.c.</p> <p>6: n.c.</p> <p>7: n.c.</p> <p>8: n.c.</p> <p>9: 24 V<sub>OUT</sub></p> <p>10: 24 V<sub>OUT</sub></p> <p>11: 0 V<sub>OUT</sub></p> <p>12: 0 V<sub>OUT</sub></p> <p>13: Shielding<sup>3)</sup></p>                                                                | <p>14: Output GND</p> <p>15: Output U1+</p> <p>16: Output GND</p> <p>17: Output I1+</p> <p>18: 24 V<sub>OUT</sub></p> <p>19: n.c.</p> <p>20: 24 V<sub>OUT</sub></p> <p>21: n.c.</p> <p>22: 0 V<sub>OUT</sub></p> <p>23: 0 V<sub>OUT</sub></p> <p>24: 0 V<sub>OUT</sub></p> <p>25: FE</p> <p>Housing: FE</p>                                                           |

1) Speedcon quick lock, additional shielding on metal thread

2) FE/shield additionally on metal thread

3) Connect shield to functional earth FE

## Datasheet – Output module, analogue

| Ordering data                                                                      |                                                                                                                                                                              |                                                  |          |                              |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------|------------------------------|
| Designation                                                                        |                                                                                                                                                                              |                                                  | Part no. | Type                         |
| Output module, analogue                                                            |                                                                                                                                                                              |                                                  |          |                              |
|    | 2 analogue current or voltage outputs                                                                                                                                        |                                                  | 526170   | CPX-2AA-U-I                  |
| Connection block                                                                   |                                                                                                                                                                              |                                                  |          |                              |
|    | Polymer                                                                                                                                                                      | 4x socket M12, 5-pin                             | 195704   | CPX-AB-4-M12X2-5POL          |
|                                                                                    |                                                                                                                                                                              | 4x socket, M12 with quick-lock technology, 5-pin | 541254   | CPX-AB-4-M12X2-5POL-R        |
|                                                                                    |                                                                                                                                                                              | Spring-loaded terminal, 32-pin                   | 195708   | CPX-AB-8-KL-4POL             |
|                                                                                    |                                                                                                                                                                              | 1x socket, Sub-D, 25-pin                         | 525676   | CPX-AB-1-SUB-BU-25POL        |
|                                                                                    | Metal                                                                                                                                                                        | 4x socket M12, 5-pin                             | 549367   | CPX-M-AB-4-M12X2-5POL        |
| Plug                                                                               |                                                                                                                                                                              |                                                  |          |                              |
|    | M12, 5-pin                                                                                                                                                                   | For cable Ø 2.1 ... 7 mm                         | 8162296  | NECB-S-M12G5-C2              |
|    | Sub-D plug, 25-pin                                                                                                                                                           |                                                  | 527522   | SD-SUB-D-ST25                |
| Connecting cable                                                                   |                                                                                                                                                                              |                                                  |          |                              |
|  | Modular system for a choice of connecting cables                                                                                                                             |                                                  | –        | NEBA-...<br>→ Internet: neba |
| Covering                                                                           |                                                                                                                                                                              |                                                  |          |                              |
|  | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |                                                  | 538219   | AK-8KL                       |
|                                                                                    | Fittings kit                                                                                                                                                                 |                                                  | 538220   | VG-K-M9                      |
| Screening plate                                                                    |                                                                                                                                                                              |                                                  |          |                              |
|  | Screening plate for M12 connections                                                                                                                                          |                                                  | 526184   | CPX-AB-S-4-M12               |
| User documentation                                                                 |                                                                                                                                                                              |                                                  |          |                              |
|  | User documentation                                                                                                                                                           | German                                           | 526415   | CPX-AA/-_AE-DE               |
|                                                                                    |                                                                                                                                                                              | English                                          | 526416   | CPX-AA/-_AE-EN               |

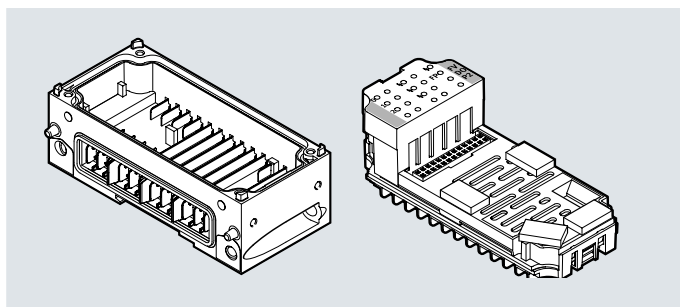
## Datasheet – PROFIsafe shut-off module

### Function

The PROFIsafe shut-off module interrupts the contact rails of the interlinking block for valves and outputs. The supply voltage for valves can be switched by the module within the CPX terminal and via a connection block to two consuming devices. Actuation takes place via the bus node (PROFINET) of the CPX terminal.

### Application area

- Output module for 24 V DC supply voltage
- Shut-off module for supply voltage for valves
- Can only be used with PROFINET or PROFIBUS bus nodes
- The shut-off module is supplied with voltage for the electronics and the outputs by the interlinking block
- The outputs are supplied from the power supply for valves ( $V_{\text{Valves}}$ )



| General technical data                                                   |                           |        |                                                                                                                                                                                     |
|--------------------------------------------------------------------------|---------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                                     |                           |        | CPX-FVDA-P2                                                                                                                                                                         |
| Number of outputs                                                        |                           |        | 2                                                                                                                                                                                   |
| Note on outputs                                                          |                           |        | 1 internal channel for switching off the supply voltage for valves<br>2 external outputs                                                                                            |
| Maximum address volume                                                   | Inputs                    | [B]    | 6                                                                                                                                                                                   |
|                                                                          | Outputs                   | [B]    | 6                                                                                                                                                                                   |
| Maximum cable length                                                     |                           |        | [m] 200                                                                                                                                                                             |
| Max. power supply                                                        | Per module                | [A]    | 5                                                                                                                                                                                   |
|                                                                          | Per channel               | [A]    | 1.5                                                                                                                                                                                 |
| Fuse protection (short circuit)                                          |                           |        | Internal electronic fuse per channel                                                                                                                                                |
| Current consumption of the module                                        |                           |        | [mA] Typ. 65 (power supply for valves)<br>[mA] Typ. 25 (power supply for electronics)                                                                                               |
| Operating voltage                                                        | Nominal width             | [V DC] | 24                                                                                                                                                                                  |
|                                                                          | Permissible range         | [V DC] | 20.4 ... 28.8                                                                                                                                                                       |
| Voltage drop per channel                                                 |                           |        | [V] 0.6                                                                                                                                                                             |
| Residual ripple                                                          |                           |        | [Vss] 2 within voltage range                                                                                                                                                        |
| Load capacity to FE                                                      |                           |        | [nF] 400                                                                                                                                                                            |
| Max. response time to switch-off command                                 |                           |        | [ms] 23                                                                                                                                                                             |
| Galvanic isolation                                                       | Channel – channel         |        | No                                                                                                                                                                                  |
|                                                                          | Channel – internal bus    |        | Yes, with intermediate air supply                                                                                                                                                   |
| Switching logic                                                          | Outputs                   |        | P-M switching                                                                                                                                                                       |
| Safety Integrity Level                                                   |                           |        | Safe switch-off, SIL3                                                                                                                                                               |
| Performance Level                                                        |                           |        | Safe switch-off/category 3, Performance Level e                                                                                                                                     |
| Failure rate per hour (PFH)                                              |                           |        | 1.0x 10 <sup>-9</sup>                                                                                                                                                               |
| Certificate-issuing authority                                            |                           |        | German Technical Control Board (TÜV) Rhld 01/205/5294.02/23<br>German Technical Control Board (TÜV) Rhld 01/205U/5294.01/23                                                         |
| LED indicators                                                           | Group diagnostics         |        | 1                                                                                                                                                                                   |
|                                                                          | Channel diagnostics       |        | 3                                                                                                                                                                                   |
|                                                                          | Channel status            |        | 3                                                                                                                                                                                   |
|                                                                          | Fail-safe protocol active |        | 1                                                                                                                                                                                   |
| Diagnostics                                                              |                           |        | <ul style="list-style-type: none"> <li>• Short circuit/overload per channel</li> <li>• Undervoltage of valves</li> <li>• Cross circuit</li> <li>• Wire break per channel</li> </ul> |
| Parameterisation                                                         |                           |        | <ul style="list-style-type: none"> <li>• Monitoring wire break per channel</li> <li>• Diagnostic behaviour</li> </ul>                                                               |
| Degree of protection to EN 60529                                         |                           |        | Dependent on the connection block                                                                                                                                                   |
| Grid dimension                                                           |                           |        | [mm] 50                                                                                                                                                                             |
| Dimensions (including interlinking block and connection block) W x L x H |                           |        | [mm] 50 x 107 x 55                                                                                                                                                                  |
| Product weight                                                           |                           |        | [g] 50                                                                                                                                                                              |

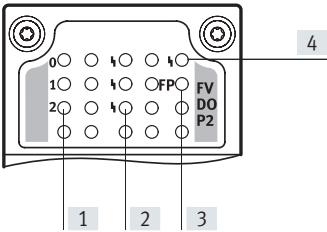
Datasheet – PROFIsafe shut-off module

| Materials                                                  |      |                                          |
|------------------------------------------------------------|------|------------------------------------------|
| Housing                                                    |      | Reinforced PA, PC                        |
| Note on materials                                          |      | RoHS-compliant                           |
| LABS (PWIS) conformity                                     |      | VDMA24364-B2-L                           |
| Operating and environmental conditions                     |      |                                          |
| Ambient temperature                                        | [°C] | –5 ... +50                               |
| Storage temperature                                        | [°C] | –20 ... +70                              |
| CE marking (see declaration of conformity) <sup>1)</sup>   |      | To EU Machinery Directive                |
|                                                            |      | To EU EMC Directive                      |
|                                                            |      | To EU RoHS Directive                     |
| UKCA marking (see declaration of conformity) <sup>1)</sup> |      | According to UK regulations for machines |
|                                                            |      | To UK EMC regulations                    |
|                                                            |      | To UK RoHS regulations                   |
| Certification                                              |      | c UL us – Recognized (OL)                |

1) More information [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

Connection and indicator components

CPX-FVDA-P2



- [1] Status LEDs (yellow):  
0: Supply voltage for valves  
1: X1  
2: X2
- [2] Channel-related error LEDs (red)  
[3] Fail-safe protocol active (green)  
[4] Error LED (red; module error)

| Combinations of bus nodes/control blocks to PROFIsafe switch-off module |          |                           |
|-------------------------------------------------------------------------|----------|---------------------------|
| Bus node/control block                                                  | Part no. | PROFIsafe shut-off module |
|                                                                         |          | CPX-FVDA-P2               |
| CPX-FB13                                                                | 195740   | ■                         |
| CPX-FB43                                                                | 8110369  | ■                         |
| CPX-M-FB44                                                              | 8110370  | ■                         |
| CPX-M-FB45                                                              | 8110371  | ■                         |

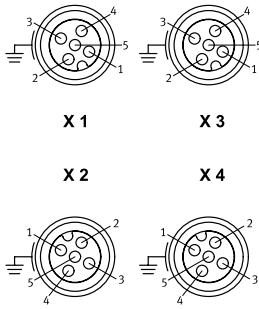
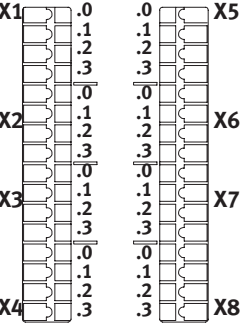
 **Note**

The PROFIsafe shut-off module CPX-FVDA-P2 can only be integrated as of software release 21 or release 30 (in the case of CPX-FB13).

## Datasheet – PROFIsafe shut-off module

| Combinations of connection blocks for PROFIsafe disconnection module |          |                           |
|----------------------------------------------------------------------|----------|---------------------------|
| Connection blocks                                                    | Part no. | PROFIsafe shut-off module |
|                                                                      |          | CPX-FVDA-P2               |
| CPX-M-AB-4-M12X2-5POL                                                | 549367   | ■                         |
| CPX-AB-8-KL-4POL                                                     | 195708   | ■                         |

| Pin assignment           |             |
|--------------------------|-------------|
| Connection block outputs | CPX-FVDA-P2 |

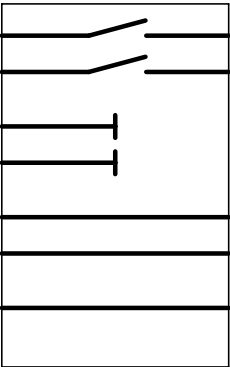
| CPX-M-AB-4-M12X2-5POL                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>X 1</b>      <b>X 3</b></p> <p><b>X 2</b>      <b>X 4</b></p>                                                                                                                                                                                                                                                  | X1.1: 0 V <sub>OUT</sub> 1 (cannot be switched off)<br>X1.2: 24 V <sub>OUT</sub> 1 (cannot be switched off)<br>X1.3: 0 V <sub>OUT</sub> 1 (can be switched off via fieldbus)<br>X1.4: 24 V <sub>OUT</sub> 1 (can be switched off via fieldbus)<br>X1.5: FE<br>X2.1: 0 V <sub>OUT</sub> 2 (cannot be switched off)<br>X2.2: 24 V <sub>OUT</sub> 2 (cannot be switched off)<br>X2.3: 0 V <sub>OUT</sub> 2 (can be switched off via fieldbus)<br>X2.4: 24 V <sub>OUT</sub> 2 (can be switched off via fieldbus)<br>X2.5: FE                                                                                 | X3.1: n.c.<br>X3.2: n.c.<br>X3.3: n.c.<br>X3.4: n.c.<br>X3.5: FE<br>X4.1: n.c.<br>X4.2: n.c.<br>X4.3: n.c.<br>X4.4: n.c.<br>X4.5: FE                                                                                         |
| CPX-AB-8-KL-4POL                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                              |
|  <p><b>X1</b>    0    .1    .2    .3    .0    .1    .2    .3    <b>X5</b></p> <p><b>X2</b>    0    .1    .2    .3    .0    .1    .2    .3    <b>X6</b></p> <p><b>X3</b>    0    .1    .2    .3    .0    .1    .2    .3    <b>X7</b></p> <p><b>X4</b>    0    .1    .2    .3    .0    .1    .2    .3    <b>X8</b></p> | X1.0: 0 V <sub>OUT</sub> 1 (cannot be switched off)<br>X1.1: 0 V <sub>OUT</sub> 1 (can be switched off via fieldbus)<br>X1.2: 24 V <sub>OUT</sub> 1 (can be switched off via fieldbus)<br>X1.3: FE<br>X2.0: n.c.<br>X2.1: n.c.<br>X2.2: 24 V <sub>OUT</sub> 1 (cannot be switched off)<br>X2.3: FE<br>X3.0: 0 V <sub>OUT</sub> 2 (cannot be switched off)<br>X3.1: 0 V <sub>OUT</sub> 2 (can be switched off via fieldbus)<br>X3.2: 24 V <sub>OUT</sub> 2 (can be switched off via fieldbus)<br>X3.3: FE<br>X4.0: n.c.<br>X4.1: n.c.<br>X4.2: 24 V <sub>OUT</sub> 2 (cannot be switched off)<br>X4.3: FE | X5.0: n.c.<br>X5.1: n.c.<br>X5.2: n.c.<br>X5.3: n.c.<br>X6.0: n.c.<br>X6.1: n.c.<br>X6.2: n.c.<br>X6.3: n.c.<br>X7.0: n.c.<br>X7.1: n.c.<br>X7.2: n.c.<br>X7.3: n.c.<br>X8.0: n.c.<br>X8.1: n.c.<br>X8.2: n.c.<br>X8.3: n.c. |



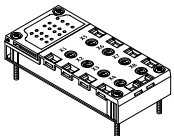
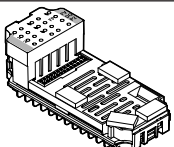
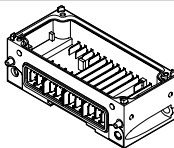
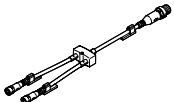
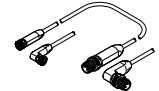
Datasheet – PROFIsafe shut-off module

| Combinations of interlinking blocks and PROFIsafe shut-off module |          |                           |
|-------------------------------------------------------------------|----------|---------------------------|
| Interlinking blocks                                               | Part no. | PROFIsafe shut-off module |
|                                                                   |          | CPX-FVDA-P2               |
| CPX-GE-EV-S                                                       | 195746   | –                         |
| CPX-GE-EV-S-VL                                                    | 8022170  | –                         |
| CPX-GE-EV-S-7/8-4POL                                              | 541248   | –                         |
| CPX-GE-EV-S-7/8-5POL                                              | 541244   | –                         |
| CPX-GE-EV-S-7/8-5POL-VL                                           | 8022172  | –                         |
| CPX-M-GE-EV-S-7/8-CIP-4P                                          | 568956   | –                         |
| CPX-M-GE-EV-S-7/8-5POL                                            | 550208   | –                         |
| CPX-M-GE-EV-S-7/8-5POL-VL                                         | 8022165  | –                         |
| CPX-M-GE-EV-S-M12-5POL                                            | 8098392  | –                         |
| CPX-M-GE-EV-S-PP-5POL                                             | 563057   | –                         |
| CPX-GE-EV                                                         | 195742   | –                         |
| CPX-M-GE-EV                                                       | 550206   | –                         |
| CPX-M-GE-EV-FVO                                                   | 567806   | ■                         |
| CPX-GE-EV-Z                                                       | 195744   | –                         |
| CPX-GE-EV-Z-7/8-4POL                                              | 541250   | –                         |
| CPX-GE-EV-Z-7/8-5POL                                              | 541246   | –                         |
| CPX-M-GE-EV-Z-7/8-5POL                                            | 550210   | –                         |
| CPX-M-GE-EV-Z-PP-5POL                                             | 563058   | –                         |
| CPX-GE-EV-V                                                       | 533577   | –                         |
| CPX-M-GE-EV-W-M12-5POL                                            | 8098391  | –                         |

| General technical data                               |        |                               |
|------------------------------------------------------|--------|-------------------------------|
| Type                                                 |        | CPX-M-GE-EV-FVO               |
| Nominal operating voltage                            | [V DC] | 24                            |
| Current carrying capacity (per contact/contact rail) | [A]    | 16                            |
| Degree of protection to EN 60529                     |        | Depending on connection block |
| Ambient temperature                                  | [°C]   | –5 ... +50                    |
| Certification                                        |        | c UL us – Recognized (OL)     |
| Materials                                            |        | Die-cast aluminium            |
| Note on materials                                    |        | RoHS-compliant                |
| LABS (PWIS) conformity                               |        | VDMA24364-B2-L                |
| Type of mounting                                     |        | Angled fitting                |
| Grid dimension                                       | [mm]   | 50                            |
| Dimensions W x L x H                                 | [mm]   | 50 x 107 x 35                 |
| Product weight                                       | [g]    | 170                           |

| Pin assignment                                                                      |              |     |            |
|-------------------------------------------------------------------------------------|--------------|-----|------------|
| Wiring                                                                              |              | Pin | Assignment |
|  | 0V Valves    | –   | –          |
|                                                                                     | 24V Valves   | –   | –          |
|                                                                                     | 0V Output    | –   | –          |
|                                                                                     | 24V Output   | –   | –          |
|                                                                                     | 0V El./Sen.  |     |            |
|                                                                                     | 24V El./Sen. |     |            |
|                                                                                     | FE           |     |            |
|                                                                                     |              |     |            |
|                                                                                     |              |     |            |
|                                                                                     |              |     |            |

## Datasheet – PROFIsafe shut-off module

| Ordering data                                                                       |                                                               |                                | Part no. | Type                         |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------|----------|------------------------------|
| PROFIsafe shut-off module                                                           |                                                               |                                |          |                              |
|    | Metal connection block                                        | 4x socket M12, 5-pin           | 549367   | CPX-M-AB-4-M12X2-5POL        |
|                                                                                     | Polymer connection block                                      | Spring-loaded terminal, 32-pin | 195708   | CPX-AB-8-KL-4POL             |
|    | Electronics module<br>(can only be used with CPX-M-GE-EV-FVO) | PROFINET, PROFIBUS             | 1971599  | CPX-FVDA-P2                  |
|    | Metal interlinking block<br>(for CPX-FVDA-P2 only)            |                                | 567806   | CPX-M-GE-EV-FVO              |
| Distributor                                                                         |                                                               |                                |          |                              |
|    | Modular system for all types of sensor/actuator distributor   |                                | –        | NEDY-...<br>→ Internet: nedy |
|   | 1x plug M12, 4-pin                                            | 2x socket M12, 5-pin           | 8005310  | NEDY-L2R1-V1-M12G5-N-M12G4   |
| Plug                                                                                |                                                               |                                |          |                              |
|  | M12, 4-pin                                                    | For cable Ø 2.1 ... 7 mm       | 8162294  | NECB-S-M12G4-C2              |
|                                                                                     |                                                               | For 2x cable Ø 2.1 ... 5.6 mm  | 8162295  | NECB-S-M12G4-C2-D            |
|                                                                                     | M12, 5-pin                                                    | For cable Ø 2.1 ... 7 mm       | 8162296  | NECB-S-M12G5-C2              |
|                                                                                     |                                                               | For 2x cable Ø 2.1 ... 5.6 mm  | 8162297  | NECB-S-M12G5-C2-D            |
| Connecting cable                                                                    |                                                               |                                |          |                              |
|  | Modular system for a choice of connecting cables              |                                | –        | NEBA-...<br>→ Internet: neba |
| User documentation                                                                  |                                                               |                                |          |                              |
|  | User documentation for PROFIsafe shut-off module              | German                         | 8022606  | CPX-FVDA-P2-DE               |
|                                                                                     |                                                               | English                        | 8022607  | CPX-FVDA-P2-EN               |

Datasheet – End plate with system supply

Function

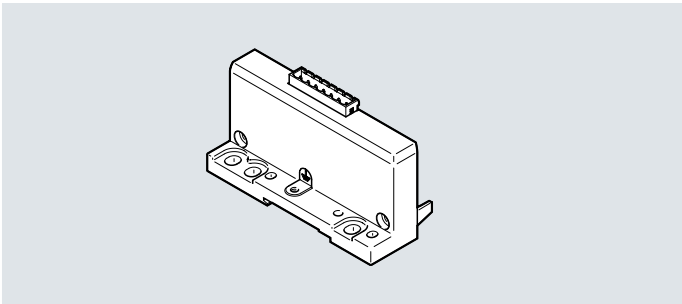
End plates form the outer edge of the CPX terminal.

The earthing connection and mounting holes for wall or DIN rail mounting are located on the left-hand end plate.

The end plate with system supply has contact rails from which the other CPX components on the interlinking modules are supplied with power.

Application area

- 24 V DC supply voltage for the electronics of the CPX terminal
- 24 V DC supply voltage for inputs
- 24 V DC supply voltage for valves
- 24 V DC supply voltage for outputs



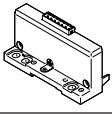
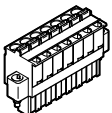
| General technical data |               |     |
|------------------------|---------------|-----|
| Electrical connection  | Plug, 7-pin   |     |
| Type of mounting       | Tie rods      |     |
| Power supply           | System supply |     |
| Maximum power supply   | [A]           | 12  |
| Product weight         | [g]           | 145 |

| Materials              |                             |
|------------------------|-----------------------------|
| Housing                | Die-cast aluminium, painted |
| Note on materials      | RoHs-compliant              |
| LABS (PWIS) conformity | VDMA24364-B2-L              |

| Operating and environmental conditions |                           |
|----------------------------------------|---------------------------|
| Certification                          | c UL us – Recognized (OL) |

| Pin assignment |     |                                                    |
|----------------|-----|----------------------------------------------------|
| Wiring         | Pin | Assignment                                         |
| Plug, 7-pin    |     |                                                    |
|                | [1] | 0 V power supply for valves                        |
|                | [2] | 24 V DC load voltage supply for valves             |
|                | [3] | 0 V power supply for outputs                       |
|                | [4] | 24 V DC load voltage supply for outputs            |
|                | [5] | 0 V power supply for electronics and sensors       |
|                | [6] | 24 V DC supply voltage for electronics and sensors |
|                | [7] | FE                                                 |

## Datasheet – End plate with system supply

| Ordering data                                                                     |                                              |                        | Part no. | Type         |
|-----------------------------------------------------------------------------------|----------------------------------------------|------------------------|----------|--------------|
| End plate with system supply                                                      |                                              |                        |          |              |
|  | End plate for CPX terminal in polymer design |                        | 576315   | CPX-EPL-EV-S |
| Terminal strip                                                                    |                                              |                        |          |              |
|  | Plug, 7-pin, straight                        | Spring-loaded terminal | 576319   | NECU-L3G7-C1 |

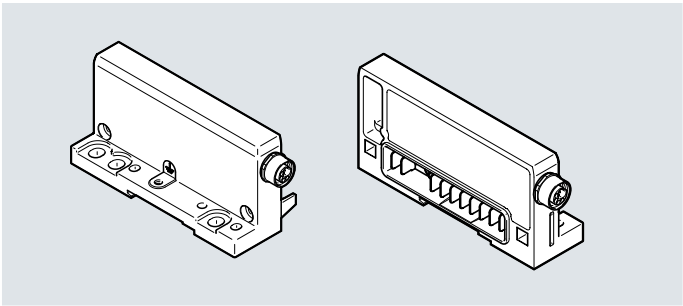
Datasheet – End plate with extension

Function

End plates form the outer edge of the CPX terminal.  
The earthing connection and mounting holes for wall or DIN rail mounting are located on the left end plates.  
The end plates with extension enable the CPX terminal to be separated into two interconnected terminals. Control is provided via a common bus node or control block.

Application area

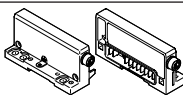
- Separation of long CPX terminals into two shorter units
- Adaptation for installation in a control cabinet

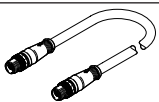


| General technical data                 |                             |                    |
|----------------------------------------|-----------------------------|--------------------|
| Type                                   | CPX-EP...                   | CPX-M-EP...        |
| Type of mounting                       | Tie rods                    | Angled fitting     |
| Maximum power supply                   | [A] 6                       | 6                  |
| Materials                              |                             |                    |
| Type                                   | CPX-EP...                   | CPX-M-EP...        |
| Housing                                | Die-cast aluminium, painted | Die-cast aluminium |
| Note on materials                      | RoHs-compliant              | RoHs-compliant     |
| LABS (PWIS) conformity                 | VDMA24364-B2-L              | VDMA24364-B2-L     |
| Operating and environmental conditions |                             |                    |
| Certification                          | c UL us – Recognized (OL)   |                    |

## Datasheet – End plate with extension

| Pin assignment – End plate with extension |     |                                                    |     |                             |  |
|-------------------------------------------|-----|----------------------------------------------------|-----|-----------------------------|--|
| Wiring                                    | Pin | Assignment                                         | Pin | Wiring                      |  |
| Right end plate (first row)               |     | Round plug, 8-pin                                  |     | Left end plate (second row) |  |
|                                           |     | M12                                                |     |                             |  |
|                                           | 1   | 0 V DC supply voltage for electronics and sensors  | 1   |                             |  |
|                                           | 2   | 0 V DC load voltage supply for valves              | 2   |                             |  |
|                                           | 3   | 24 V DC load voltage supply for valves             | 3   |                             |  |
|                                           | 4   | 24 V DC supply voltage for electronics and sensors | 4   |                             |  |
|                                           | 5   | Bus signal                                         | 5   |                             |  |
|                                           | 6   | Bus signal                                         | 6   |                             |  |
|                                           | 7   | Bus signal                                         | 7   |                             |  |
|                                           | 8   | Bus signal                                         | 8   |                             |  |
| Housing                                   | FE  | Housing                                            |     |                             |  |

| Ordering data                                                                     |                                    |                            |            |          |                |
|-----------------------------------------------------------------------------------|------------------------------------|----------------------------|------------|----------|----------------|
|                                                                                   |                                    |                            | Weight [g] | Part no. | Type           |
| End plate with extension                                                          |                                    |                            |            |          |                |
|  | For CPX terminal in polymer design | First row, right end plate | 190        | 576313   | CPX-EPR-EV-X   |
|                                                                                   |                                    | Second row, left end plate | 175        | 576314   | CPX-EPL-EV-X   |
|                                                                                   | For CPX terminal in metal design   | First row, right end plate | 190        | 576316   | CPX-M-EPR-EV-X |
|                                                                                   |                                    | Second row, left end plate | 175        | 576317   | CPX-M-EPL-EV-X |

| Connecting cable                                                                    |       |        |     |        |                              |
|-------------------------------------------------------------------------------------|-------|--------|-----|--------|------------------------------|
|  | 8-pin | 0.25 m | 47  | 564189 | NEBC-F12G8-KH-0.25-N-S-F12G8 |
|                                                                                     |       | 0.5 m  | 69  | 564190 | NEBC-F12G8-KH-0.5-N-S-F12G8  |
|                                                                                     |       | 1 m    | 113 | 564191 | NEBC-F12G8-KH-1-N-S-F12G8    |
|                                                                                     |       | 1.5 m  | 154 | 564192 | NEBC-F12G8-KH-1.5-N-S-F12G8  |
|                                                                                     |       | 2 m    | 200 | 576015 | NEBC-F12G8-KH-2-N-S-F12G8    |
|                                                                                     |       | 3 m    | 280 | 576636 | NEBC-F12G8-KH-3-N-S-F12G8    |

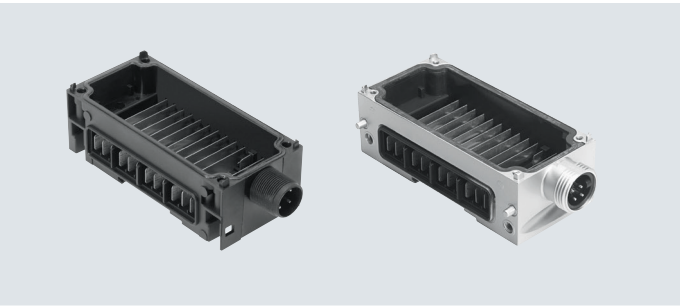
Datasheet – Interlinking block with system supply

Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with power.  
The internal division of the power supply allows specific areas of the sensors and actuators to be switched off individually.

Application area

- 24 V DC supply voltage for the electronics of the CPX terminal
- 24 V DC supply voltage for inputs
- 24 V DC supply voltage for valves
- 24 V DC supply voltage for outputs



| General technical data           |  |        |                               |  |  |  |
|----------------------------------|--|--------|-------------------------------|--|--|--|
| Nominal operating voltage        |  | [V DC] | 24                            |  |  |  |
| Degree of protection to EN 60529 |  |        | Depending on connection block |  |  |  |
| Ambient temperature              |  | [°C]   | –5 ... +50                    |  |  |  |
| Note on materials                |  |        | RoHS-compliant                |  |  |  |
| LABS (PWIS) conformity           |  |        | VDMA24364-B2-L                |  |  |  |
| Grid dimension                   |  | [mm]   | 50                            |  |  |  |
| Dimensions W x L x H             |  | [mm]   | 50 x 107 x 35                 |  |  |  |

| Technical data – Polymer interlinking blocks |                         |             |               |             |             |              |
|----------------------------------------------|-------------------------|-------------|---------------|-------------|-------------|--------------|
| Type                                         |                         | CPX-GE-EV-S |               |             |             |              |
|                                              |                         |             | -VL           | -7/8-4POL   | -7/8-5POL   | -7/8-5POL-VL |
| Electrical connection                        |                         | M18         | M18           | 7/8", 4-pin | 7/8", 5-pin | 7/8", 5-pin  |
| Power supply                                 | Sensors and electronics | [A]         | Max. 16       | Max. 8      | Max. 10     | Max. 8       |
|                                              | Valves and outputs      | [A]         | Max. 16       | Max. 8      | Max. 10     | Max. 8       |
| Corrosion resistance class CRC1)             |                         |             | 1             |             |             |              |
| Type of mounting                             |                         |             | Tie rods      |             |             |              |
| Materials                                    |                         |             | Reinforced PA |             |             |              |
| Product weight                               |                         | [g]         | 125           |             |             |              |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet – Interlinking block with system supply

| Technical data – Metal interlinking blocks |                         |     |         | CPX-M-GE-EV-S      |             |                        |              |                       |
|--------------------------------------------|-------------------------|-----|---------|--------------------|-------------|------------------------|--------------|-----------------------|
| Type                                       |                         |     |         | -7/8-CIP-4P        | -7/8-5POL   | -M12-5POL              | -7/8-5POL-VL | -PP-5POL              |
| Electrical connection                      |                         |     |         | 7/8", 4-pin        | 7/8", 5-pin | Plug                   | 7/8", 5-pin  | AIDA push-pull, 5-pin |
|                                            |                         |     |         |                    |             | M12x1                  |              |                       |
|                                            |                         |     |         |                    |             | 5-pin                  |              |                       |
|                                            |                         |     |         |                    |             | L-coded                |              |                       |
| Power supply                               | Sensors and electronics | [A] | Max. 10 | Max. 8             | Max. 16     | Max. 8                 | Max. 16      |                       |
|                                            | Valves and outputs      | [A] | Max. 10 | Max. 8             | Max. 16     | Max. 8                 | Max. 16      |                       |
| Corrosion resistance class CRC1)           |                         |     |         | 0                  |             |                        |              |                       |
| Type of mounting                           |                         |     |         | Angled fitting     |             |                        |              |                       |
| Materials                                  |                         |     |         | Die-cast aluminium |             |                        |              |                       |
| Certification                              |                         |     |         | –                  | –           | c UL - Recognized (OL) | –            | –                     |
| Product weight [g]                         |                         |     |         | 187                | 187         | 266                    | 187          | 279                   |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)



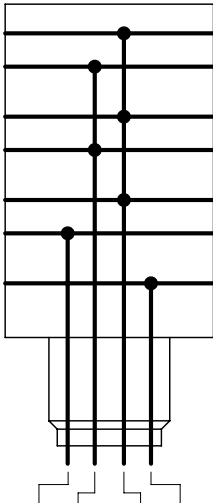
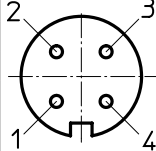
### Note

Points to note about the interlinking block CPX-M-GE-EV-S-7/8-CIP-4P:

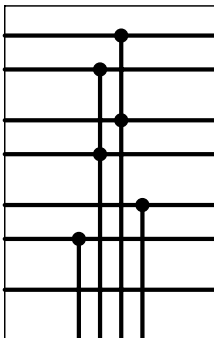
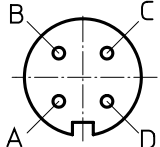
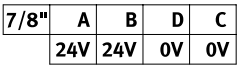
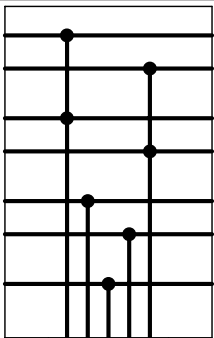
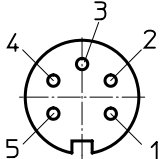
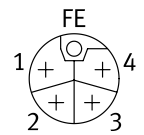
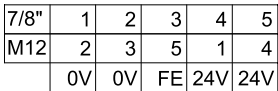
- Must be mounted as the first module to the right of the left end plate
- The functional earth (FE) must be connected via the left-hand end plate
- Only permitted as an interlinking block to a bus node



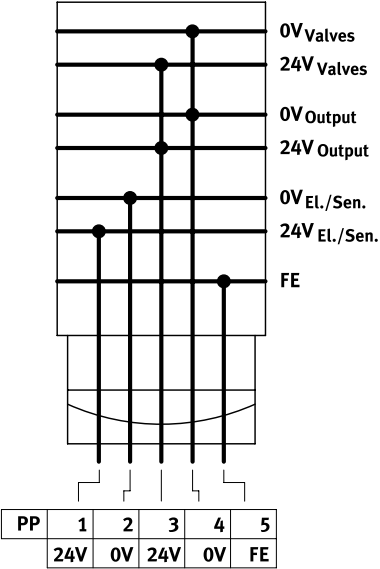
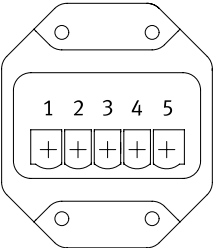
Datasheet – Interlinking block with system supply

| Pin assignment – Polymer interlinking blocks                                      |             | Pin                                                                               | Assignment                                         |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|----------------------------------------------------|
| Wiring                                                                            |             |                                                                                   |                                                    |
| Round plug, 4-pin                                                                 |             |                                                                                   |                                                    |
|  | 0V Valves   |  |                                                    |
|                                                                                   | 24V Valves  |                                                                                   |                                                    |
|                                                                                   | 0V Output   |                                                                                   |                                                    |
|                                                                                   | 24V Output  |                                                                                   |                                                    |
|                                                                                   | 0V EL./Sen. |                                                                                   |                                                    |
| 24V EL./Sen.                                                                      |             | 1                                                                                 | 24 V DC supply voltage for electronics and sensors |
|                                                                                   |             | 2                                                                                 | 24 V DC load voltage supply for valves and outputs |
|                                                                                   |             | 3                                                                                 | 0 V                                                |
|                                                                                   |             | 4                                                                                 | FE                                                 |
| FE                                                                                |             |                                                                                   |                                                    |
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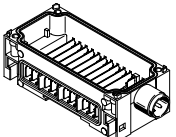
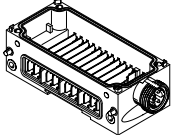
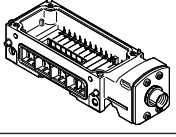
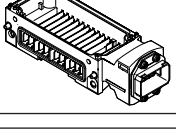
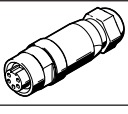
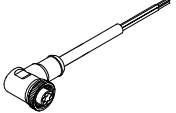
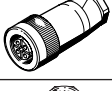
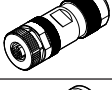
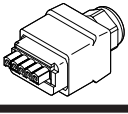
## Datasheet – Interlinking block with system supply

| Pin assignment – Metal interlinking blocks                                                                                                                                                                                                           |                                                                                                 | Pin                                                                                                                                                                         | Assignment                                         |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--|
| Wiring                                                                                                                                                                                                                                               |                                                                                                 |                                                                                                                                                                             |                                                    |  |
| Round plug, 4-pin                                                                                                                                                                                                                                    |                                                                                                 |                                                                                                                                                                             |                                                    |  |
|  <p>0V<sub>Valves</sub><br/>24V<sub>Valves</sub><br/>0V<sub>Output</sub><br/>24V<sub>Output</sub><br/>0V<sub>El./Sen.</sub><br/>24V<sub>El./Sen.</sub><br/>FE</p>   |  <p>7/8"</p>   | A                                                                                                                                                                           | 24 V DC supply voltage for electronics and sensors |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | B                                                                                                                                                                           | 24 V DC load voltage supply for valves and outputs |  |
|  <p>7/8" A B D C<br/>24V 24V 0V 0V</p>                                                                                                                              |                                                                                                 | C                                                                                                                                                                           | 0 V DC supply voltage for electronics and sensors  |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | D                                                                                                                                                                           | 0 V DC load voltage supply for valves and outputs  |  |
|                                                                                                                                                                                                                                                      |                                                                                                 |  <b>Note</b><br>The functional earth (FE) must be connected via the left-hand end plate. |                                                    |  |
|                                                                                                                                                                                                                                                      |                                                                                                 |                                                                                                                                                                             |                                                    |  |
| Round plug, 5-pin                                                                                                                                                                                                                                    |                                                                                                 |                                                                                                                                                                             |                                                    |  |
|  <p>0V<sub>Valves</sub><br/>24V<sub>Valves</sub><br/>0V<sub>Output</sub><br/>24V<sub>Output</sub><br/>0V<sub>El./Sen.</sub><br/>24V<sub>El./Sen.</sub><br/>FE</p> |  <p>7/8"</p> | 1                                                                                                                                                                           | 0 V valves and outputs                             |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | 2                                                                                                                                                                           | 0 V electronics and sensors                        |  |
|  <p>M12</p>                                                                                                                                                       |                                                                                                 | 3                                                                                                                                                                           | FE                                                 |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | 4                                                                                                                                                                           | 24 V DC supply voltage for electronics and sensors |  |
|  <p>7/8" 1 2 3 4 5<br/>M12 2 3 5 1 4<br/>0V 0V FE 24V 24V</p>                                                                                                     |                                                                                                 | 5                                                                                                                                                                           | 24 V DC load voltage supply for valves and outputs |  |
|                                                                                                                                                                                                                                                      |                                                                                                 |                                                                                                                                                                             |                                                    |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | 1                                                                                                                                                                           | 24 V DC supply voltage for electronics and sensors |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | 2                                                                                                                                                                           | 0 V valves and outputs                             |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | 3                                                                                                                                                                           | 0 V electronics and sensors                        |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | 4                                                                                                                                                                           | 24 V DC load voltage supply for valves and outputs |  |
|                                                                                                                                                                                                                                                      |                                                                                                 | FE                                                                                                                                                                          | FE                                                 |  |

Datasheet – Interlinking block with system supply

| Pin assignment – Metal interlinking blocks                                        |  | Pin                                           | Assignment                                         |
|-----------------------------------------------------------------------------------|--|-----------------------------------------------|----------------------------------------------------|
| Wiring                                                                            |  |                                               |                                                    |
| Push-pull plug 5-pin                                                              |  |                                               |                                                    |
|  |  | <b>Plug pattern to PROFINET specification</b> |                                                    |
|  |  | 1                                             | 24 V DC supply voltage for electronics and sensors |
|                                                                                   |  | 2                                             | 0 V electronics and sensors                        |
|                                                                                   |  | 3                                             | 24 V DC load voltage supply for valves and outputs |
|                                                                                   |  | 4                                             | 0 V valves and outputs                             |
|                                                                                   |  | 5                                             | FE                                                 |

## Datasheet – Interlinking block with system supply

| Ordering data                                                                       |                                                                                  |       |                      | Part no. | Type                      |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------|----------------------|----------|---------------------------|
| Designation                                                                         |                                                                                  |       |                      |          |                           |
| Interlinking block with system supply                                               |                                                                                  |       |                      |          |                           |
|    | M18 connection, polymer interlinking block                                       | 4-pin | –                    | 195746   | CPX-GE-EV-S               |
|                                                                                     |                                                                                  |       | For ATEX environment | 8022170  | CPX-GE-EV-S-VL            |
|    | 7/8" connection, polymer interlinking block                                      | 4-pin | –                    | 541248   | CPX-GE-EV-S-7/8-4POL      |
|                                                                                     |                                                                                  | 5-pin | –                    | 541244   | CPX-GE-EV-S-7/8-5POL      |
|                                                                                     |                                                                                  |       | For ATEX environment | 8022172  | CPX-GE-EV-S-7/8-5POL-VL   |
|                                                                                     | 7/8" connection, metal interlinking block                                        | 4-pin | –                    | 568956   | CPX-M-GE-EV-S-7/8-CIP-4P  |
|                                                                                     |                                                                                  | 5-pin | –                    | 550208   | CPX-M-GE-EV-S-7/8-5POL    |
|                                                                                     |                                                                                  |       | For ATEX environment | 8022165  | CPX-M-GE-EV-S-7/8-5POL-VL |
|    | M12x1 L-coded connection, metal interlinking block                               | 5-pin | –                    | 8098392  | CPX-M-GE-EV-S-M12-5POL    |
|    | Push-pull plug connection (AIDA), metal interlinking block                       | 5-pin | –                    | 563057   | CPX-M-GE-EV-S-PP-5POL     |
| Connection sockets 7/8"                                                             |                                                                                  |       |                      |          |                           |
|  | Power supply socket                                                              | 5-pin |                      | 543107   | NECU-G78G5-C2             |
|                                                                                     |                                                                                  | 4-pin |                      | 543108   | NECU-G78G4-C2             |
|  | Angled socket, 5-pin – open cable end, 5-core                                    | 2 m   |                      | 573855   | NEBU-G78W5-K-2-N-LE5      |
| Connection sockets M18                                                              |                                                                                  |       |                      |          |                           |
|  | Straight socket, screw terminal                                                  | 4-pin | PG9                  | 18493    | NTSD-GD-9                 |
|                                                                                     |                                                                                  |       | PG13.5               | 18526    | NTSD-GD-13,5              |
|  | Angled socket, screw terminal                                                    | 4-pin | PG9                  | 18527    | NTSD-WD-9                 |
|                                                                                     | Angled socket, screw terminal                                                    | 4-pin | PG11                 | 533119   | NTSD-WD-11                |
| Power supply sockets M12                                                            |                                                                                  |       |                      |          |                           |
|  | Straight socket, screw terminal                                                  | 5-pin |                      | 8166793  | NECL-L12G5-C2-Q10         |
|  | Angled socket, screw terminal                                                    | 5-pin |                      | 8166794  | NECL-L12W5-C2-Q10         |
| Push-pull power supply socket                                                       |                                                                                  |       |                      |          |                           |
|  | Socket, spring-loaded terminal,<br>Plug pattern PP, fulfils requirements to AIDA | 5-pin |                      | 5195383  | NECU-M-PPG5PP-C1-PN       |

## Datasheet – Interlinking block with system supply

| Ordering data                                                                    |                                                                                     |                                   |          |                    |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|----------|--------------------|
| Designation                                                                      |                                                                                     |                                   | Part no. | Type               |
| Mounting accessories                                                             |                                                                                     |                                   |          |                    |
|  | Screws for mounting the bus node/connection block on the polymer interlinking block | Bus node/metal connection block   | 550218   | CPX-DPT-30X32-S-4X |
|                                                                                  | Screws for mounting the bus node/connection block on the metal interlinking block   | Bus node/polymer connection block | 550219   | CPX-M-M3x22-4x     |
|                                                                                  |                                                                                     | Bus node/metal connection block   | 550216   | CPX-M-M3x22-S-4x   |

## Datasheet – Interlinking block without power supply

### Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with power.

The internal division of the power supply allows specific areas of the sensors and actuators to be switched off individually.

### Application area

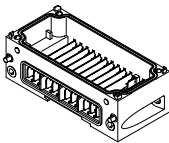
- All voltages are fed through to the next module via the interlinking blocks without supply.
- The connected electronics module for inputs/outputs or bus node taps off the required voltage.



| General technical data                               |        |                               |             |
|------------------------------------------------------|--------|-------------------------------|-------------|
| Type                                                 |        | CPX-GE-EV                     | CPX-M-GE-EV |
| Electrical connection                                |        | –                             | –           |
| Nominal operating voltage                            | [V DC] | 24                            | 24          |
| Current carrying capacity (per contact/contact rail) | [A]    | 16                            | 16          |
| Degree of protection to EN 60529                     |        | Depending on connection block |             |
| Ambient temperature                                  | [°C]   | –5 ... +50                    |             |
| Materials                                            |        | Reinforced PA                 | Aluminium   |
| Note on materials                                    |        | RoHs-compliant                |             |
| LABS (PWIS) conformity                               |        | VDMA24364-B2-L                |             |
| Grid dimension                                       | [mm]   | 50                            |             |
| Dimensions W x L x H                                 | [mm]   | 50 x 107 x 35                 |             |
| Product weight                                       | [g]    | 108                           | 169         |

| Pin assignment                                                                                                                                                                                                                                                                                                                              |  |     |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|------------|
| Wiring                                                                                                                                                                                                                                                                                                                                      |  | Pin | Assignment |
| <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 100px; margin-right: 10px;"></div> <div> <p><b>0V</b> Valves</p> <p><b>24V</b> Valves</p> <p><b>0V</b> Output</p> <p><b>24V</b> Output</p> <p><b>0V</b> EL./Sen.</p> <p><b>24V</b> EL./Sen.</p> <p><b>FE</b></p> </div> </div> |  | –   | –          |
|                                                                                                                                                                                                                                                                                                                                             |  | –   | –          |
|                                                                                                                                                                                                                                                                                                                                             |  | –   | –          |
|                                                                                                                                                                                                                                                                                                                                             |  | –   | –          |
|                                                                                                                                                                                                                                                                                                                                             |  |     |            |
|                                                                                                                                                                                                                                                                                                                                             |  |     |            |
|                                                                                                                                                                                                                                                                                                                                             |  |     |            |
|                                                                                                                                                                                                                                                                                                                                             |  |     |            |
|                                                                                                                                                                                                                                                                                                                                             |  |     |            |
|                                                                                                                                                                                                                                                                                                                                             |  |     |            |

Datasheet – Interlinking block without power supply

| Ordering data                                                                    |                                                                                     | Part no.                          | Type        |                    |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|-------------|--------------------|
| Designation                                                                      |                                                                                     |                                   |             |                    |
| Interlinking block without power supply                                          |                                                                                     |                                   |             |                    |
|  | Polymer interlinking block                                                          | 195742                            | CPX-GE-EV   |                    |
|                                                                                  | Metal interlinking block                                                            | 550206                            | CPX-M-GE-EV |                    |
| Mounting accessories                                                             |                                                                                     |                                   |             |                    |
|  | Screws for mounting the bus node/connection block on the polymer interlinking block | Bus node/metal connection block   | 550218      | CPX-DPT-30X32-S-4X |
|                                                                                  | Screws for mounting the bus node/connection block on the metal interlinking block   | Bus node/polymer connection block | 550219      | CPX-M-M3x22-4x     |
|                                                                                  |                                                                                     | Bus node/metal connection block   | 550216      | CPX-M-M3x22-S-4x   |

## Datasheet – Interlinking block with additional supply for outputs

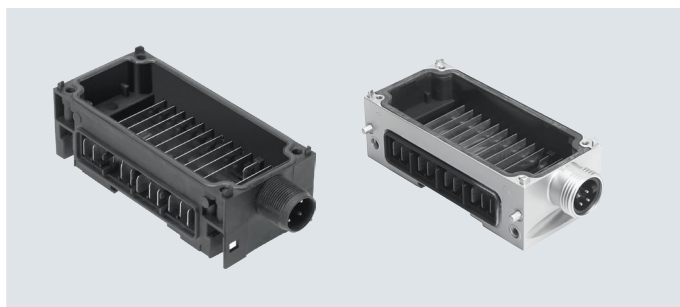
### Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with power.

The internal division of the power supply allows specific areas of the sensors and actuators to be switched off individually.

### Application area

- 24 V DC supply voltage for outputs



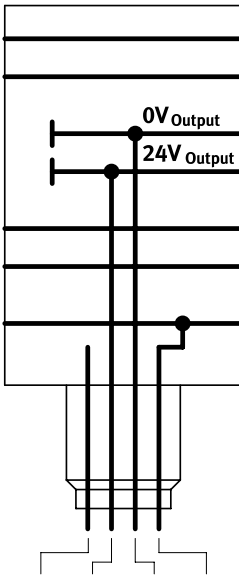
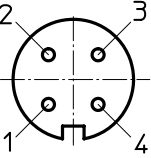
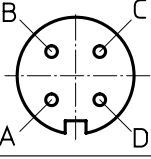
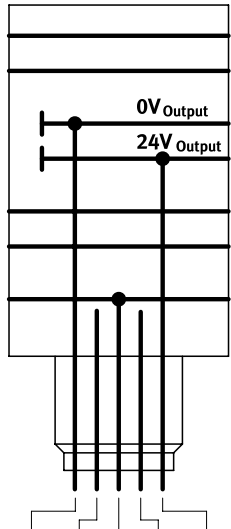
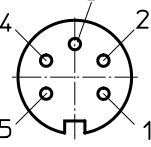
| General technical data           |        |                               |
|----------------------------------|--------|-------------------------------|
| Nominal operating voltage        | [V DC] | 24                            |
| Degree of protection to EN 60529 |        | Depending on connection block |
| Ambient temperature              | [°C]   | –5 ... +50                    |
| Note on materials                |        | RoHS-compliant                |
| LABS (PWIS) conformity           |        | VDMA24364-B2-L                |
| Grid dimension                   | [mm]   | 50                            |
| Dimensions W x L x H             | [mm]   | 50 x 107 x 35                 |

| Technical data – Polymer interlinking blocks |         |               |             |             |
|----------------------------------------------|---------|---------------|-------------|-------------|
| Type                                         |         | CPX-GE-EV-Z   |             |             |
|                                              |         |               | -7/8-4POL   | -7/8-5POL   |
| Electrical connection                        |         | M18           | 7/8", 4-pin | 7/8", 5-pin |
| Power supply                                 | Outputs | [A]           | Max. 16     | Max. 10     |
| Materials                                    |         | Reinforced PA |             |             |
| Product weight                               |         | [g]           | 125         |             |

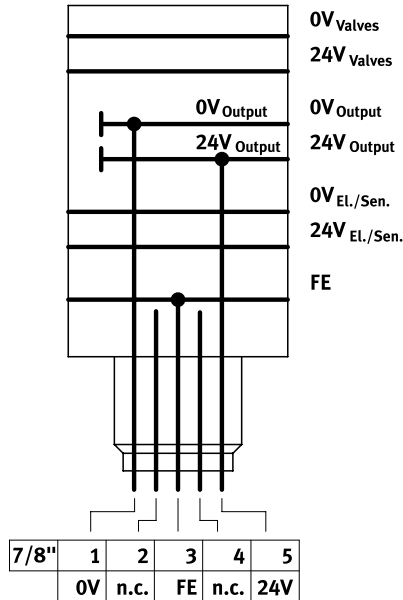
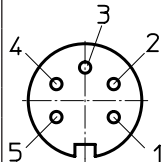
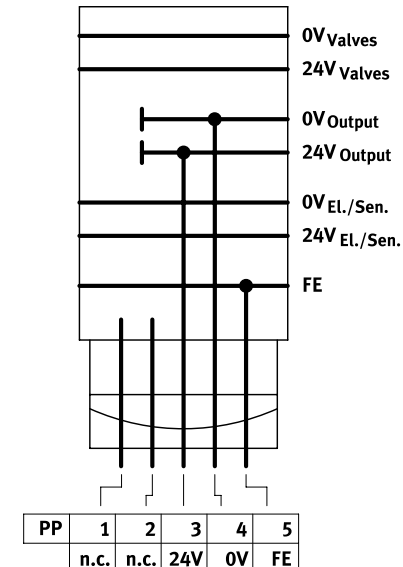
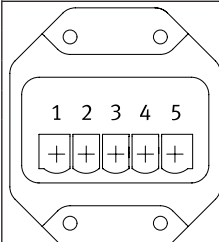
| Technical data – Metal interlinking blocks |         |                    |                       |         |
|--------------------------------------------|---------|--------------------|-----------------------|---------|
| Type                                       |         | CPX-M-GE-EV-Z      |                       |         |
|                                            |         | -7/8-5POL          | -PP-5POL              |         |
| Electrical connection                      |         | 7/8", 5-pin        | AIDA push-pull, 5-pin |         |
| Power supply                               | Outputs | [A]                | Max. 8                | Max. 16 |
| Materials                                  |         | Die-cast aluminium |                       |         |
| Product weight                             |         | [g]                | 187                   | 279     |



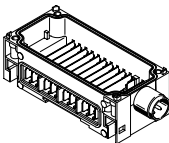
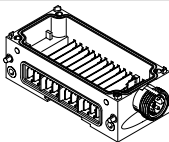
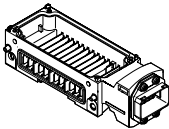
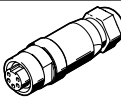
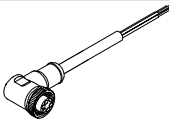
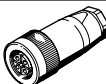
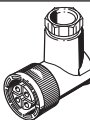
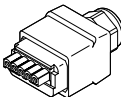
Datasheet – Interlinking block with additional supply for outputs

| Pin assignment – Polymer interlinking blocks                                                                                                                                                                |                                                                                                                                                    | Pin                                                                                 | Assignment                                                                                                                                                                                                              |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|------|-----------------------------------------|----|------|----|------|------|-----------------------------------------|----|----|--|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------|---|-----------------------------------------|---|----|---|----|
| Wiring                                                                                                                                                                                                      |                                                                                                                                                    |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| Round plug, 4-pin                                                                                                                                                                                           |                                                                                                                                                    |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
|                                                                                                                            | <div>0V Valves</div> <div>24V Valves</div> <div>0V Output</div> <div>24V Output</div> <div>0V EL./Sen.</div> <div>24V EL./Sen.</div> <div>FE</div> |    | <table><tr><td>1</td><td>n.c.</td></tr><tr><td>2</td><td>24 V DC load voltage supply for outputs</td></tr><tr><td>3</td><td>0 V</td></tr><tr><td>4</td><td>FE</td></tr></table>                                         | 1    | n.c.        | 2    | 24 V DC load voltage supply for outputs | 3  | 0 V  | 4  | FE   |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 1                                                                                                                                                                                                           | n.c.                                                                                                                                               |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 2                                                                                                                                                                                                           | 24 V DC load voltage supply for outputs                                                                                                            |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 3                                                                                                                                                                                                           | 0 V                                                                                                                                                |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 4                                                                                                                                                                                                           | FE                                                                                                                                                 |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| <table><tr><td>M18</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>7/8"</td><td>A</td><td>B</td><td>D</td><td>C</td></tr><tr><td></td><td>n.c.</td><td>24V</td><td>0V</td><td>FE</td></tr></table> | M18                                                                                                                                                | 1                                                                                   | 2                                                                                                                                                                                                                       | 3    | 4           | 7/8" | A                                       | B  | D    | C  |      | n.c. | 24V                                     | 0V | FE |  |  | <table><tr><td>A</td><td>n.c.</td></tr><tr><td>B</td><td>24 V DC load voltage supply for outputs</td></tr><tr><td>C</td><td>FE</td></tr><tr><td>D</td><td>0V</td></tr></table> | A | n.c. | B | 24 V DC load voltage supply for outputs | C | FE | D | 0V |
| M18                                                                                                                                                                                                         | 1                                                                                                                                                  | 2                                                                                   | 3                                                                                                                                                                                                                       | 4    |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 7/8"                                                                                                                                                                                                        | A                                                                                                                                                  | B                                                                                   | D                                                                                                                                                                                                                       | C    |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
|                                                                                                                                                                                                             | n.c.                                                                                                                                               | 24V                                                                                 | 0V                                                                                                                                                                                                                      | FE   |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| A                                                                                                                                                                                                           | n.c.                                                                                                                                               |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| B                                                                                                                                                                                                           | 24 V DC load voltage supply for outputs                                                                                                            |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| C                                                                                                                                                                                                           | FE                                                                                                                                                 |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| D                                                                                                                                                                                                           | 0V                                                                                                                                                 |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| Round plug, 5-pin                                                                                                                                                                                           |                                                                                                                                                    |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
|                                                                                                                          | <div>0V Valves</div> <div>24V Valves</div> <div>0V Output</div> <div>24V Output</div> <div>0V EL./Sen.</div> <div>24V EL./Sen.</div> <div>FE</div> |  | <table><tr><td>1</td><td>0 V outputs</td></tr><tr><td>2</td><td>n.c.</td></tr><tr><td>3</td><td>FE</td></tr><tr><td>4</td><td>n.c.</td></tr><tr><td>5</td><td>24 V DC load voltage supply for outputs</td></tr></table> | 1    | 0 V outputs | 2    | n.c.                                    | 3  | FE   | 4  | n.c. | 5    | 24 V DC load voltage supply for outputs |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 1                                                                                                                                                                                                           | 0 V outputs                                                                                                                                        |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 2                                                                                                                                                                                                           | n.c.                                                                                                                                               |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 3                                                                                                                                                                                                           | FE                                                                                                                                                 |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 4                                                                                                                                                                                                           | n.c.                                                                                                                                               |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 5                                                                                                                                                                                                           | 24 V DC load voltage supply for outputs                                                                                                            |                                                                                     |                                                                                                                                                                                                                         |      |             |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| <table><tr><td>7/8"</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td></td><td>0V</td><td>n.c.</td><td>FE</td><td>n.c.</td><td>24V</td></tr></table>                                       | 7/8"                                                                                                                                               | 1                                                                                   | 2                                                                                                                                                                                                                       | 3    | 4           | 5    |                                         | 0V | n.c. | FE | n.c. | 24V  |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
| 7/8"                                                                                                                                                                                                        | 1                                                                                                                                                  | 2                                                                                   | 3                                                                                                                                                                                                                       | 4    | 5           |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |
|                                                                                                                                                                                                             | 0V                                                                                                                                                 | n.c.                                                                                | FE                                                                                                                                                                                                                      | n.c. | 24V         |      |                                         |    |      |    |      |      |                                         |    |    |  |                                                                                   |                                                                                                                                                                                |   |      |   |                                         |   |    |   |    |

# Datasheet – Interlinking block with additional supply for outputs

| Pin assignment – Metal interlinking blocks                                          |                                                                                                                                                      | Pin                                                                                                                                  | Assignment                                                                             |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Wiring                                                                              |                                                                                                                                                      |                                                                                                                                      |                                                                                        |
| Round plug, 5-pin                                                                   |                                                                                                                                                      |                                                                                                                                      |                                                                                        |
|    | <b>0V</b> Valves<br><b>24V</b> Valves<br><br><b>0V</b> Output<br><b>24V</b> Output<br><br><b>0V</b> El./Sen.<br><b>24V</b> El./Sen.<br><br><b>FE</b> | <b>7/8"</b><br>                                     | 1 0 V outputs<br>2 n.c.<br>3 FE<br>4 n.c.<br>5 24 V DC load voltage supply for outputs |
|                                                                                     |                                                                                                                                                      | <b>Push-pull plug 5-pin</b>                                                                                                          |                                                                                        |
|  | <b>0V</b> Valves<br><b>24V</b> Valves<br><br><b>0V</b> Output<br><b>24V</b> Output<br><br><b>0V</b> El./Sen.<br><b>24V</b> El./Sen.<br><br><b>FE</b> | <b>Plug pattern to PROFINET specification</b><br> | 1 n.c.<br>2 n.c.<br>3 24 V DC load voltage supply for outputs<br>4 0 V outputs<br>5 FE |
|                                                                                     |                                                                                                                                                      |                                                                                                                                      |                                                                                        |

## Datasheet – Interlinking block with additional supply for outputs

| Ordering data                                                                      |                                                                                     |                                   |        | Part no. | Type                   |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|--------|----------|------------------------|
| Designation                                                                        |                                                                                     |                                   |        |          |                        |
| Interlinking block with additional supply for outputs                              |                                                                                     |                                   |        |          |                        |
|    | M18 connection, polymer interlinking block                                          | 4-pin                             | –      | 195744   | CPX-GE-EV-Z            |
|    | 7/8" connection, polymer interlinking block                                         | 4-pin                             | –      | 541250   | CPX-GE-EV-Z-7/8-4POL   |
|                                                                                    |                                                                                     | 5-pin                             | –      | 541246   | CPX-GE-EV-Z-7/8-5POL   |
|                                                                                    | 7/8" connection, metal interlinking block                                           | 5-pin                             | –      | 550210   | CPX-M-GE-EV-Z-7/8-5POL |
|    | Push-pull plug connection (AIDA), metal interlinking block                          | 5-pin                             | –      | 563058   | CPX-M-GE-EV-Z-PP-5POL  |
| Connection sockets 7/8"                                                            |                                                                                     |                                   |        |          |                        |
|    | Power supply socket                                                                 | 5-pin                             |        | 543107   | NECU-G78G5-C2          |
|                                                                                    |                                                                                     | 4-pin                             |        | 543108   | NECU-G78G4-C2          |
|   | Angled socket, 5-pin – open cable end, 5-core                                       | 2 m                               |        | 573855   | NEBU-G78W5-K-2-N-LE5   |
| Connection sockets M18                                                             |                                                                                     |                                   |        |          |                        |
|  | Straight socket, screw terminal                                                     | 4-pin                             | PG9    | 18493    | NTSD-GD-9              |
|                                                                                    |                                                                                     |                                   | PG13.5 | 18526    | NTSD-GD-13,5           |
|  | Angled socket, screw terminal                                                       | 4-pin                             | PG9    | 18527    | NTSD-WD-9              |
|                                                                                    | Angled socket, screw terminal                                                       | 4-pin                             | PG11   | 533119   | NTSD-WD-11             |
| Push-pull power supply socket                                                      |                                                                                     |                                   |        |          |                        |
|  | Socket, spring-loaded terminal,<br>Plug pattern PP, fulfils requirements to AIDA    | 5-pin                             |        | 5195383  | NECU-M-PPG5PP-C1-PN    |
| Mounting accessories                                                               |                                                                                     |                                   |        |          |                        |
|  | Screws for mounting the bus node/connection block on the polymer interlinking block | Bus node/metal connection block   |        | 550218   | CPX-DPT-30X32-S-4X     |
|                                                                                    | Screws for mounting the bus node/connection block on the metal interlinking block   | Bus node/polymer connection block |        | 550219   | CPX-M-M3x22-4x         |
|                                                                                    |                                                                                     | Bus node/metal connection block   |        | 550216   | CPX-M-M3x22-S-4x       |

## Datasheet – Interlinking block with additional supply for valves

### Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with power.

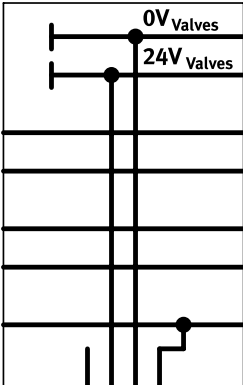
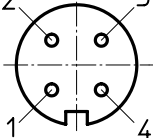
The internal division of the power supply allows specific areas of the sensors and actuators to be switched off individually.

### Application area

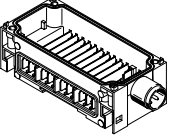
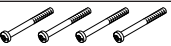
- 24 V DC supply voltage for valves



| General technical data                               |        |                               |
|------------------------------------------------------|--------|-------------------------------|
| Type                                                 |        | CPX-GE-EV-V                   |
| Electrical connection                                |        | M18                           |
| Nominal operating voltage                            | [V DC] | 24                            |
| Current carrying capacity (per contact/contact rail) | [A]    | 16                            |
| Degree of protection to EN 60529                     |        | Depending on connection block |
| Ambient temperature                                  | [°C]   | –5 ... +50                    |
| Materials                                            |        | Reinforced PA                 |
| Note on materials                                    |        | RoHs-compliant                |
| LABS (PWIS) conformity                               |        | VDMA24364-B2-L                |
| Grid dimension                                       | [mm]   | 50                            |
| Dimensions W x L x H                                 | [mm]   | 50 x 107 x 35                 |
| Product weight                                       | [g]    | 125                           |

| Pin assignment – Polymer interlinking blocks                                                                                                                                                                                                                                                                          |                                        |     |            |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----|------------|----|---|------|---|---|---|---|--|------|-----|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------|---|----------------------------------------|---|-----|---|----|
| Wiring                                                                                                                                                                                                                                                                                                                |                                        | Pin | Assignment |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| Round plug, 4-pin                                                                                                                                                                                                                                                                                                     |                                        |     |            |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| <div></div> <div><table><tr><td>M18</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>7/8"</td><td>A</td><td>B</td><td>D</td><td>C</td></tr><tr><td></td><td>n.c.</td><td>24V</td><td>0V</td><td>FE</td></tr></table></div> | M18                                    | 1   | 2          | 3  | 4 | 7/8" | A | B | D | C |  | n.c. | 24V | 0V | FE | <div></div> <table><tr><td>1</td><td>n.c.</td></tr><tr><td>2</td><td>24 V DC load voltage supply for valves</td></tr><tr><td>3</td><td>0 V</td></tr><tr><td>4</td><td>FE</td></tr></table> | 1 | n.c. | 2 | 24 V DC load voltage supply for valves | 3 | 0 V | 4 | FE |
| M18                                                                                                                                                                                                                                                                                                                   | 1                                      | 2   | 3          | 4  |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| 7/8"                                                                                                                                                                                                                                                                                                                  | A                                      | B   | D          | C  |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
|                                                                                                                                                                                                                                                                                                                       | n.c.                                   | 24V | 0V         | FE |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| 1                                                                                                                                                                                                                                                                                                                     | n.c.                                   |     |            |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| 2                                                                                                                                                                                                                                                                                                                     | 24 V DC load voltage supply for valves |     |            |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| 3                                                                                                                                                                                                                                                                                                                     | 0 V                                    |     |            |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |
| 4                                                                                                                                                                                                                                                                                                                     | FE                                     |     |            |    |   |      |   |   |   |   |  |      |     |    |    |                                                                                                                                                                                                                                                                               |   |      |   |                                        |   |     |   |    |

## Datasheet – Interlinking block with additional supply for valves

| Ordering data                                                                    |                                                                                     |                                 |        |               |                           |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------|--------|---------------|---------------------------|
| Designation                                                                      |                                                                                     |                                 |        | Part no.      | Type                      |
| Interlinking block with additional supply for valves                             |                                                                                     |                                 |        |               |                           |
|  | M18 connection, polymer interlinking block                                          | 4-pin                           | –      | <b>533577</b> | <b>CPX-GE-EV-V</b>        |
| Connection sockets M18                                                           |                                                                                     |                                 |        |               |                           |
|  | Straight socket, screw terminal                                                     | 4-pin                           | PG9    | <b>18493</b>  | <b>NTSD-GD-9</b>          |
|                                                                                  |                                                                                     | 4-pin                           | PG13.5 | <b>18526</b>  | <b>NTSD-GD-13,5</b>       |
|  | Angled socket, screw terminal                                                       | 4-pin                           | PG9    | <b>18527</b>  | <b>NTSD-WD-9</b>          |
|                                                                                  | Angled socket, screw terminal                                                       | 4-pin                           | PG11   | <b>533119</b> | <b>NTSD-WD-11</b>         |
| Mounting accessories                                                             |                                                                                     |                                 |        |               |                           |
|  | Screws for mounting the bus node/connection block on the polymer interlinking block | Bus node/metal connection block |        | <b>550218</b> | <b>CPX-DPT-30X32-S-4X</b> |

## Datasheet – Interlinking block with forwarding supply

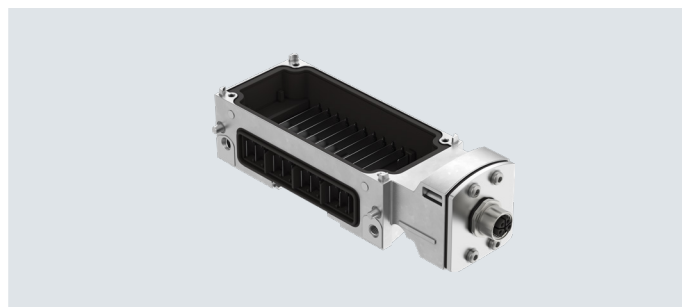
### Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with power.

The internal division of the power supply allows specific areas of the sensors and actuators to be switched off individually.

### Application area

- Forwarding of 24 V DC supply voltage for the electronics of the CPX terminal
- Forwarding of 24 V DC supply voltage for inputs
- Forwarding of 24 V DC supply voltage for valves
- Forwarding of 24 V DC supply voltage for outputs



| General technical data           |        |                               |
|----------------------------------|--------|-------------------------------|
| Nominal operating voltage        | [V DC] | 24                            |
| Degree of protection to EN 60529 |        | Depending on connection block |
| Ambient temperature              | [°C]   | –5 ... +50                    |
| Note on materials                |        | RoHS-compliant                |
| LABS (PWIS) conformity           |        | VDMA24364-B2-L                |
| Grid dimension                   | [mm]   | 50                            |
| Dimensions W x L x H             | [mm]   | 50 x 107 x 35                 |

| Technical data – Metal interlinking blocks |                         |     |                        |
|--------------------------------------------|-------------------------|-----|------------------------|
| Type                                       |                         |     | CPX-M-GE-EV-W-M12-5POL |
| Electrical connection                      |                         |     | Socket                 |
|                                            |                         |     | M12x1                  |
|                                            |                         |     | 5-pin                  |
|                                            |                         |     | L-coded                |
| Power supply                               | Sensors and electronics | [A] | Max. 16                |
|                                            | Valves and outputs      | [A] | Max. 16                |
| Corrosion resistance class CRC1)           |                         |     | 0                      |
| Type of mounting                           |                         |     | Angled fitting         |
| Materials                                  |                         |     | Die-cast aluminium     |
| Certification                              |                         |     | c UL - Recognized (OL) |
| Product weight                             |                         | [g] | 266                    |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

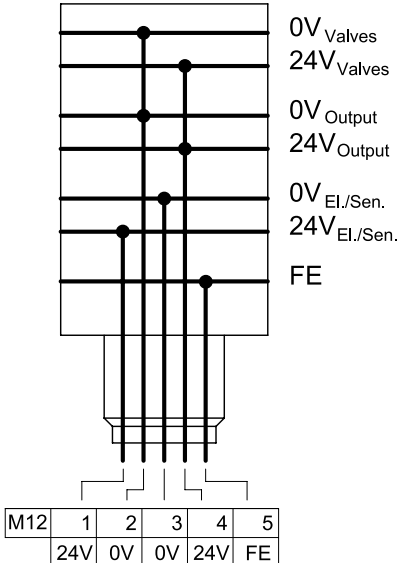
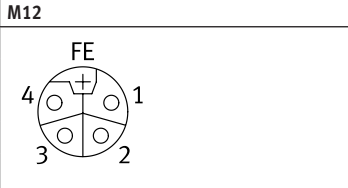
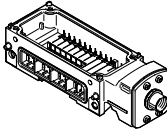
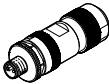


### Note

Points to note about the interlinking block CPX-M-GE-EV-W-M12-5POL:

- Must be mounted as the first module to the right or left of the system supply
- Only one interlinking block permitted per CPX terminal

Datasheet – Interlinking block with forwarding supply

| Pin assignment – Metal interlinking blocks                                                    |                                                    |                                                                                                                       |                                                    |                        |  |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------|--|
| Wiring                                                                                        |                                                    | Pin                                                                                                                   | Assignment                                         |                        |  |
| Round plug, 5-pin                                                                             |                                                    |                                                                                                                       |                                                    |                        |  |
| <div></div>   |                                                    | <div><div>M12</div><div></div></div> |                                                    |                        |  |
|                                                                                               |                                                    | 1                                                                                                                     | 24 V DC supply voltage for electronics and sensors |                        |  |
|                                                                                               |                                                    | 2                                                                                                                     | 0 V valves and outputs                             |                        |  |
|                                                                                               |                                                    | 3                                                                                                                     | 0 V electronics and sensors                        |                        |  |
|                                                                                               |                                                    | 4                                                                                                                     | 24 V DC load voltage supply for valves and outputs |                        |  |
|                                                                                               |                                                    | FE                                                                                                                    | FE                                                 |                        |  |
| Ordering data                                                                                 |                                                    |                                                                                                                       |                                                    |                        |  |
| Designation                                                                                   |                                                    |                                                                                                                       | Part no.                                           | Type                   |  |
| Interlinking block with forwarding supply                                                     |                                                    |                                                                                                                       |                                                    |                        |  |
| <div></div> | M12x1 L-coded connection, metal interlinking block | 5-pin                                                                                                                 | 8098391                                            | CPX-M-GE-EV-W-M12-5POL |  |
| Power supply plugs M12                                                                        |                                                    |                                                                                                                       |                                                    |                        |  |
| <div></div> | Straight plug, screw terminal                      | 5-pin                                                                                                                 | 8166791                                            | NECL-S-L12G5-C2-Q10    |  |
| <div></div> | Angled plug, screw terminal                        | 5-pin                                                                                                                 | 8166792                                            | NECL-S-L12W5-C2-Q10    |  |

## Datasheet – Pneumatic interface for valve terminal MPA-S

### Function

The pneumatic interface VMPA-FB establishes the electromechanical connection between the CPX terminal and the valve terminal MPA-S.

The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA-S via the integrated CPX bus.

The bus signal for activating the solenoid coils is converted in the electronics module for max. 8 coils.

From a technical point of view, the individual MPA pneumatic modules each represent a separate electrical module with digital outputs. Valves, which are galvanically isolated, can be supplied with power via the interlinking block CPX-GE-EV-V.

### Application area

- Interface to the valve terminal MPA-S
- Max. 128 solenoid coils
- Characteristics of the electronics module of the valve terminal MPA-S can be parameterised; for example, status of the solenoid coils in the event of fieldbus communication being interrupted (fail-safe), individual channel diagnostics can be activated, condition monitoring can be activated individually for each valve
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block and feeds them through to the electronics modules of the valve terminal MPA-S
- Electronics modules of the valve terminal MPA-S:
  - Undervoltage of valves
  - Short circuit of valves
  - Open load of valves
  - Counter preset reached in condition monitoring



| General technical data            |       |                                   |               |
|-----------------------------------|-------|-----------------------------------|---------------|
| Type                              |       | VMPA-FB-EPL-G                     | VMPA-FB-EPL-E |
| Valve terminal design             |       | Modular, valve sizes can be mixed |               |
| Maximum number of valve positions |       | 64                                |               |
| Maximum number of pressure zones  |       | 17                                |               |
| Signal status indication          |       | LED                               |               |
| Pilot air supply                  |       | Internal                          | External      |
| Operating pressure                | [MPa] | 0.3 ... 0.8                       | –0.09 ... 1   |
|                                   | [bar] | 3 ... 8                           | –0.9 ... 10   |
| Pilot pressure                    | [MPa] | 0.3 ... 0.8                       | 0.3 ... 0.8   |
|                                   | [bar] | 3 ... 8                           | 3 ... 8       |
| Product weight                    | [g]   | 320                               |               |
| Degree of protection              |       | IP67                              |               |

| Technical data – Electrics       |        |     |
|----------------------------------|--------|-----|
| Nominal operating voltage        | [V DC] | 24  |
| Permissible voltage fluctuations | [%]    | ±25 |

| Materials              |                   |
|------------------------|-------------------|
| Note on materials      | RoHS-compliant    |
| LABS (PWIS) conformity | VDMA24364-B1/B2-L |



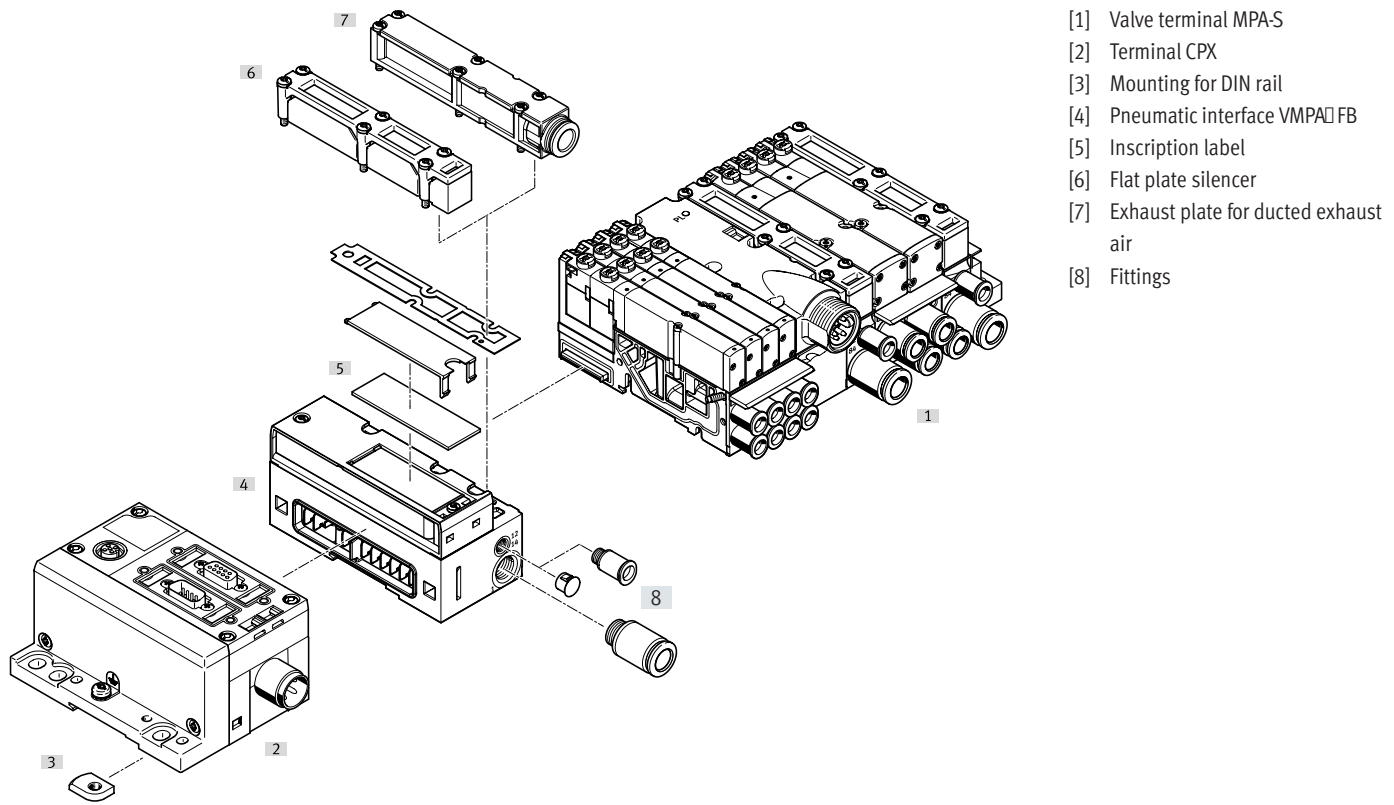
Accessories – Pneumatic interface for valve terminal MPA-S

| Operating and environmental conditions       |      |                                                                                            |
|----------------------------------------------|------|--------------------------------------------------------------------------------------------|
| Operating medium                             |      | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |
| Note on the operating/pilot medium           |      | Lubricated operation possible (in which case lubricated operation will always be required) |
| Ambient temperature                          | [°C] | –5 ... +50                                                                                 |
| Temperature of medium                        | [°C] | –5 ... +50                                                                                 |
| Storage temperature                          | [°C] | –20 ... +40                                                                                |
| Relative humidity                            |      | Max. 90% at 40 °C                                                                          |
| Corrosion resistance class CRC <sup>1)</sup> |      | 1                                                                                          |
| CE marking (see declaration of conformity)   |      | To EU EMC Directive <sup>2)</sup>                                                          |
|                                              |      | To EU RoHS Directive                                                                       |
|                                              |      | To EU Explosion Protection Directive (ATEX)                                                |
| UKCA marking (see declaration of conformity) |      | To UK EMC regulations                                                                      |
|                                              |      | To UK RoHS regulations                                                                     |
|                                              |      | To UK explosion regulations                                                                |
| KC marking                                   |      | KC EMC                                                                                     |
| Certification                                |      | RCM                                                                                        |
|                                              |      | c UL us – Recognized (OL)                                                                  |
| Certificate-issuing authority                |      | DNV 15.0193 X                                                                              |

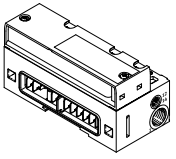
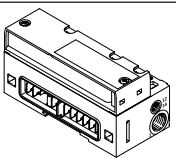
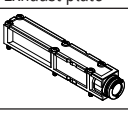
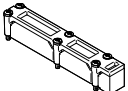
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)  
2) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d/Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).  
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

| ATEX                                              |      |                   |
|---------------------------------------------------|------|-------------------|
| ATEX category for gas                             |      | II 3G             |
| Type of ignition protection for gas               |      | Ex ec IIC T4 Gc X |
| Explosion-proof ambient temperature               | [°C] | –5 ≤ Ta ≤ +50     |
| Explosion protection certification outside the EU |      | EPL Db (GB)       |
|                                                   |      | EPL Gb (GB)       |

Overview – Pneumatic interface VMPA-FB



## Accessories – Pneumatic interface for valve terminal MPA-S

| Ordering data                                                                     |                                                      |          |                 |
|-----------------------------------------------------------------------------------|------------------------------------------------------|----------|-----------------|
| Designation                                                                       |                                                      | Part no. | Type            |
| Pneumatic interface for CPX polymer interlinking module                           |                                                      |          |                 |
|  | Ducted exhaust air, internal pilot air               | 533370   | VMPA-FB-EPL-G   |
|                                                                                   | Ducted exhaust air, external pilot air               | 533369   | VMPA-FB-EPL-E   |
|                                                                                   | Flat plate silencer, internal pilot air              | 533372   | VMPA-FB-EPL-GU  |
|                                                                                   | Flat plate silencer, external pilot air              | 533371   | VMPA-FB-EPL-EU  |
| Pneumatic interface for CPX metal interlinking module                             |                                                      |          |                 |
|  | Ducted exhaust air, internal pilot air               | 552286   | VMPA-FB-EPLM-G  |
|                                                                                   | Ducted exhaust air, external pilot air               | 552285   | VMPA-FB-EPLM-E  |
|                                                                                   | Flat plate silencer, internal pilot air              | 552288   | VMPA-FB-EPLM-GU |
|                                                                                   | Flat plate silencer, external pilot air              | 552287   | VMPA-FB-EPLM-EU |
| Exhaust plate                                                                     |                                                      |          |                 |
|  | For ducted exhaust air, with 10 mm push-in connector | 533375   | VMPA-AP         |
|                                                                                   | For ducted exhaust air, with QS-3/8 connector        | 541629   | VMPA-AP-3/8     |
|  | Flat plate silencer                                  | 533374   | VMPA-APU        |

Datasheet – Pneumatic interface for valve terminal MPA-L

Function

The pneumatic interface VMPAL establishes the electromechanical connection between the terminal CPX and the valve terminal MPA-L.

The bus signal for actuating the solenoid coils is converted in the pneumatic interface for the entire valve terminal.

The interlinking within the valve terminal is identical with the interlinking with multi-pin plug connections.

Application area

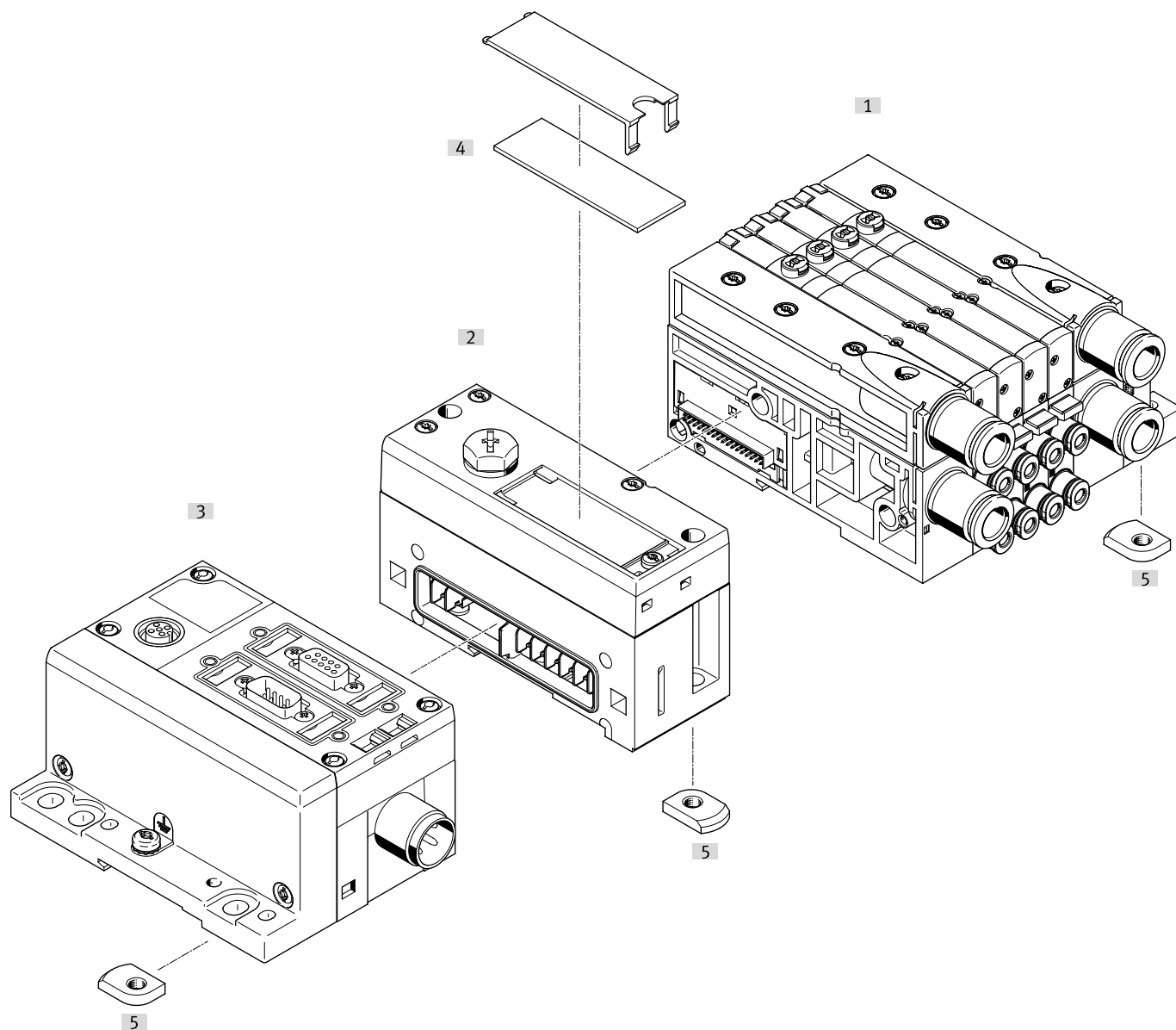
- Interface to the valve terminal MPA-L
- Max. 32 solenoid coils
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block and feeds them through to the electrical modules of the valve terminal MPA-L



| General technical data           |        |                   |
|----------------------------------|--------|-------------------|
| Type                             |        | VMPAL-EPL-CPX     |
| Number of valve coils            |        | 32                |
| Operating pressure               | [bar]  | –0.9 ... 10       |
| Pilot pressure                   | [bar]  | 3 ... 8           |
| Nominal operating voltage        | [V DC] | 24                |
| Degree of protection to EN 60529 |        | IP67              |
| Ambient temperature              | [°C]   | –5 ... +50        |
| Note on materials                |        | RoHs-compliant    |
| LABS (PWS) conformity            |        | VDMA24364-B1/B2-L |

# Datasheet – Pneumatic interface for valve terminal MPA-L

## Overview – Pneumatic interface VMPAL



[1] Valve terminal MPA-L  
[2] Pneumatic interface VMPAL

[3] Terminal CPX

[4] Inscription label

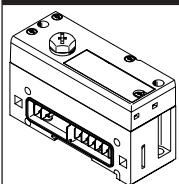
[5] Mounting for DIN rail

### Ordering data

Designation

Part no.

Type



Pneumatic interface for CPX polymer interlinking module

**570783**

**VMPAL-EPL-CPX**

## Datasheet – Pneumatic interface for valve terminal VTSA/VTSA-F

### Function

The pneumatic interface VTSA provides the electromechanical connection between the terminal CPX and valve terminal VTSA/VTSA-F.

A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the CPX terminal.

Different circuits for valves and electrical outputs are implemented using an additional supply. The integrated valve diagnostics enable the causes of errors to be identified quickly, thus increasing system availability.

### Application area

- Interface to the valve terminal VTSA and VTSA-F
- Max. 32 solenoid coils
- Address space allocation (configuration) of valve terminals can be set using integrated DIL switches
- Properties of the pneumatic interface can be parameterised, e.g. status of the solenoid coil in the event of fieldbus communication being interrupted (fail-safe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left interlinking block
- Detecting missing solenoid coils and short circuit monitoring for the valves



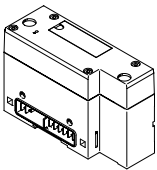
### General technical data

|                                                            |             |                                                     |
|------------------------------------------------------------|-------------|-----------------------------------------------------|
| Max. number of valve positions                             |             | 16 with double solenoid valves                      |
|                                                            |             | 32 with single solenoid valves                      |
| Valve terminal interface                                   |             | Type 44, VTSA                                       |
| Electrical control                                         |             | Fieldbus                                            |
| Electrical connection                                      |             | Via CPX                                             |
| Diagnostics                                                |             | Undervoltage of valves                              |
| Parameterisation                                           |             | Fail-safe per channel                               |
|                                                            |             | Forcing per channel                                 |
|                                                            |             | Idle mode per channel                               |
|                                                            |             | Module monitoring                                   |
| LED indicators                                             |             | 1 group diagnostics                                 |
|                                                            |             | Channel status on valves                            |
| Fuse protection (short circuit)                            |             | Internal electronic fuse per valve output           |
| Galvanic isolation channel – internal bus                  |             | Yes, when using an additional supply for the valves |
| Nominal operating voltage                                  | [V DC]      | 24                                                  |
| Operating voltage range                                    | [V DC]      | 21.6 ... 26.4                                       |
| Intrinsic current consumption at nominal operating voltage | Electronics | [mA] Typically 15                                   |
|                                                            | Valves      | [mA] Typically 50                                   |
| Max. power supply per channel                              | [A]         | 0.2                                                 |
| Max. total current per module                              | [A]         | 4                                                   |
| Degree of protection                                       |             | IP65                                                |
|                                                            |             | NEMA 4                                              |
| Product weight                                             | [g]         | 590                                                 |

## Datasheet – Pneumatic interface for valve terminal VTSA/VTSA-F

| Materials                              |      |                    |
|----------------------------------------|------|--------------------|
| Housing                                |      | Die-cast aluminium |
| Cover                                  |      | PA                 |
| Note on materials                      |      | RoHs-compliant     |
| LABS (PWIS) conformity                 |      | VDMA24364-B1/B2-L  |
| Operating and environmental conditions |      |                    |
| Ambient temperature                    | [°C] | –5 ... +50         |
| Corrosion resistance class CRC1)       |      | 0                  |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

| Ordering data                                                                     |                                |                                    |                       |
|-----------------------------------------------------------------------------------|--------------------------------|------------------------------------|-----------------------|
| Designation                                                                       |                                | Part no.                           | Type                  |
|  | For polymer interlinking block |                                    | 543416 VABA-S6-1-X1   |
|                                                                                   | For metal interlinking block   | Diagnostics via fieldbus           | 550663 VABA-S6-1-X2   |
|                                                                                   |                                | Diagnostics via process data image | 573613 VABA-S6-1-X2-D |

Datasheet – Pneumatic interface for valve terminal VTSA-F-CB

Function

The pneumatic interface provides the electromechanical connection between the terminal CPX and valve terminal VTSA-F-CB.

A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the CPX terminal.

Different circuits for valves and electrical outputs are implemented using an additional supply. The integrated valve diagnostics enable the causes of errors to be identified quickly, thus increasing system availability.

Application area

- Interface to the valve terminal VTSA-F-CB
- Max. 24 solenoid coils
- Properties of the pneumatic interface can be parameterised, e.g. status of the solenoid coil in the event of fieldbus communication being interrupted (fail-safe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block
- The supply voltage for the valves is provided from the left-hand interlinking block or externally
- Detecting missing solenoid coils and short circuit monitoring for the valves



| General technical data                        |                       | Pneumatic interface            |                                  |                                          |
|-----------------------------------------------|-----------------------|--------------------------------|----------------------------------|------------------------------------------|
|                                               |                       | Without voltage zones          | With safe voltage zones          | With external power supply to the valves |
| Max. number of valve positions                |                       | 12 with double solenoid valves |                                  |                                          |
|                                               |                       | 24 with single solenoid valves |                                  |                                          |
| Valve terminal interface                      |                       | Type 44, VTSA                  |                                  |                                          |
| Electrical control                            |                       | Fieldbus                       |                                  |                                          |
| Electrical connection                         |                       | Via CPX                        |                                  |                                          |
| Electrical connection output                  | Function              | –                              | Safe digital output              | –                                        |
|                                               | Connection type       | –                              | Socket                           | –                                        |
|                                               | Connection technology | –                              | M12x1, A-coded to EN 61076-2-101 | –                                        |
|                                               | Number of pins/cores  | –                              | 5                                | –                                        |
| Electrical connection, power supply to valves | Function              | –                              | –                                | –                                        |
|                                               | Connection type       | –                              | –                                | Plug                                     |
|                                               | Connection technology | –                              | –                                | 3x M12x1, A-coded                        |
|                                               | Number of pins/cores  | –                              | –                                | 5                                        |
| Diagnostics                                   |                       | Wire break per valve coil      |                                  |                                          |
|                                               |                       | Short circuit of valves        |                                  |                                          |
|                                               |                       | Undervoltage of valves         |                                  |                                          |
| Parameterisation                              |                       | Fail-safe per channel          |                                  |                                          |
|                                               |                       | Forcing per channel            |                                  |                                          |
|                                               |                       | Idle mode per channel          |                                  |                                          |
|                                               |                       | Module monitoring              |                                  |                                          |
| LED indicators                                |                       | 1 group diagnostics            | 1 group diagnostics              | 1 group diagnostics                      |
|                                               |                       | Channel status on valves       | –                                | Channel status on valves                 |
|                                               |                       | –                              | –                                | 3 load supply                            |

## Datasheet – Pneumatic interface for valve terminal VTSA-F-CB

| Technical data – Electrics                                 |                  | Pneumatic interface                                 |                                                                                                                                                            |                                           |
|------------------------------------------------------------|------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|                                                            |                  | Without voltage zones                               | With safe voltage zones                                                                                                                                    | With external power supply to the valves  |
| Nominal operating voltage                                  | [V DC]           | 24                                                  |                                                                                                                                                            |                                           |
| Operating voltage range                                    | [V DC]           | 21.6 ... 26.4                                       |                                                                                                                                                            |                                           |
| Intrinsic current consumption at nominal operating voltage | Electronics [mA] | Typically 11                                        | <ul style="list-style-type: none"> <li>Typically 45 for electronics without CPX-FVDA-P2</li> <li>Typically 110 for electronics with CPX-FVDA-P2</li> </ul> | Typically 11                              |
|                                                            | Valves [mA]      | Typically 45                                        | <ul style="list-style-type: none"> <li>Typically 25 for valves without CPX-FVDA-P2</li> <li>Typically 90 for valves with CPX-FVDA-P2</li> </ul>            | Typically 45                              |
| Max. power supply per channel                              | [A]              | 0.2                                                 | 0.2                                                                                                                                                        | 0.2                                       |
| Max. total current per module                              | [A]              | 6                                                   | 4.5                                                                                                                                                        | 6                                         |
| Fuse protection (short circuit)                            |                  | Internal electronic fuse per valve output           | Internal electronic fuse per valve output                                                                                                                  | Internal electronic fuse per valve output |
| Galvanic isolation channel – internal bus                  |                  | Yes, when using an additional supply for the valves | Yes, when using an additional supply for the valves                                                                                                        | Yes                                       |

| Materials              |  | Pneumatic interface   |                         |                                          |
|------------------------|--|-----------------------|-------------------------|------------------------------------------|
|                        |  | Without voltage zones | With safe voltage zones | With external power supply to the valves |
| Housing                |  | Die-cast aluminium    | –                       | Die-cast aluminium                       |
| Cover                  |  | PA                    | PA                      | PA                                       |
| Sub-base               |  | –                     | Die-cast aluminium      | –                                        |
| Seals                  |  | –                     | NBR                     | –                                        |
| Screws                 |  | –                     | Steel                   | –                                        |
| Note on materials      |  | RoHS-compliant        | RoHS-compliant          | RoHS-compliant                           |
| LABS (PWIS) conformity |  | VDMA24364-B1/B2-L     | VDMA24364-B1/B2-L       | VDMA24364-B1/B2-L                        |

| Operating and environmental conditions                     |      | Pneumatic interface   |                                                                                  |                                          |
|------------------------------------------------------------|------|-----------------------|----------------------------------------------------------------------------------|------------------------------------------|
|                                                            |      | Without voltage zones | With safe voltage zones                                                          | With external power supply to the valves |
| Ambient temperature                                        | [°C] | –5 ... +50            | –5 ... +50                                                                       | –5 ... +50                               |
| Storage temperature                                        | [°C] | –                     | –20 ... +60                                                                      | –                                        |
| Corrosion resistance class CRC1)                           |      | 0                     | 0                                                                                | 0                                        |
| Shock resistance                                           |      | –                     | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                | –                                        |
| Vibration resistant                                        |      | –                     | Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6 | –                                        |
| CE marking (see declaration of conformity) <sup>3)</sup>   |      | –                     | To EU EMC Directive <sup>2)</sup>                                                | –                                        |
|                                                            |      | –                     | To EU RoHS Directive                                                             | –                                        |
| UKCA marking (see declaration of conformity) <sup>3)</sup> |      | –                     | To UK EMC regulations                                                            | –                                        |
|                                                            |      | –                     | To UK RoHS regulations                                                           | –                                        |
| Degree of protection                                       |      | IP65                  | IP65                                                                             | IP65                                     |
|                                                            |      | NEMA 4                | –                                                                                | NEMA 4                                   |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)2) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d/Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

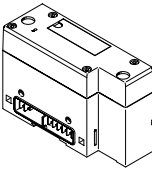
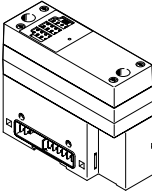
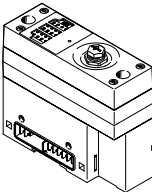
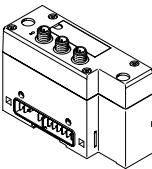
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) More information [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.



## Datasheet – Pneumatic interface for valve terminal VTSA-F-CB

| Combinations of bus nodes/control blocks with pneumatic interface |                |                     |                |                   |                   |
|-------------------------------------------------------------------|----------------|---------------------|----------------|-------------------|-------------------|
| Bus node/control block                                            | Part no.       | Pneumatic interface |                |                   |                   |
|                                                                   |                | VABA-...-X1-CB      | VABA-...-X2-CB | VABA-...-X2-F1-CB | VABA-...-X2-F2-CB |
| CPX-FB13                                                          | <b>195740</b>  | ■                   | ■              | ■                 | ■                 |
| CPX-FB36                                                          | <b>1912451</b> | ■                   | ■              | —                 | —                 |
| CPX-FB37                                                          | <b>2735960</b> | ■                   | ■              | —                 | —                 |
| CPX-FB43                                                          | <b>8110369</b> | ■                   | ■              | ■                 | ■                 |
| CPX-M-FB44                                                        | <b>8110370</b> | ■                   | ■              | ■                 | ■                 |

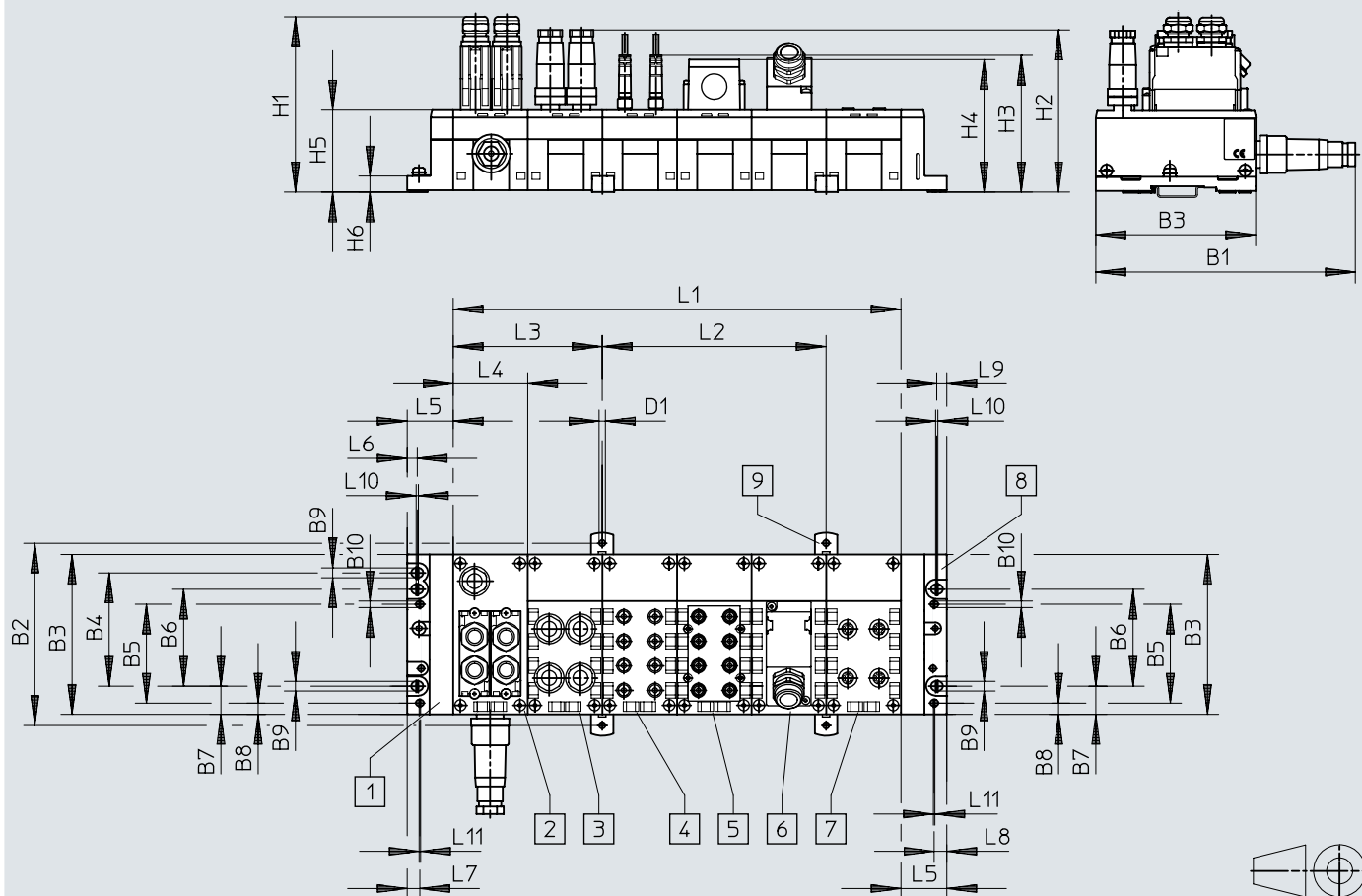
| Ordering data                                                                      |                                |                                                                                                                                                                     |          |                 |                    |
|------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|--------------------|
|                                                                                    | Description                    | Product weight<br>[g]                                                                                                                                               | Part no. | Type            |                    |
| Pneumatic interface without voltage zones                                          |                                |                                                                                                                                                                     |          |                 |                    |
|    | For polymer interlinking block | 560                                                                                                                                                                 | 8082877  | VABA-S6-1-X1-CB |                    |
|                                                                                    | For metal interlinking block   | 560                                                                                                                                                                 | 8082876  | VABA-S6-1-X2-CB |                    |
| Pneumatic interface with voltage zones                                             |                                |                                                                                                                                                                     |          |                 |                    |
|   | For metal interlinking block   | Division of the connected valves into up to 3 safe voltage zones                                                                                                    | 734      | 8068240         | VABA-S6-1-X2-F1-CB |
|  | For metal interlinking block   | <ul style="list-style-type: none"><li>• Division of the connected valves into up to 2 safe voltage zones</li><li>• 1 external safe voltage zone</li></ul>           | 754      | 8068241         | VABA-S6-1-X2-F2-CB |
|  | For polymer interlinking block | <ul style="list-style-type: none"><li>• Division of the connected valves into up to 3 voltage zones</li><li>• External power supply for each voltage zone</li></ul> | 580      | 8082879         | VABA-S6-1-X1-3V-CB |
|                                                                                    | For metal interlinking block   | <ul style="list-style-type: none"><li>• Division of the connected valves into up to 3 voltage zones</li><li>• External power supply for each voltage zone</li></ul> | 580      | 8082878         | VABA-S6-1-X2-3V-CB |

## Datasheet

## Dimensions – Polymer interlinking module

Download CAD data → [www.festo.com](http://www.festo.com)

With bus nodes and connection blocks



[1] Left end plate (earthing plate optional)

[2] Bus node

[3] Connection block CPX-AB-4-M12-8POL

[4] Connection block CPX-AB-8-M8-3POL

[5] Connection block CPX-AB-8-KL-4POL

[6] Connection block CPX-AB-1-SUB-BU-25POL

[7] Connection block CPX-AB-4-M12-8POL

[8] Right end plate

[9] Mounting clip for wall mounting (required every 2 ... 3 connection blocks)

n Number of CPX modules

| Type  | B1  | B2    | B3    | B4 | B5   | B6 | B7   | B8  | B9  | B10 | D1<br>Ø |
|-------|-----|-------|-------|----|------|----|------|-----|-----|-----|---------|
| CPX-M | 175 | 122.3 | 107.3 | 78 | 66.3 | 65 | 18.9 | 7.5 | 6.6 | 4.4 | 4.3     |

| Type  | H1  | H2  | H3 | H4   | H5   | H6   |
|-------|-----|-----|----|------|------|------|
| CPX-M | 118 | 110 | 92 | 89.1 | 55.1 | 10.8 |

| Type  | L1 <sup>1)</sup> | L2    | L3 <sup>2)</sup> | L4   | L5 <sup>3)</sup> | L6  | L7  | L8  | L9  | L10 | L11 |
|-------|------------------|-------|------------------|------|------------------|-----|-----|-----|-----|-----|-----|
| CPX-M | nx50.1           | 150.3 | 100.2            | 50.1 | 30.8             | 7.1 | 8.8 | 8.5 | 6.8 | 1.5 | 1   |

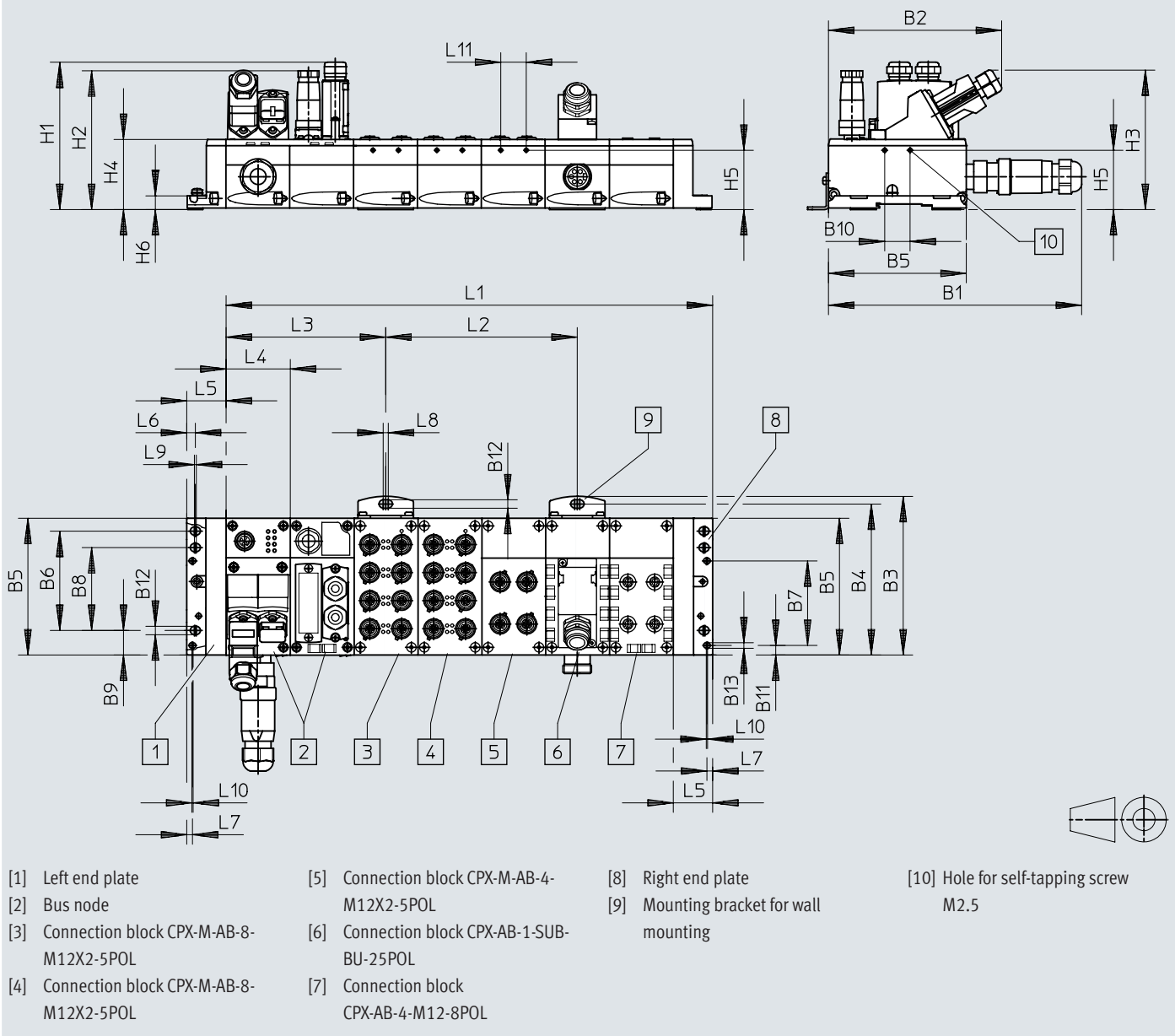
1) n = Number of CPX modules

Datasheet

Dimensions – Metal interlinking block

Download CAD data → [www.festo.com](http://www.festo.com)

With bus nodes and connection blocks



| Type  | B1  | B2  | B3    | B4     | B5    | B6    | B7   | B8 | B9    | B10 | B11 | B12 | B13 |
|-------|-----|-----|-------|--------|-------|-------|------|----|-------|-----|-----|-----|-----|
| CPX-M | 199 | 136 | 124.9 | 118.85 | 108.1 | 77.95 | 66.3 | 65 | 19.25 | 20  | 7.9 | 6.6 | 4.4 |

| Type  | H1  | H2  | H3    | H4   | H5    | H6   |
|-------|-----|-----|-------|------|-------|------|
| CPX-M | 116 | 109 | 109.5 | 55.1 | 46.55 | 10.8 |

| Type  | L1 <sup>1)</sup> | L2    | L3 <sup>2)</sup> | L4   | L5 <sup>3)</sup> | L6   | L7  | L8 | L9  | L10 | L11 |
|-------|------------------|-------|------------------|------|------------------|------|-----|----|-----|-----|-----|
| CPX-M | nx50.1+30.4      | 150.3 | 125.25           | 50.1 | 30.4             | 6.75 | 4.5 | 4  | 1.5 | 1   | 20  |

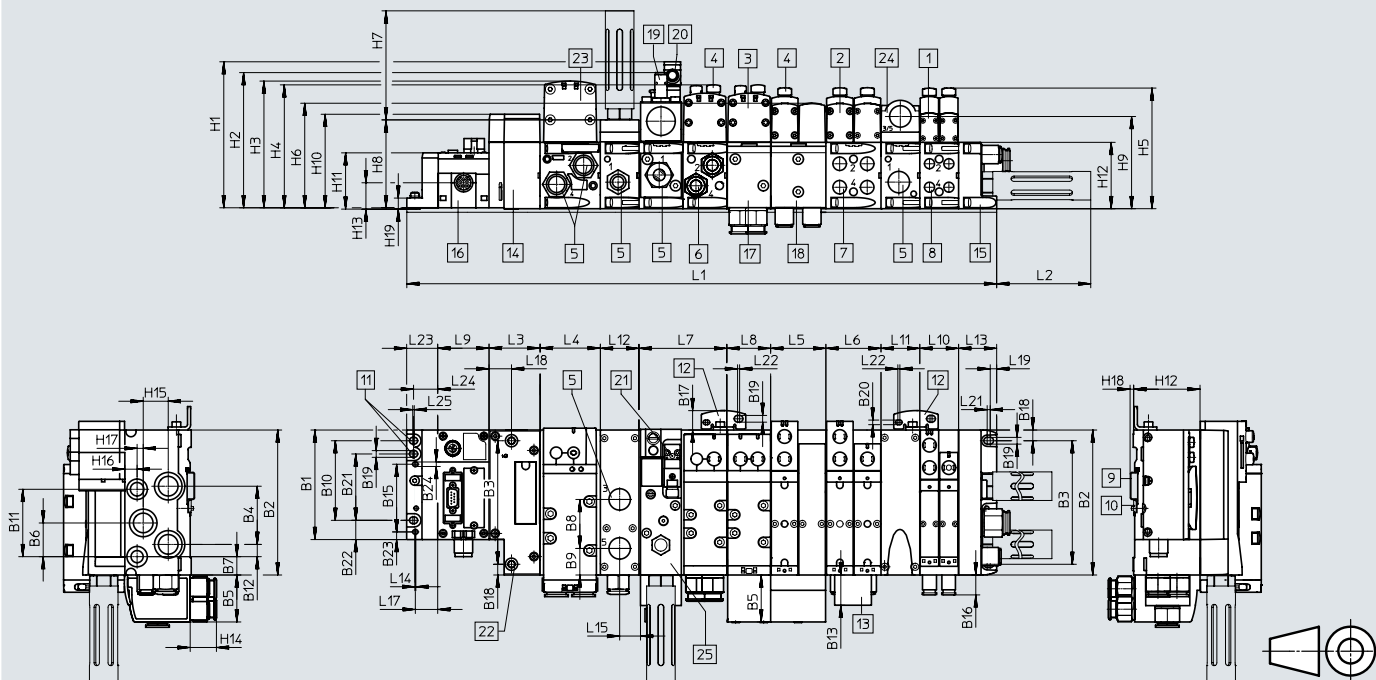
1) n = Number of CPX modules

## Datasheet

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

With bus node and valve terminal VTSA/VTSA-F/VTSA-F-CB



- [1] Solenoid valve, width 18 mm
- [2] Solenoid valve, width 26 mm
- [3] Solenoid valve, width 42 mm
- [4] Cover cap/manual override
- [5] Threaded connection G1/2
- [6] Threaded connection G3/8

- [7] Threaded connection G1/4
- [8] Threaded connection G1/8
- [9] DIN rail
- [10] DIN rail mounting
- [11] Mounting hole
- [12] Additional mounting bracket
- [13] Inscription label holder
- [14] Pneumatic interface CPX
- [15] End plate

- [16] CPX module/bus node
- [17] Angled connection plate 43 mm, G3/8
- [18] Angled connection plate 54 mm, G1/4
- [19] Proximity switch M12x1
- [20] Plug socket M12x1
- [21] Electrical connection to EN 175301-803, type C

- [22] Additional mounting bracket
- [23] Hole for additional mounting, diameter 6.4 2x
- [24] Solenoid valve, width 52 mm
- [25] Supply plate
- [26] Soft-start valve

| Dim. | B1    | B2  | B3  | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13  | B14 | B16  | B18  | B19 | B20 | B21 | B22  | B23 | B24 |
|------|-------|-----|-----|----|----|----|----|----|----|-----|-----|-----|------|-----|------|------|-----|-----|-----|------|-----|-----|
| [mm] | 107.3 | 142 | 121 | 57 | 46 | 33 | 18 | 48 | 26 | 78  | 66  | 12  | 29.6 | 23  | 19.5 | 10.5 | 6.6 | 4.5 | 65  | 18.9 | 7.5 | 4.4 |

| Dim. | L2   | L3 | L4    | L5     | L6 | L7    | L8 | L9       | L10    | L11    | L12 | L13  | L14 | L15  | L17 | L18 | L19 | L20 | L21 | L22 |
|------|------|----|-------|--------|----|-------|----|----------|--------|--------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|
| [mm] | 92.4 | 50 | n2x59 | n01x54 | 54 | n1x43 | 43 | m x 50.1 | n02x38 | n x 38 | 38  | 37.3 | 1   | 20.5 | 22  | 22  | 6.3 | 5.5 | 3   | 2   |

| Dim. | L23  | L24  | L25 | H1    | H2    | H3  | H4    | H5    | H6  | H7    | H8 | H9   | H10  | H11  | H12 | H13  | H14  | H15  | H16 | H17 | H18 | H19  |
|------|------|------|-----|-------|-------|-----|-------|-------|-----|-------|----|------|------|------|-----|------|------|------|-----|-----|-----|------|
| [mm] | 30.4 | 23.7 | 1.5 | 143.9 | 133.3 | 125 | 121.3 | 118.2 | 103 | 106.8 | 87 | 90.3 | 92.9 | 55.1 | 65  | 25.8 | 25.7 | 24.5 | 12  | 6   | 3.5 | 10.8 |

| Width                                        | L1 <sup>1)</sup>                                                                                               |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 18 mm                                        | $30.4 + m \times 50.1 + 50 + n02 \times 38 + n \times 38 + 37.3$                                               |
| 26 mm                                        | $30.4 + m \times 50.1 + 50 + n01 \times 54 + n \times 38 + 37.3$                                               |
| 42 mm                                        | $30.4 + m \times 50.1 + 50 + n1 \times 43 + n \times 38 + 37.3$                                                |
| 52 mm                                        | $30.4 + m \times 50.1 + 50 + n2 \times 59 + n \times 38 + 37.3$                                                |
| Combination of 18 mm, 26 mm, 42 mm and 52 mm | $30.4 + m \times 50.1 + 50 + n02 \times 38 + n01 \times 54 + n1 \times 43 + n2 \times 59 + n \times 38 + 37.3$ |

- 1) N02 Number of manifold sub-bases 38 mm
- N01 Number of manifold sub-bases 54 mm
- N1 Number of manifold sub-bases 43 mm

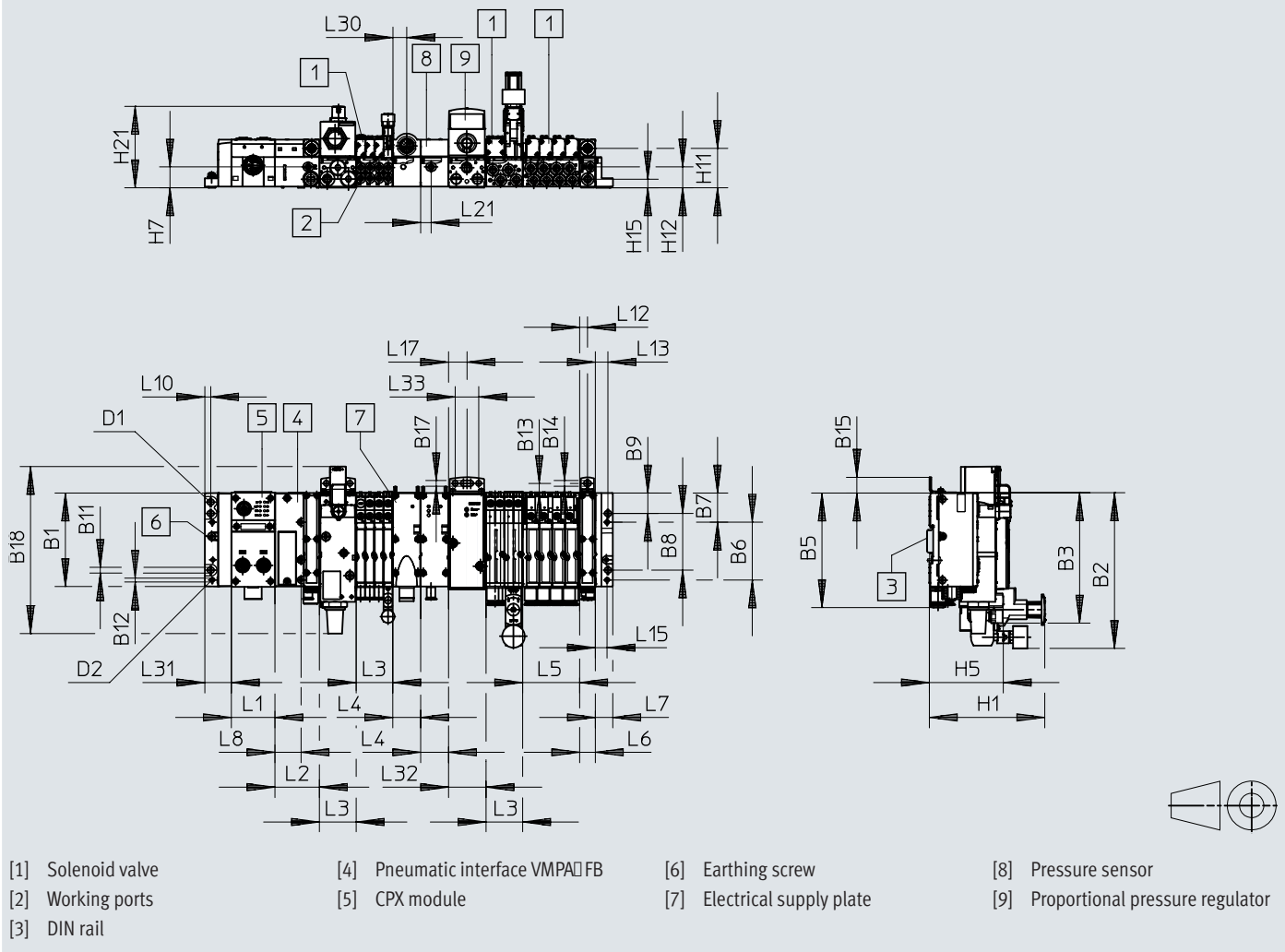
- N2 Number of manifold sub-bases 59 mm
- n Number of supply plates (only with end plate with pilot air selector)
- m Number of CPX modules

• Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – With bus nodes and valve terminals MPA-S

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| Type  | B1    | B2  | B3    | B5  | B6   | B7   | B8 | B9   | B11 | B12 | B13 | B14 | B15 | B17 |
|-------|-------|-----|-------|-----|------|------|----|------|-----|-----|-----|-----|-----|-----|
| MPA-S | 107.3 | 178 | 149.2 | 129 | 66.4 | 33.5 | 65 | 23.5 | 6.6 | 4.4 | 11  | 6.6 | 18  | 6.6 |

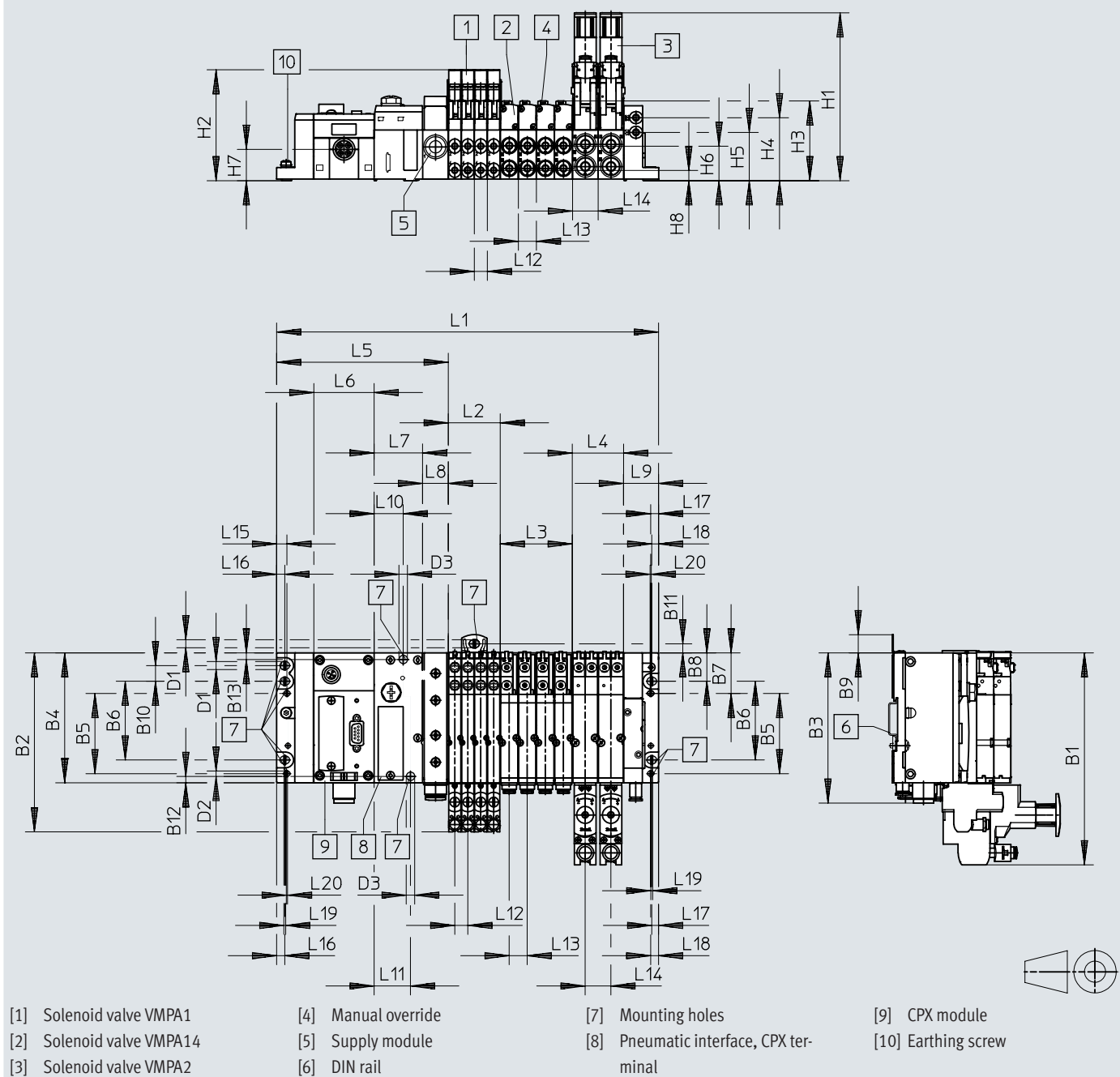
| Type  | D2 | H1    | H5   | H7   | H11  | H12  | H15 | H21  | L1 <sup>1)</sup> | L2   | L3 <sup>2)</sup> | L4 | L5 <sup>3)</sup> | L6   |
|-------|----|-------|------|------|------|------|-----|------|------------------|------|------------------|----|------------------|------|
| MPA-S | M4 | 132.3 | 84.9 | 23.9 | 45.1 | 23.9 | 9.8 | 93.4 | m x 50.1         | 51.3 | n x 42           | 32 | o x 65.5         | 17.9 |

| Type  | L7 | L8 | L10 | L12 | L13  | L14 | L15  | L17 | L21  | L30  | L31  | L32 | L33 |
|-------|----|----|-----|-----|------|-----|------|-----|------|------|------|-----|-----|
| MPA-S | 20 | 30 | 6.8 | 9   | 14.5 | 1.5 | 13.5 | 21  | 11.9 | 15.8 | 30.4 | 42  | 27  |

1) m = Number of CPX modules  
2) n = Number of sub-bases with 4 valve positions (width 10 mm) or 2 valve positions (width 20 mm)  
3) o = number of sub-bases with 4 valve positions (width 14 mm)

## Datasheet

## Dimensions – With bus nodes and valve terminals MPA-L

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| Type  | L1 <sup>1)</sup>      | L2 <sup>1)</sup> | L3 <sup>1)</sup> | L4 <sup>1)</sup> | L5  | L6 | L7   | L8   | L9   |
|-------|-----------------------|------------------|------------------|------------------|-----|----|------|------|------|
| MPA-L | 170.65 + L2 + L3 + L4 | m x 10.7         | n x 14.9         | o x 21.2         | 142 | 50 | 40.1 | 21.2 | 28.8 |

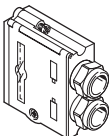
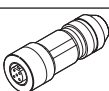
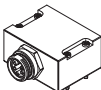
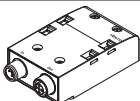
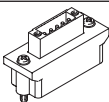
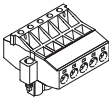
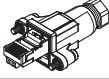
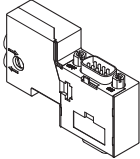
| Type  | L10 | L11 | L12  | L13  | L14  | L15 | L16  | L17  | L18 | L19 | L20 |
|-------|-----|-----|------|------|------|-----|------|------|-----|-----|-----|
| MPA-L | 24  | 30  | 10.7 | 14.9 | 21.2 | 8.5 | 6.75 | 5.55 | 6.5 | 1.5 | 1   |

| Type  | B1    | B2    | B3  | B4    | B5   | B6 | B7   | B8    | B9 | B10   | B11 | B12  | B13 |
|-------|-------|-------|-----|-------|------|----|------|-------|----|-------|-----|------|-----|
| MPA-L | 175.1 | 147.8 | 124 | 107.3 | 66.3 | 65 | 33.5 | 23.45 | 15 | 12.95 | 7.5 | 5.25 | 5.5 |

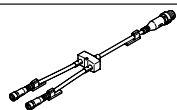
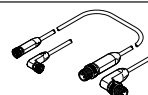
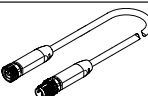
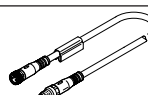
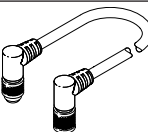
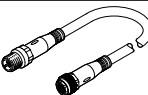
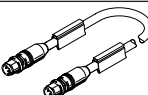
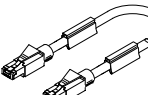
| Type  | D1  | D2  | D3 | H1    | H2   | H3   | H4 | H5   | H6   | H7   | H8  |
|-------|-----|-----|----|-------|------|------|----|------|------|------|-----|
| MPA-L | 6.6 | 4.4 | 7  | 138.7 | 92.6 | 65.7 | 52 | 39.8 | 28.5 | 25.8 | 8.5 |

1) m, n, o = number of sub-bases/valve positions (m = width 10 mm, n = width 14 mm, o = width 20 mm)

## Accessories

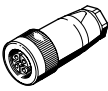
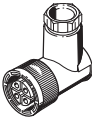
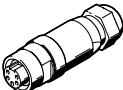
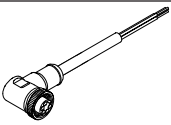
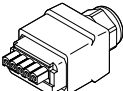
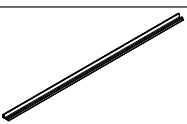
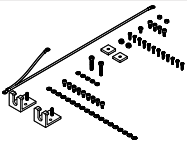
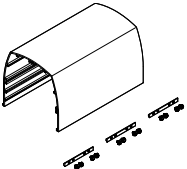
| Ordering data – Accessories                                                        |                                                                           |                |                                        |                 | Part no. | Type                    |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------|----------------------------------------|-----------------|----------|-------------------------|
| Designation                                                                        |                                                                           |                |                                        |                 |          |                         |
| Plug connectors and accessories                                                    |                                                                           |                |                                        |                 |          |                         |
|    | Sub-D plug for DeviceNet®/CANopen                                         |                |                                        |                 | 532219   | FBS-SUB-9-BU-2x5POL-B   |
|                                                                                    | Sub-D plug for PROFIBUS DP                                                |                |                                        |                 | 532216   | FBS-SUB-9-GS-DP-B       |
|                                                                                    | Sub-D plug for CC-Link®                                                   |                |                                        |                 | 532220   | FBS-SUB-9-GS-2x4POL-B   |
|                                                                                    | Sub-D plug                                                                |                |                                        |                 | 534497   | FBS-SUB-9-GS-1x9POL-B   |
|    | Bus connection M12 adapter (B-coded) for PROFIBUS DP                      |                |                                        |                 | 533118   | FBA-2-M12-5POL-RK       |
|                                                                                    | Micro style bus connection, 2xM12 for DeviceNet/CANopen                   |                |                                        |                 | 525632   | FBA-2-M12-5POL          |
|    | For micro style connection, M12                                           | Socket         | For cable Ø 3.8 ... 9 mm               |                 | 8162291  | NECB-M12G5-C2           |
|                                                                                    |                                                                           | Plug           | For cable Ø 2.1 ... 7 mm               |                 | 8162296  | NECB-S-M12G5-C2         |
|                                                                                    | Bus connection M12x1, 4-pin (D-coded) for Ethernet                        |                |                                        |                 | 543109   | NECU-M-S-D12G4-C2-ET    |
|                                                                                    | For FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP, M12x1, 5-pin, straight      |                |                                        | Socket          | 1067905  | NECU-M-B12G5-C2-PB      |
|                                                                                    |                                                                           |                |                                        | Plug            | 1066354  | NECU-M-S-B12G5-C2-PB    |
|                                                                                    | Plug M12x1, 4-pin, straight, A-coded                                      | Screw terminal | For cable Ø 2.1 ... 7 mm               |                 | 8162294  | NECB-S-M12G4-C2         |
|    | Connection block, Sub-D socket 9-pin, plug 7/8" 5-pin for DeviceNet®      |                |                                        |                 | 571052   | CPX-AB-1-7/8-DN         |
|   | Connection block M12 adapter (B-coded)                                    |                |                                        | For PROFIBUS DP | 541519   | CPX-AB-2-M12-RK-DP      |
|  | Open style bus connection for 5-pin terminal strip for DeviceNet/CANopen  |                |                                        |                 | 525634   | FBA-1-SL-5POL           |
|  | Terminal strip for open style connection, 5-pin                           |                |                                        |                 | 525635   | FBSD-KL-2x5POL          |
|  | RJ45/plug                                                                 |                |                                        |                 | 534494   | FBS-RJ45-8-GS           |
|  | Push-pull with locking mechanism against unintentional pulling            |                | Plug RJ45, 8-pin                       |                 | 5195384  | NECC-M-S-R3G8PP-HX-PN   |
|                                                                                    |                                                                           |                | SC-RJ connector to IEC 61754-24, 2-pin |                 | 5195381  | NOCC-M-S-SCRJG2PP-C5-PN |
|  | Sub-D socket with terminating resistor and programming interface          |                |                                        | For CANopen     | 574588   | NECU-S1W9-C2-ACO        |
|                                                                                    | Sub-D plug, straight, with terminating resistor and programming interface |                |                                        | For PROFIBUS    | 574589   | NECU-S1W9-C2-APB        |

## Accessories

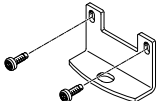
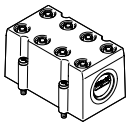
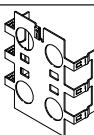
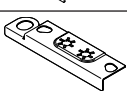
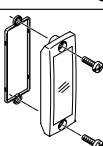
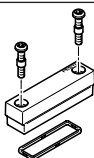
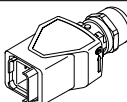
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|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------|----------------------|-----------|------------------------------|
| Designation                                                                         |                                                                              |                                      |                      |           |                              |
| Distributor                                                                         |                                                                              |                                      |                      |           |                              |
|    | Modular system for all types of sensor/actuator distributor                  |                                      |                      | –         | NEDY-...<br>→ Internet: nedy |
|    | Push-in T-connector                                                          | 1x plug M8, 4-pin                    | 2x socket M8, 3-pin  | 8005312   | NEDY-L2R1-V1-M8G3-N-M8G4     |
|                                                                                     |                                                                              | 1x plug M12, 4-pin                   | 2x socket M8, 3-pin  | 8005311   | NEDY-L2R1-V1-M8G3-N-M12G4    |
|                                                                                     |                                                                              |                                      | 2x socket M12, 5-pin | 8005310   | NEDY-L2R1-V1-M12G5-N-M12G4   |
| Connecting cables                                                                   |                                                                              |                                      |                      |           |                              |
|    | Modular system for a choice of connecting cables                             |                                      |                      | –         | NEBA-...<br>→ Internet: neba |
|    | 1x socket M8, 3-pin                                                          | 1x plug M8, 3-pin                    | 0.5 m                | ★ 8078282 | NEBA-M8G3-U-0.5-N-M8G3       |
|                                                                                     |                                                                              |                                      | 1.0 m                | ★ 8078283 | NEBA-M8G3-U-1-N-M8G3         |
|                                                                                     |                                                                              |                                      | 2.5 m                | ★ 8078286 | NEBA-M8G3-U-2.5-N-M8G3       |
|                                                                                     |                                                                              |                                      | 5.0 m                | ★ 8078287 | NEBA-M8G3-U-5-N-M8G3         |
|                                                                                     |                                                                              | Connecting cable M12-M12             | 5-pin                | 1.5 m     | 529044                       |
|                                                                                     |                                                                              |                                      | 3.5 m                | 530901    | KV-M12-M12-3.5               |
|    | Connecting cable for CPX-CTEL, M12-M12, 5-pin, straight plug/straight socket |                                      | 5 m                  | 574321    | NEBU-M12G5-E-5-Q8N-M12G5     |
|                                                                                     |                                                                              |                                      | 7.5 m                | 574322    | NEBU-M12G5-E-7.5-Q8N-M12G5   |
|                                                                                     |                                                                              |                                      | 10 m                 | 574323    | NEBU-M12G5-E-10-Q8N-M12G5    |
|                                                                                     | Connecting cable M12-M12, 8-pin, Straight plug / straight socket             |                                      | 2.0 m                | 525617    | KM12-8GD8GS-2-PU             |
|  | Connecting cable M9, Angled plug / angled socket                             |                                      | 0.25 m               | 540327    | KVI-CP-3-WS-WD-0.25          |
|                                                                                     |                                                                              |                                      | 0.5 m                | 540328    | KVI-CP-3-WS-WD-0.5           |
|                                                                                     |                                                                              |                                      | 2 m                  | 540329    | KVI-CP-3-WS-WD-2             |
|                                                                                     |                                                                              |                                      | 5 m                  | 540330    | KVI-CP-3-WS-WD-5             |
|                                                                                     |                                                                              |                                      | 8 m                  | 540331    | KVI-CP-3-WS-WD-8             |
|  | Connecting cable M9, Straight plug / straight socket                         |                                      | 2 m                  | 540332    | KVI-CP-3-GS-GD-2             |
|                                                                                     |                                                                              |                                      | 5 m                  | 540333    | KVI-CP-3-GS-GD-5             |
|                                                                                     |                                                                              |                                      | 8 m                  | 540334    | KVI-CP-3-GS-GD-8             |
|  | Connecting cable, Straight plug, M12x1, 4-pin, D-coded                       | Straight plug, M12x1, 4-pin, D-coded | 0.5 m                | 8040446   | NEBC-D12G4-ES-0.5-S-D12G4-ET |
|                                                                                     |                                                                              |                                      | 1 m                  | 8040447   | NEBC-D12G4-ES-1-S-D12G4-ET   |
|                                                                                     |                                                                              |                                      | 3 m                  | 8040448   | NEBC-D12G4-ES-3-S-D12G4-ET   |
|                                                                                     |                                                                              |                                      | 5 m                  | 8040449   | NEBC-D12G4-ES-5-S-D12G4-ET   |
|                                                                                     |                                                                              |                                      | 10 m                 | 8040450   | NEBC-D12G4-ES-10-S-D12G4-ET  |
|                                                                                     |                                                                              | Straight plug, RJ45, 8-pin           | 1 m                  | 8040451   | NEBC-D12G4-ES-1-S-R3G4-ET    |
|                                                                                     |                                                                              |                                      | 3 m                  | 8040452   | NEBC-D12G4-ES-3-S-R3G4-ET    |
|                                                                                     |                                                                              |                                      | 5 m                  | 8040453   | NEBC-D12G4-ES-5-S-R3G4-ET    |
|                                                                                     |                                                                              |                                      | 10 m                 | 8040454   | NEBC-D12G4-ES-10-S-R3G4-ET   |
|                                                                                     |                                                                              |                                      |                      | 5 m       | 8040456                      |
|  | Connecting cable, Straight plug, RJ45, 8-pin                                 | Straight plug, RJ45, 8-pin           | 1 m                  | 8040455   | NEBC-R3G4-ES-1-S-R3G4-ET     |



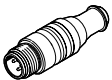
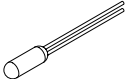
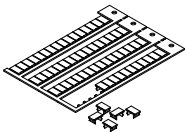
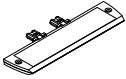
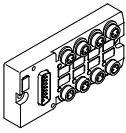
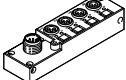
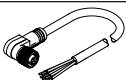
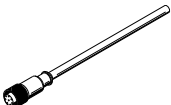
## Accessories

| Ordering data – Accessories                                                                                                                             |                                                                                                             |                                   | Part no. | Type                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------|----------|----------------------|
| Designation                                                                                                                                             |                                                                                                             |                                   |          |                      |
| Plug connectors and accessories – Power supply                                                                                                          |                                                                                                             |                                   |          |                      |
|                                                                         | Plug socket for mains connection M18, straight                                                              | For 1.5 mm2                       | 18493    | NTSD-GD-9            |
|                                                                                                                                                         |                                                                                                             | For 2.5 mm²                       | 18526    | NTSD-GD-13,5         |
|                                                                         | Plug socket for mains connection M18, angled                                                                | For 1.5 mm2                       | 18527    | NTSD-WD-9            |
|                                                                                                                                                         |                                                                                                             | For 2.5 mm²                       | 533119   | NTSD-WD-11           |
|                                                                         | Power supply socket, straight                                                                               | 7/8" connection, 5-pin            | 543107   | NECU-G78G5-C2        |
|                                                                                                                                                         |                                                                                                             | 7/8" connection, 4-pin            | 543108   | NECU-G78G4-C2        |
|  | Power supply socket 7/8", 5-pin, angled socket/open cable end, 5-core                                       | 2 m                               | 573855   | NEBU-G78W5-K-2-N-LE5 |
|                                                                         | Power supply socket M12x1, L-coded, straight                                                                | 5-pin                             | 8166793  | NECL-L12G5-C2-Q10    |
|                                                                                                                                                         | Power supply plug M12x1, L-coded, straight                                                                  | 5-pin                             | 8166791  | NECL-S-L12G5-C2-Q10  |
|                                                                        | Power supply socket M12x1, L-coded, angled                                                                  | 5-pin                             | 8166794  | NECL-L12W5-C2-Q10    |
|                                                                                                                                                         | Power supply plug M12x1, L-coded, angled                                                                    | 5-pin                             | 8166792  | NECL-S-L12W5-C2-Q10  |
|                                                                       | Push-pull power supply socket, plug pattern PP, fulfils requirements to AIDA                                | 5-pin                             | 5195383  | NECU-M-PPG5PP-C1-PN  |
|                                                                       | Straight plug, spring-loaded terminal, for left-hand end plate with system supply                           | 7-pin                             | 576319   | NECU-L3G7-C1         |
| Hood                                                                                                                                                    |                                                                                                             |                                   |          |                      |
|                                                                       | Mounting rail for attaching the hood                                                                        | 1000 mm                           | 572256   | CAFC-X1-S            |
|                                                                       | Mounting kit for CPX hood                                                                                   |                                   | 572257   | CAFC-X1-BE           |
|                                                                       | Hood section for CPX terminal including mounting attachments for connecting several hood sections in series | 200 mm                            | 572258   | CAFC-X1-GAL-200      |
|                                                                                                                                                         |                                                                                                             | 300 mm                            | 572259   | CAFC-X1-GAL-300      |
| Screws                                                                                                                                                  |                                                                                                             |                                   |          |                      |
|                                                                       | Screws for mounting the bus node/connection block on the polymer interlinking block                         | Bus node/metal connection block   | 550218   | CPX-DPT-30X32-S-4X   |
|                                                                                                                                                         | Screws for mounting the bus node/connection block on the metal interlinking block                           | Bus node/polymer connection block | 550219   | CPX-M-M3x22-4x       |
|                                                                                                                                                         |                                                                                                             | Bus node/metal connection block   | 550216   | CPX-M-M3x22-S-4x     |
|                                                                       | Screws for mounting an inscription label on the bus node CPX-M-FB45                                         | Pack of 12                        | 550222   | CPX-M-M2.5X8-12X     |

## Accessories

| Ordering data – Accessories                                                         |                                                                                                                                                                              |                                        | Part no. | Type               |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------|--------------------|
| Designation                                                                         |                                                                                                                                                                              |                                        |          |                    |
| Mounting                                                                            |                                                                                                                                                                              |                                        |          |                    |
|    | Attachment for wall mounting (for long valve terminals, pack of 10)                                                                                                          | Version for polymer manifold sub-bases | 529040   | CPX-BG-RW-10x      |
|    | Attachment for wall mounting, version for metal manifold sub-bases                                                                                                           | 2 mounting brackets, 4 screws          | 550217   | CPX-M-BG-RW-2X     |
|                                                                                     |                                                                                                                                                                              | 1 mounting bracket, 2 screws           | 2721419  | CPX-M-BG-VT-2X     |
| Covers and attachments                                                              |                                                                                                                                                                              |                                        |          |                    |
|    | Covering hood for CPX-AB-8-KL-4POL (IP65, IP67) <ul style="list-style-type: none"><li>• 8 cable through-feeds M9</li><li>• 1 cable through-feed for multi-pin plug</li></ul> |                                        | 538219   | AK-8KL             |
|                                                                                     | Fittings kit                                                                                                                                                                 |                                        | 538220   | VG-K-M9            |
|    | Screening plate for M12 connections                                                                                                                                          |                                        | 526184   | CPX-AB-S-4-M12     |
|    | Earthing component (pack of 5), for right/left end plate (polymer interlinking blocks)                                                                                       |                                        | 538892   | CPX-EPFE-EV        |
|   | Inspection cover, transparent                                                                                                                                                |                                        | 533334   | AK-SUB-9/15-B      |
|  | Transparent cover for the DIL switches                                                                                                                                       |                                        | 548757   | CPX-AK-P           |
|                                                                                     | Cover for DIL switches                                                                                                                                                       |                                        | 548754   | CPX-M-AK-M         |
|  | Cover for RJ45 connection                                                                                                                                                    |                                        | 534496   | AK-RJ45            |
|  | Cover cap for RJ45 push-pull connection                                                                                                                                      |                                        | 8090740  | NEAC-M-S-BD-R3SCPP |
|  | Cover cap for bus connection                                                                                                                                                 |                                        | 2873540  | CPX-M-AK-D         |
|  | Cover cap for sealing unused connections (pack of 10)                                                                                                                        | For M8 connections                     | 177672   | ISK-M8             |
|                                                                                     |                                                                                                                                                                              | For M12 connections                    | 165592   | ISK-M12            |

## Accessories

| Ordering data – Accessories                                                        |                                                                |                      |          |                       |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------|----------|-----------------------|
| Designation                                                                        |                                                                |                      | Part no. | Type                  |
| Function blocks                                                                    |                                                                |                      |          |                       |
|    | Terminating resistor, M12, B-coded for PROFIBUS                |                      | 1072128  | CACR-S-B12G5-220-PB   |
|    | PT1000 temperature sensor for cold junction compensation       |                      | 553596   | CPX-W-PT1000          |
|    | Adapter M12, 5-pin to mini USB socket, and controller software |                      | 547432   | NEFC-M12G5-0.3-U1G5   |
| Inscription labels                                                                 |                                                                |                      |          |                       |
|    | Inscription labels 6x10 mm, 64 pieces, in a frame              |                      | 18576    | IBS-6x10              |
|    | Inscription label holder for connection block                  |                      | 536593   | CPX-ST-1              |
| Multi-pin plug distributor                                                         |                                                                |                      |          |                       |
|   | Sub-D plug, 15-pin                                             | 8x socket M8, 3-pin  | 177669   | MPV-E/A08-M8          |
|                                                                                    |                                                                | 12x socket M8, 3-pin | 177670   | MPV-E/A12-M8          |
|  | Plug M12, 8-pin                                                | 4x socket M8, 3-pin  | 574586   | NEDU-L4R1-M8G3L-M12G8 |
|                                                                                    |                                                                | 6x socket M8, 3-pin  | 574587   | NEDU-L6R1-M8G3L-M12G8 |
| Connecting cable for multi-pin plug distributor                                    |                                                                |                      |          |                       |
|  | Sub-D socket, 15-pin<br>Open cable end, 15-core                | 5 m                  | 177673   | KMPV-SUB-D-15-5       |
|                                                                                    |                                                                | 10 m                 | 177674   | KMPV-SUB-D-15-10      |
|  | Angled socket, M12, 8-pin,<br>Open cable end, 8-core           | Length: 2 m          | 542256   | NEBU-M12W8-K-2-N-LE8  |
|                                                                                    |                                                                | Length: 5 m          | 542257   | NEBU-M12W8-K-5-N-LE8  |
|                                                                                    |                                                                | Length: 10 m         | 570007   | NEBU-M12W8-K-10-N-LE8 |
|  | Straight socket, M12, 8-pin,<br>Open cable end, 8-core         | Length: 2 m          | 525616   | SIM-M12-8GD-2-PU      |
|                                                                                    |                                                                | Length: 5 m          | 525618   | SIM-M12-8GD-5-PU      |
|                                                                                    |                                                                | Length: 10 m         | 570008   | SIM-M12-8GD-10-PU     |