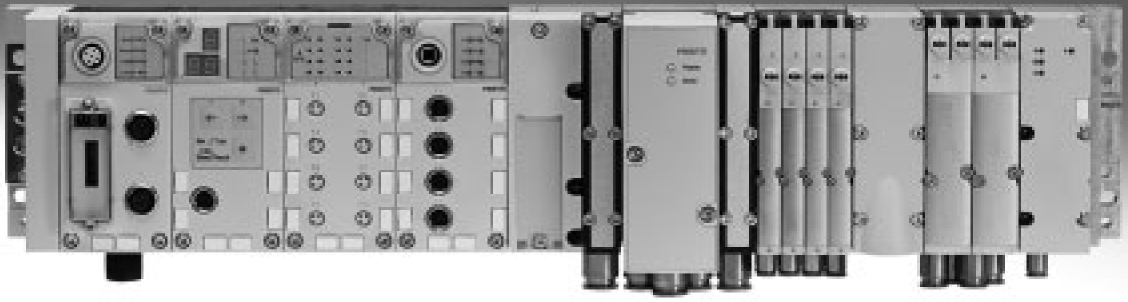
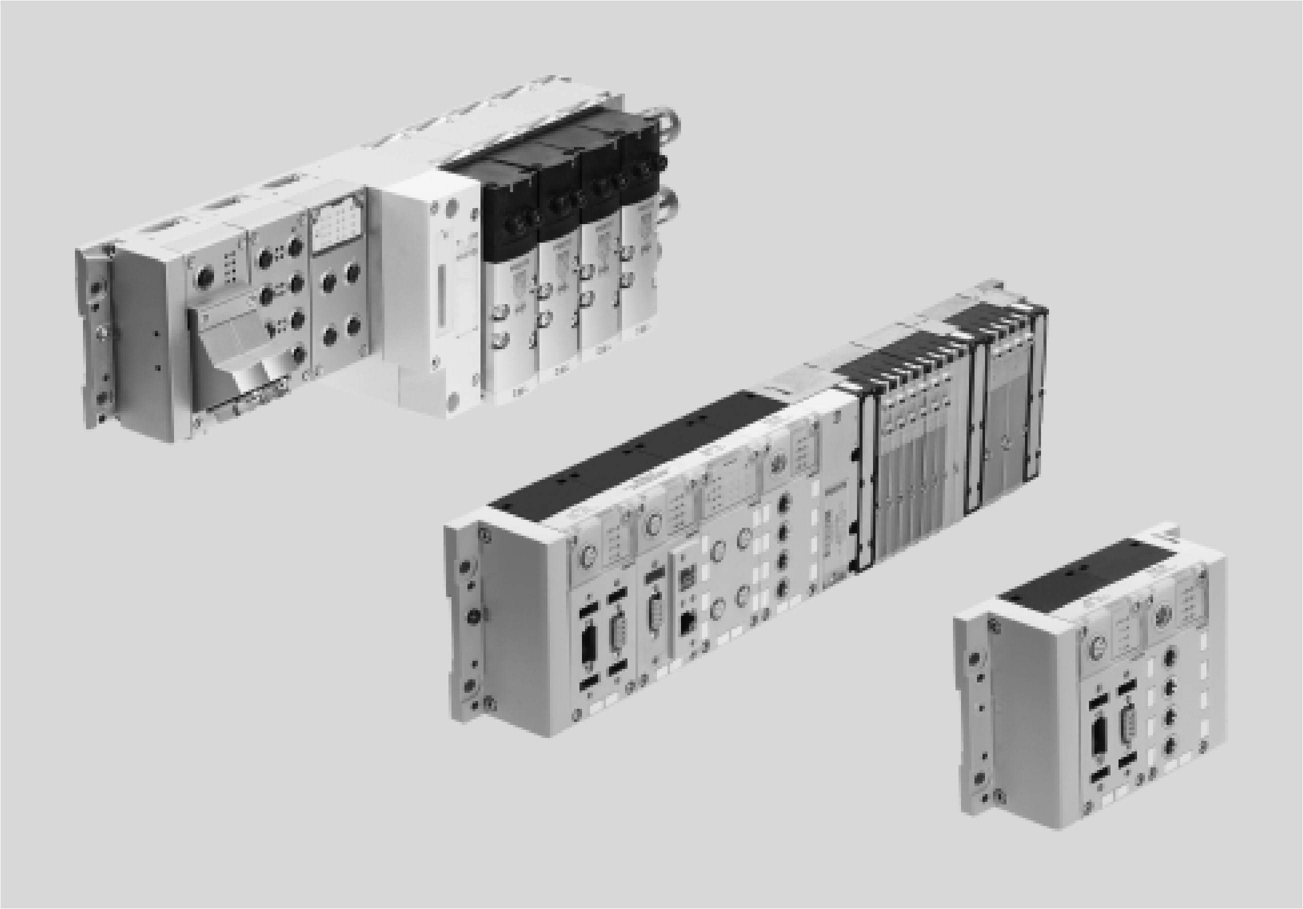
Modular electrical terminal CPX

FESTO



Terminal CPX

Key features



Key features

Installation concept

- Choice of several valve terminal types for different applications:
  - MPA-S
  - MPA-F
  - MPA-L
- Economical from the smallest configuration up to the maximum number of modules
- Up to 9 electrical input/output modules plus bus nodes and pneumatic interface/electronic modules for valves
- Extensive range of functions and connection options for the electrical modules
- Choice of connection technology for technically and economically optimised connections
- Can be used as a dedicated remote I/O module

Electrical components

- High operating voltage tolerance (±25%)
- Choice of M18, 7/8" or AIDA push-pull connection for power supply
- Open to all fieldbus protocols and Ethernet
- Optional function and technology modules for preprocessing
- IT services and TCP/IP such as remote maintenance, remote diagnostics, web server, text message and e-mail alert
- Digital inputs and outputs, 4-/8-/16-way, optionally available with individual channel diagnostics
- Analogue inputs and outputs, 2-/4-way
- Pressure inputs
- Temperature inputs
- Controllers for pneumatic and electrical axes
- IP65 and IP67 or IP20

Assembly

- Wall or H-rail mounting, also on mobile systems
- Conversions/extensions are possible at any time, individual linking with CPX metal design
- Modular system offering a range of configuration options
- Fully assembled and tested unit
- Lower selection, ordering, assembly and commissioning costs thanks to the central CPX terminal
- Choice of pneumatic components for optimised control loop system design
- Decentralised, subordinate CPI installation system improves cycle times by up to 30%
- Safe and convenient earthing thanks to earthing plate

Operation

- 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
- Supports module and channel-oriented diagnostics
- On-the-spot diagnostics in plain text via handheld device
- Fieldbus/Ethernet remote diagnostics
- Innovative diagnostic support with integrated web server/web monitor or maintenance tool with USB adapter for PC
- Optimised commissioning thanks to parameterisable functions
- Reliability of service with connection blocks and modules that are quick to replace without changing the wiring

Terminal CPX

Key features

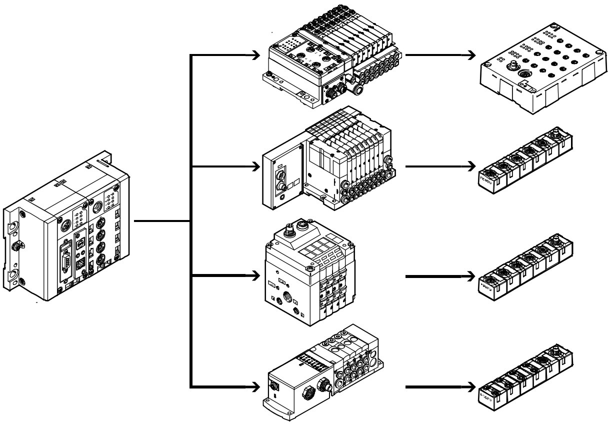
Pneumatic variants of the CPX terminal

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

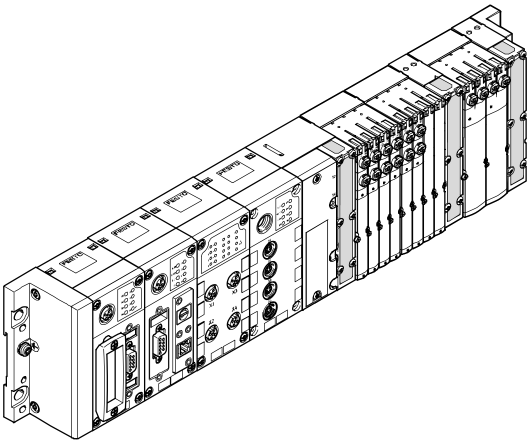
The system is specifically designed so that the valve terminal can be adapted to suit different applications.

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

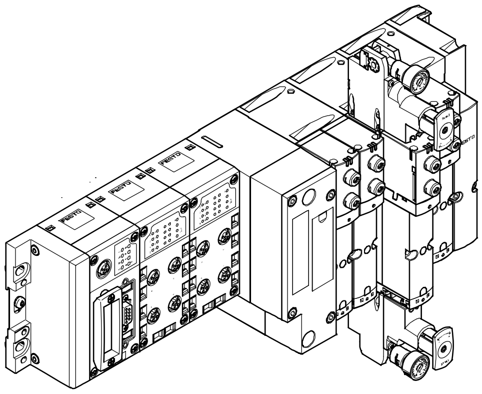
With valve terminal – decentralised



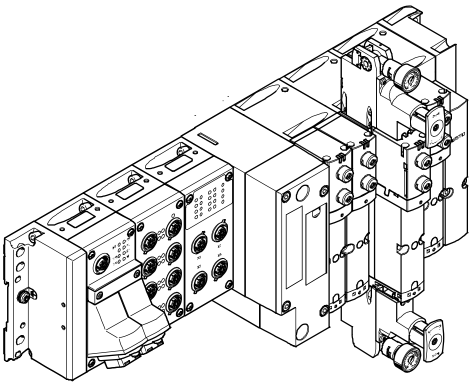
With valve terminal MPA-S – centralised



With valve terminal VTSA – centralised



In metal design with valve terminal VTSA – centralised



Terminal CPX

Key features

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

Bus node

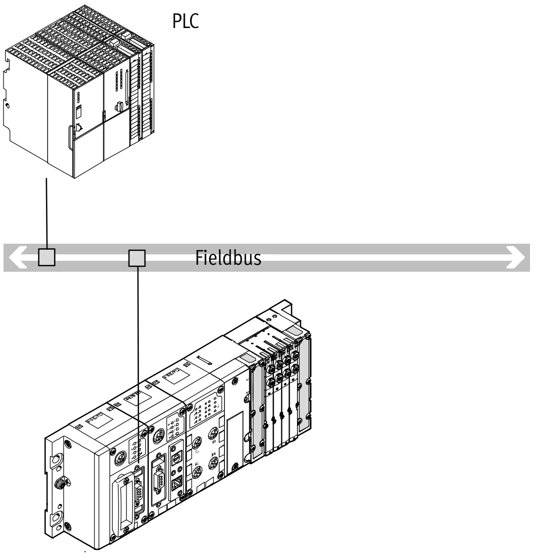
Different bus nodes are used to integrate the terminal in the control systems of various manufacturers. The CPX terminal can therefore be operated on over 90% of the most commonly used fieldbus systems:

- PROFIBUS DP
- PROFINET
- INTERBUS
- 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/e-mail alerts, 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:

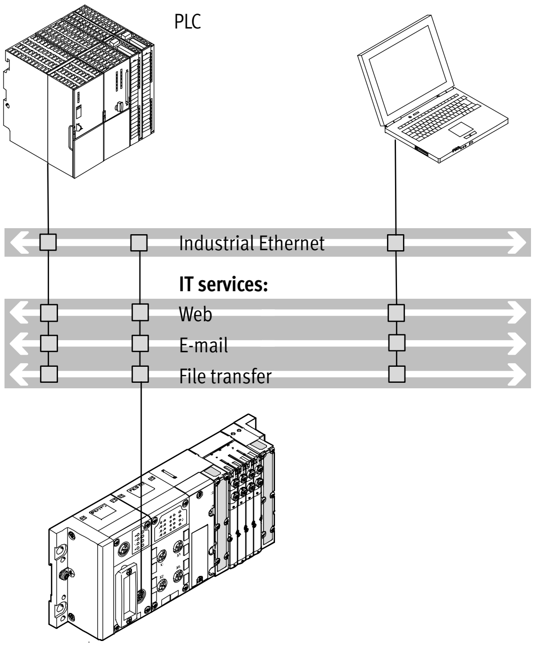
- EtherNet/IP
- Modbus/TCP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III

Bus node



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

Industrial Ethernet bus node



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

Note

Every electrical connection 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 connection variant.

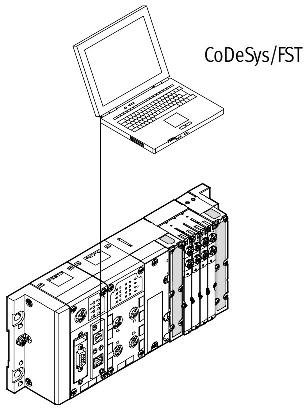
Variants of the CPX terminal controller (with preprocessing in the control block)

Control block

The optional Front End Controllers CPX-FEC and CPX-CEC enable simultaneous access via Ethernet and an integrated web server (in the case of CPX-FEC), in parallel with a bus node, as well as autonomous preprocessing. Access via Modbus/TCP and EasyIP is also possible.

Commissioning, programming and diagnostics using the Festo software tool FST 4.1 with hardware configurator.

With control block in stand-alone mode

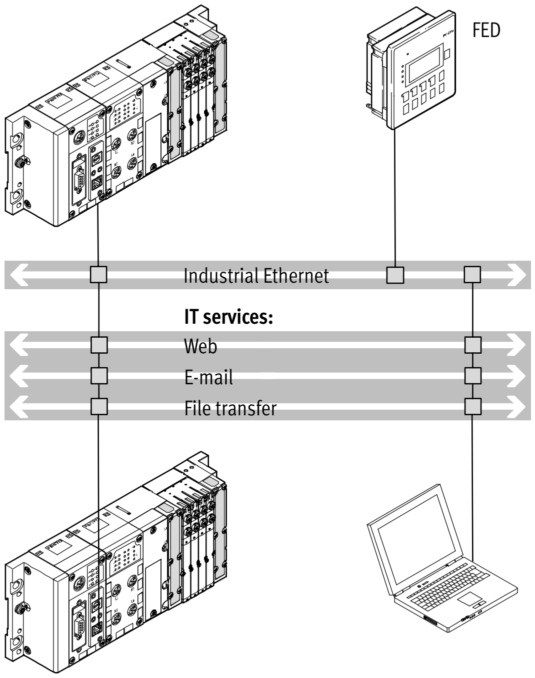


- Decentralised controller with direct machine mounting
- Interaction options via CPX-MMI or Front End Display (FED)
- Downloading of programs via Ethernet (or via the programming interface)
- Supports full expansion of all CPX peripherals
- More than 300 I/Os

Beneficial application areas:

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

With control block in Festo EasyIP mode

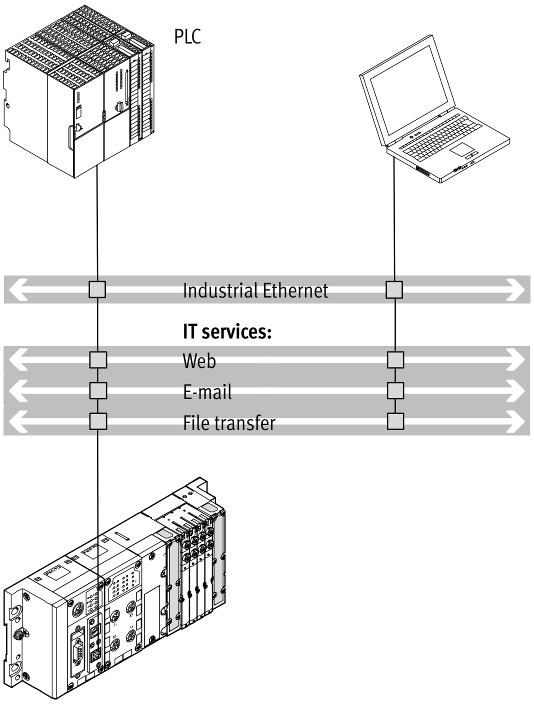


- Fast preprocessing of the CPX peripherals in the control block
- Exchange of any data between the control blocks via EasyIP
- Operation and monitoring of several control blocks via one FED
- Remote diagnostics
- No higher-order controller is required
- More than 300 I/Os per CPX control block

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

With control block as remote controller on Ethernet

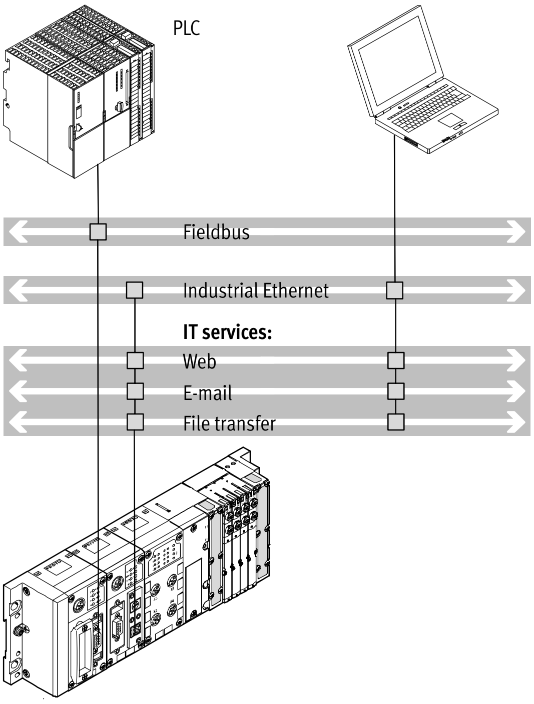
Remote controller on Ethernet as the preprocessing unit for decentralised, stand-alone subsystems using IT technology.



- 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 INTERBUS, PROFIBUS DP, PROFINET, CANopen, DeviceNet, CC-Link, POWERLINK, Sercos III or EtherCAT) as the preprocessing unit for decentralised, stand-alone subsystems.



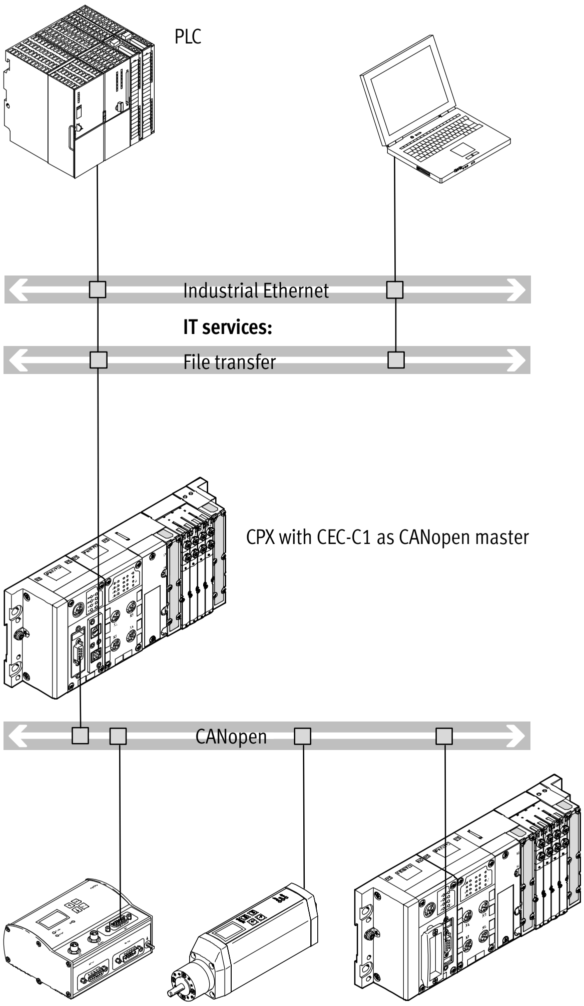
- Fast preprocessing of the CPX peripherals in the control block
- Communication with higher-order controller via fieldbus
- Optional additional monitoring via Ethernet and web applications
- Downloading of programs via programming interface
- More than 300 I/Os, bus node is only used for communication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

Terminal CPX

Key features

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

With control block as CANopen fieldbus master



Properties:

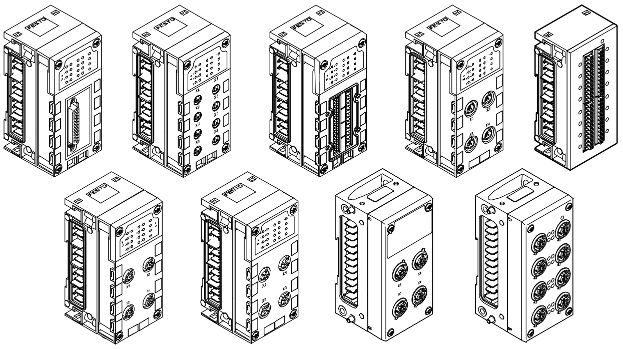
- Connection to a higher-order controller via Ethernet, no further bus node is required
- Monitoring via Ethernet
- Preprocessing of the CPX peripherals by CPX control block
- More than 300 I/Os
- Up to 128 stations with repeater technology on CANopen

Operating modes:

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

Connection of inputs and outputs to the CPX terminal

Digital and analogue CPX I/O modules

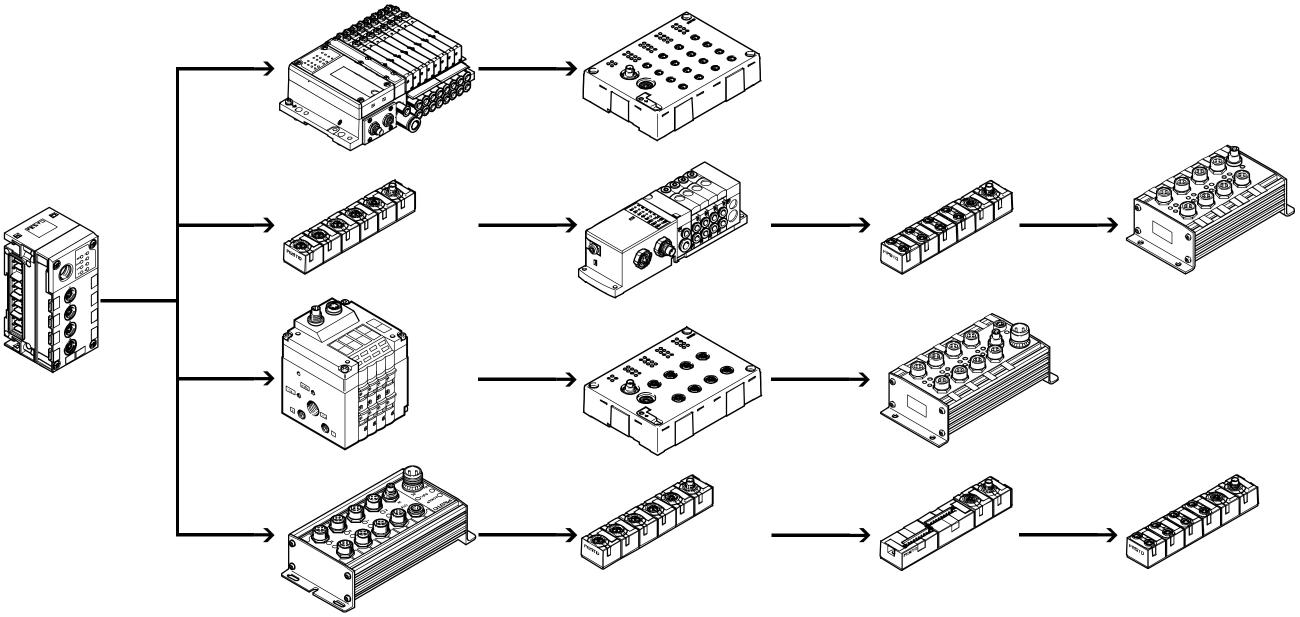


Electrical connection

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. Plastic or metal connection blocks can be combined as required:

- Metal design
  - M12-5POL
- Plastic design:
  - M12-5POL
  - M12-5POL with quick lock and metal thread
  - M12-8POL
  - M8-3POL
  - M8-4POL
  - Sub-D
  - Harax®
  - CageClamp® (with cover also to IP65, IP67)

With CPX-CP interface

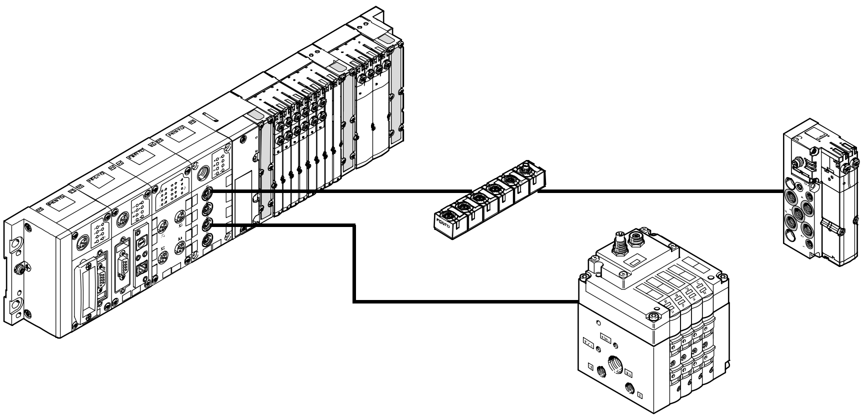


- Up to 4 strings per CP interface possible
- Up to 4 subordinate CP modules can be combined in one string
- Up to 32 I/Os can be connected per string
- Modules with M8, M12 and terminal connection

Several CP interface modules can be combined in one CPX terminal (depending on the controller used).

Combination of centralised CPX I/O modules and decentrally mounted I/O modules of the CPI installation system.

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



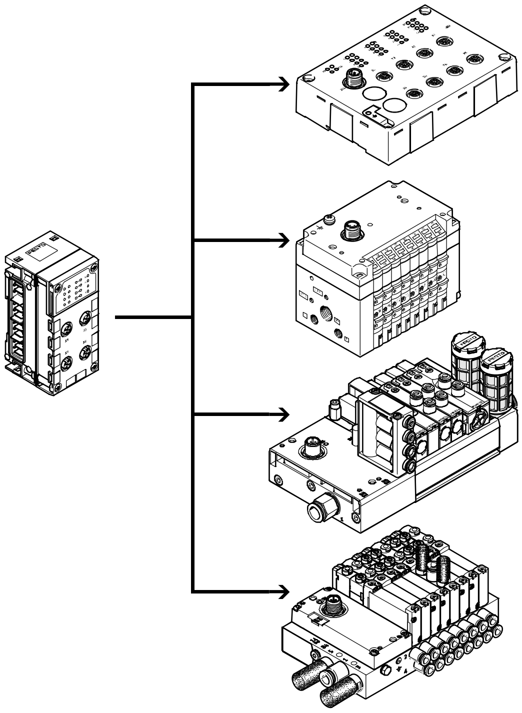
- Scalable to different requirements within a system
- One control interface in the system, reduces installation complexity with closely and widely spaced actuators
- Enables an optimum electrical and pneumatic control chain

Terminal CPX

Key features

Connection of inputs and outputs to the CPX terminal

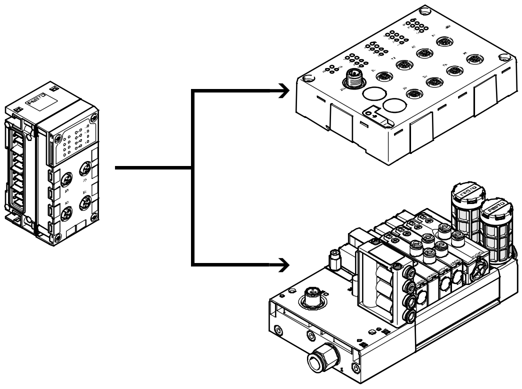
with CPX-CTEL interface



- Up to 4 devices with individual electronic fuse protection per CPX-CTEL 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 (3-pin M8 and 5-pin M12 connection technology)
- Valve terminals with I-Port interface (up to 48 solenoid coils, different valve functions)

Several CPX-CTEL masters can be combined in 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

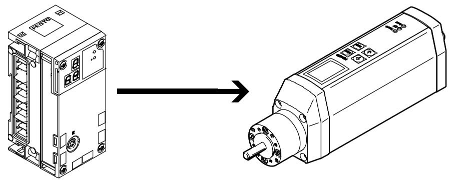


- Up to 2 individual electronically protected IO-Link devices per CPX-CTEL-2 interface
- Max. 16-byte inputs/ 16-byte outputs per IO-Link device
- The maximum length of a string is 20 m

Several CPX-CTEL-2 interface modules 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.

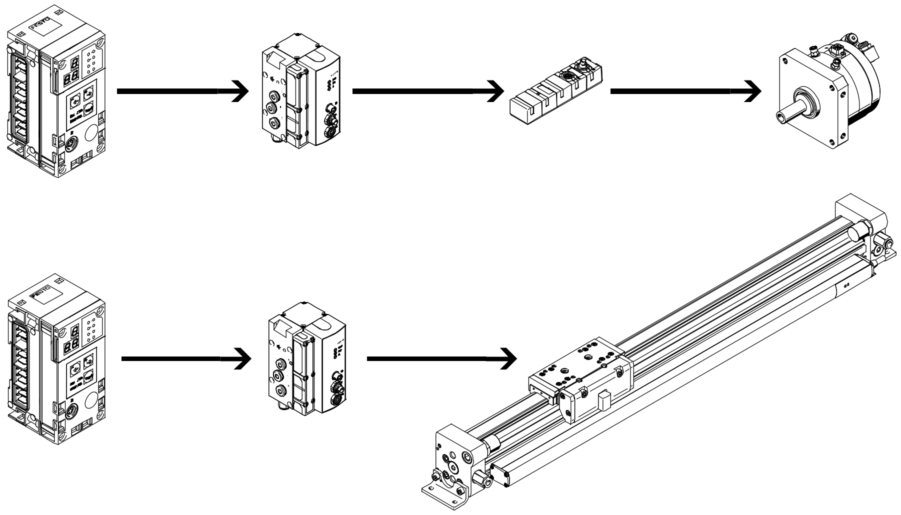
Connection of inputs and outputs to the CPX terminal

Electrical drives with CPX-CM-HPP axis interface



- Max. 4 individual electric axes, per CPX-CM-HPP
- No programming required
- Standardised communication with the drives via the Festo Handling and Positioning Profile (FHPP)
- The control component is independent of the bus node used
- Quick configuration and diagnostics via the operator unit CPX-MMI

Pneumatic drives with CPX-CMAX/CMPX



CPX-CMAX

- Position and force control, directly actuated or selected from one of 64 configurable positioning profiles.
- Configurable record continuation enables simple functional sequences to be realised.
- The auto-identification function identifies each station with its device data on the controller.
- Actuation 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.

CPX-CMPX

- Fast travel between the mechanical end stops of the cylinder, stopping gently and without impact in the end position.
- Fast commissioning via control panel, fieldbus or handheld unit.
- Improved downtime control.
- Actuation of a brake or clamping unit via the proportional directional control valve VPWP.
- Max. 9 end-position controllers can be actuated depending on the fieldbus.
- All system data can be read and written via the fieldbus, including the mid positions, for example.

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 desired actuation and the selected components of the VTSA (ISO), VTSA-F, MPA-S or MPA-L modules.

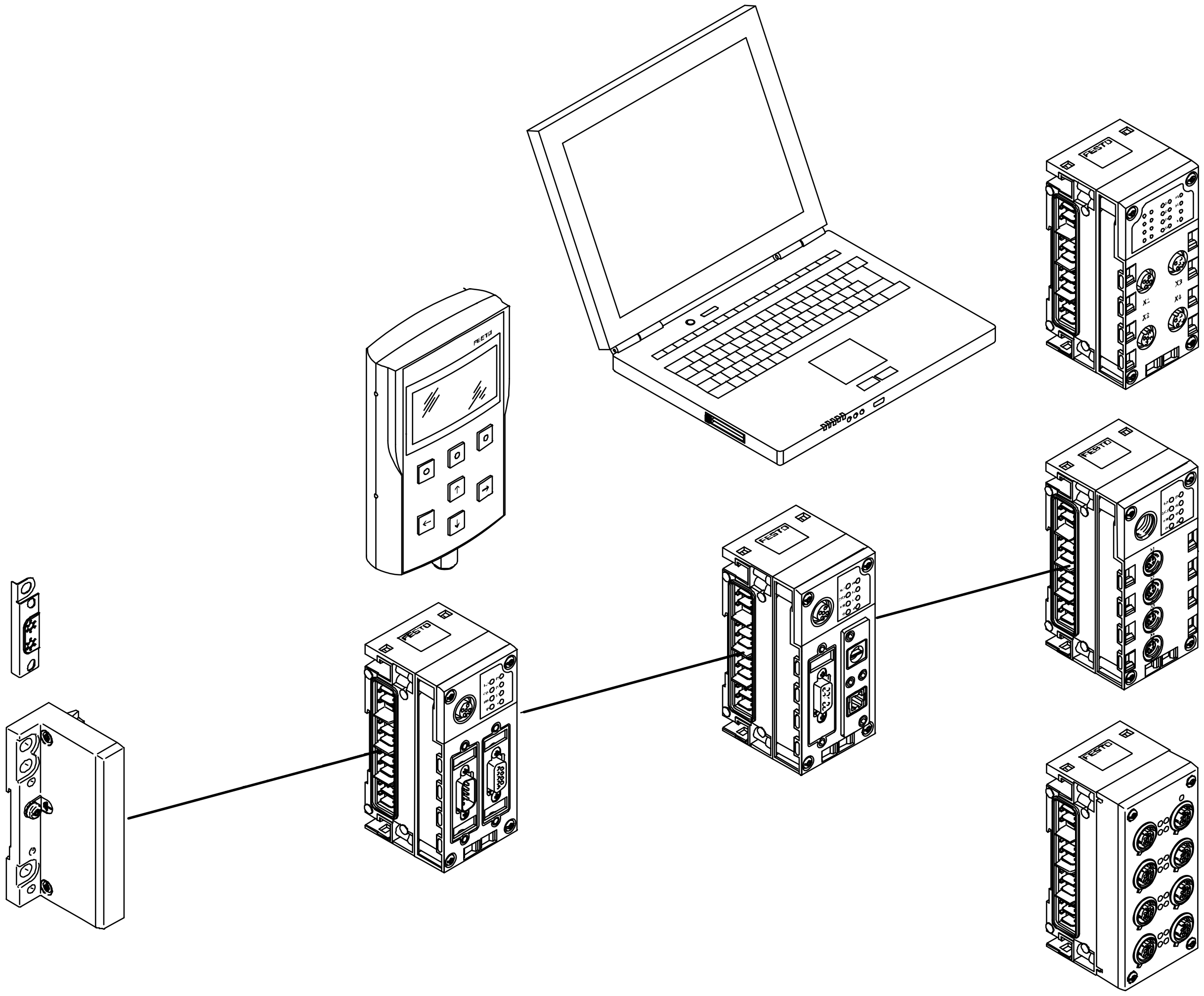
The CPX terminal with valve terminal is ordered using two separate order codes. One order code defines the electrical peripherals type CPX, while the other specifies the pneumatic components of the valve terminal.
The electrical peripherals type CPX can also be configured without a valve terminal and can be used on a fieldbus. For this order, only the order code for the electrical peripherals is required.

The order lists for the pneumatic components can be found on
➔ Internet: vtsa
(valve terminal VTSA)
➔ Internet: vtsa-f
(valve terminal VTSA-F)
➔ 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 on
➔ Internet: ctec
(CPI installation system)

The order lists for the CTEU/CTEL components can be found on
➔ Internet: cteu
(I-Port interface/IO-Link)

Complete overview of modules



End plate

- Mounting holes for wall mounting
- Functional earth connection
- Special earthing plate for safe and easy connection to the machine bed or H-rail
- External power supply for the entire system

Bus node

- Fieldbus/Industrial Ethernet connection using various types of connection technology
- Setting of fieldbus parameters via DIL switch
- Display of fieldbus and peripheral equipment status via LED
- PROFINET to AIDA standard in metal housing, fast start-up

Control block

- Pre-processing, stand-alone controller or remote unit CPX-FEC/CPX-CEC
- Connection via Ethernet TCP/IP or Sub-D programming interface
- Setting of operating modes via DIL switch and program selection via rotary switch
- CPX-CMX products for controlling axes

CP interface/CTEL interface

- Interfaces for decentralised installation systems, thus optimising the pneumatic control chains (short tubes/short cycle times)
- Actuation for I/O modules and valve terminals
- Power supply and bus interface via the same cable

Operator unit

- Connection to bus nodes or control block
- Display and modification of parameter settings
- Plain-text display for texts, messages (e.g. individual channel diagnostics, condition monitoring), menus, etc.

Web monitor

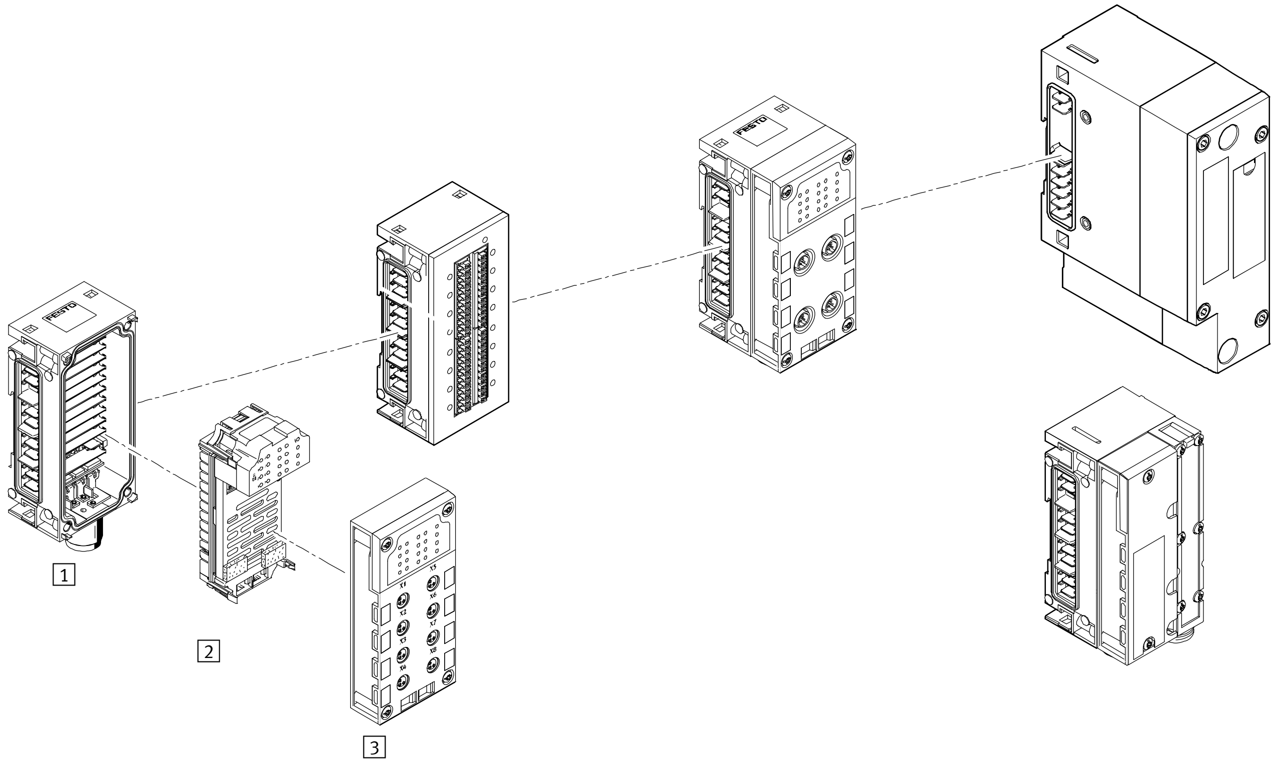
- Website integrated in the CPX terminal
- Dynamic status display
- Online diagnostics
- SMS/e-mail alert

Input/output modules

Combination of

- Interlinking block
- Electronics module
- Connection block

Complete overview of modules



Input/output modules

1 Interlinking block

- Internal linking of the power supply and serial communication
- External power supply for the entire system
- Additional power supply for outputs or valves
- Connection accessories for M18, 7/8" or AIDA push-pull
- Plastic design: linking with tie rods
- Metal design: individual linking with M6 screws, individually expandable

2 Electronics module

- Digital inputs for connecting the sensors
- Digital outputs for activating additional actuators
- Analogue inputs
- Temperature inputs (analogue)
- Analogue outputs
- PROFIsafe input module for safety-oriented sensor technology
- PROFIsafe shut-off module with two digital outputs for shutting off the supply voltage for valves

3 Connection block

- Choice of 8 connection technology variants
- Protection class IP65, IP67 or IP20
- Can be combined with the electronics modules
- M8/M12/Sub-D/quick connection
- M8/M12/Sub-D, etc. connecting cables
- Modular system for M8/M12 connecting cables
- M12 connection technology for the metal design

Pneumatics interface

- MPA-S
- MPA-F
- MPA-L
- VTSA/VTSA-F

Individual overview of modules

Bus node

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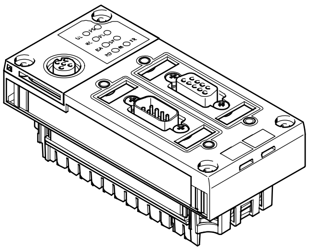

Bus node for
- PROFIBUS DP
- INTERBUS
- DeviceNet
- CANopen
- CC-LINK
- Ethernet/IP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III

Control block

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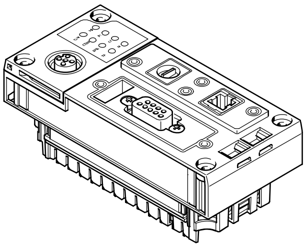

CPX-FEC
- Programming with FST
- Ethernet interface
- Modbus/TCP
- EasyIP
- Integrated web server
- Sub-D programming interface

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

CP interface

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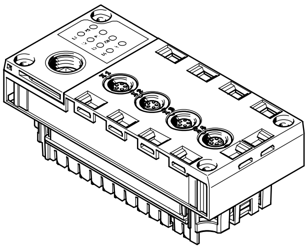

Interface CPX-CP
- 4 CP strings
- Max. 4 modules per string
- 32 inputs/32 outputs per string
- CPI functionality

CTEL interface

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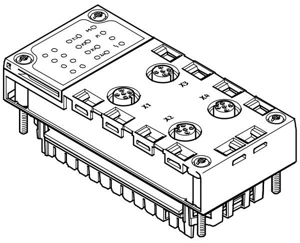

CPX-CTEL interface
- CTEL master
- Max. 4 devices with individual electronic fuse protection
- Max. 64 inputs/64 outputs per I-Port interface
- The maximum length of a string is 20 m

Electrical interface CPX-CTEL-2

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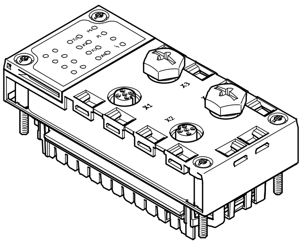

Interface CPX-CTEL-2
- Master for IO-Link
- Max. 2 devices with individual electronic protection
- Process data length of the inputs and outputs is limited to 16 bytes for inputs and 16 bytes for outputs per port
- The maximum length of a string is 20 m

Individual overview of modules

Modules for actuating electric drive units

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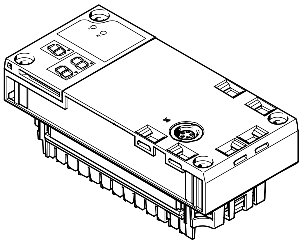

CPX-CM-HPP

- Axis interface
- CAN bus for up to 4 individual electric axes

Modules for controlling pneumatic drive units

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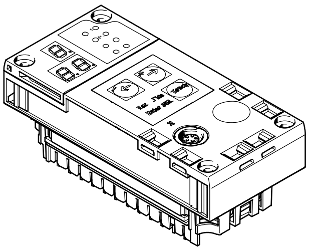


CPX-CMAX

- 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

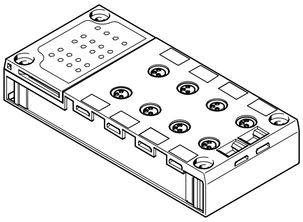
CPX-CMPX

- End-position controller
- Fast travel between the mechanical end stops of the cylinder
- Smooth travel into the end position
- Improved control of downtime
- Control of a brake via the proportional directional control valve VPWP

CPX-CMIX

- Measuring module
- CAN input (Festo specification) for measuring signal
- Recording of the absolute position values or speed values of the connected drive

Plastic connection block



Direct machine mounting
(protection class IP65, IP67)

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

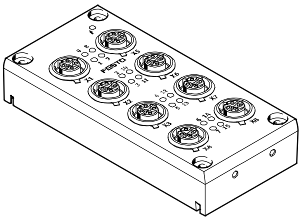
Protected fitting space
(protection class IP20)

- Spring-loaded terminal

Screening concept

- Optional screening plate for connection blocks with M12 connection technology

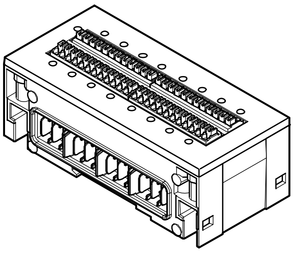
Metal manifold block



Direct machine mounting
(protection class IP65, IP67)

- M12-5POL

Connection block including electronics module and interlinking block



Installation in the control cabinet
(protection class IP20)

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

Individual overview of modules

Digital electronics module for inputs/outputs

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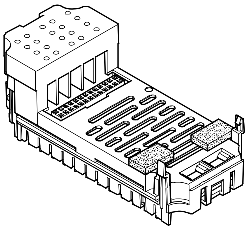


Digital inputs

- 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

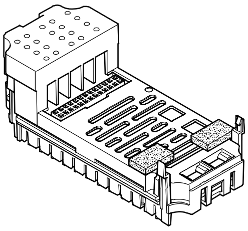
- 4 digital outputs (1 A per channel, individual channel diagnostics)
- 8 digital outputs (0.5 A per channel, individual channel diagnostics)
- 8 digital outputs (2.1 A/50 W lamp load per channel pair, individual channel diagnostics)

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

→ 191



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

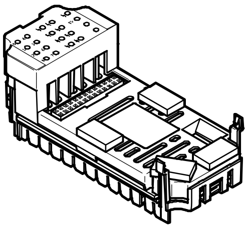
- 4 analogue inputs for temperature measurement (Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni500, Ni1000)
- 4 analogue inputs for temperature measurement (thermocoupler and PT1000 sensor for cold-junction compensation)

Analogue outputs

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

PROFIsafe input module

→ 163

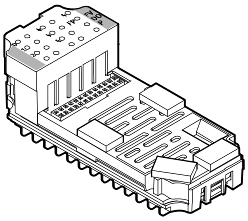


Digital inputs

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

PROFIsafe shut-off module

→ 210

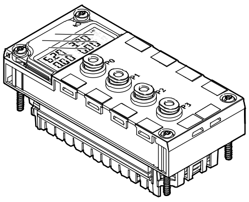


Digital outputs

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

Analogue electronics module for pressure inputs

→ 196



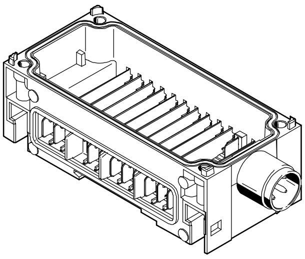
Analogue inputs

- 4 analogue supply ports (0 … 10 bar, −1 … +1 bar)

Individual overview of modules

Plastic interlinking block – Interlinking by means of tie rods

→ 219



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 power supply

In addition to system linking, power supply for the

- actuators (16 A per supply)

Power supply for the

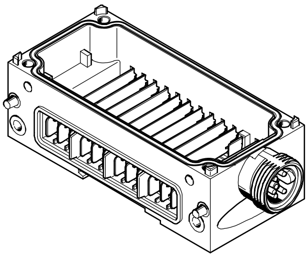
- valves (16 A per supply)

Expandability

- Can be expanded using an interlinking block with tie-rod extension CPX-ZA-1-E

Metal interlinking block – Individual linking

→ 219



System linking

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

System supply

- 7/8" 4-pin or 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 power supply

In addition to system linking, power supply for the

- actuators (16 A per supply)

Power supply for the

- valves (16 A per supply)

Expandability

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

Note

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

Note

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

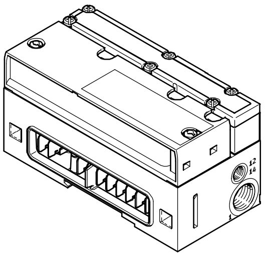
- 5-pin 8 A
- 4-pin 10 A

Note

The usage of appropriate interlinking blocks (CPX-...-VL) is required for use in ATEX environments as per approval certificate (→ 46). The maximum supply is limited to 8 A for these modules.

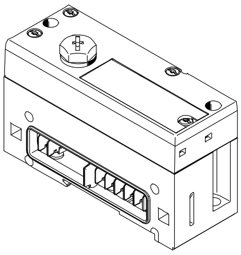
Individual overview of modules

Pneumatic interface MPA-S ➔ 233



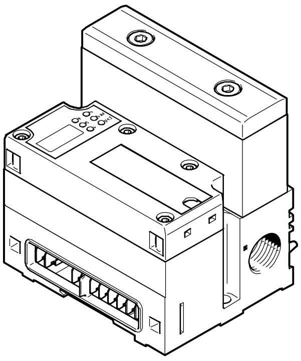
Valve terminal
- MPA1 (360 l/min)
- MPA2 (700 l/min)
- Up to 128 solenoid coils
- Up to 16 modules can be configured
- For CPX plastic design
- For CPX metal design
- Actuation of pressure sensors
- Proportional pressure regulators
- Pressure sensors
- Proportional pressure regulators

Pneumatic interface MPA-L ➔ 235



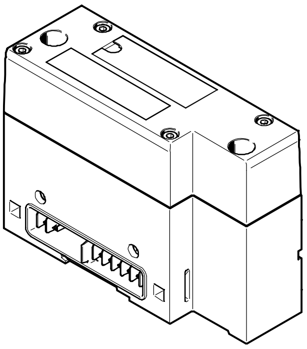
Valve terminal
- MPA1 (360 l/min)
- MPA14 (670 l/min)
- MPA2 (870 l/min)
- Up to 32 solenoid coils
- For CPX plastic design

Pneumatic interface MPA-F ➔ 236



Valve terminal
- MPAF1 (360 l/min)
- MPAF2 (900 l/min)
- Up to 128 solenoid coils
- Up to 16 modules can be configured
- With integrated pressure sensor for channel 1
- For CPX plastic design
- For CPX metal design

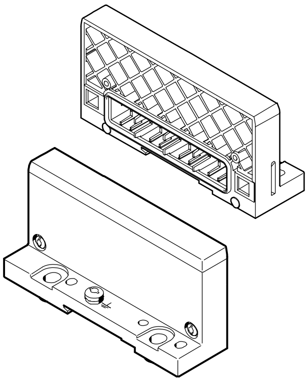
Pneumatic interface VTSA/VTSA-F ➔ 238



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 plastic design
- For CPX metal design

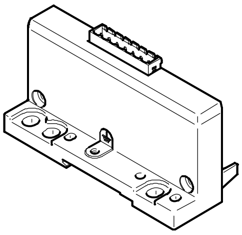
Individual overview of modules

End plate for plastic/metal design



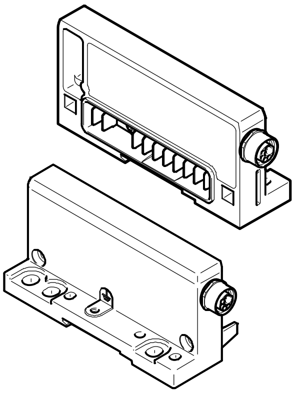
End plate
- Left-hand
- Right-hand (for using of the CPX terminal without valves)

End plate with system power supply ➔ 215



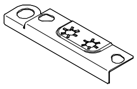
End plate
- Left-hand
- For plastic design
- Different voltages for supplying the CPX terminal

End plate with extension ➔ 217



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

Earthing plate (for end plate for plastic design)

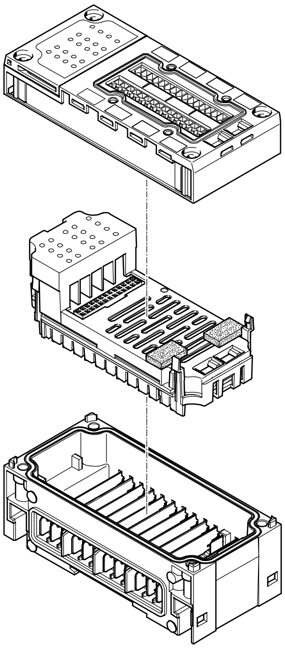


Earthing plate
- For safe and easy connection to the machine bed or H-rail, suitable for right-hand and left-hand end plate
- Assembly and earthing in a single processing step, which means:
  - 50% time saving
  - No additional material required

Terminal CPX

Peripherals overview

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
  - With VTSA, VTSA-F and MPA-F: fixed operating range, set using DIL switch
  - With MPA-S: 16 MPA modules can be configured
  - With 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
- Multiple interlinking blocks with additional power supply, always positioned to the right of the interlinking block with system supply
- The connection blocks can, with just a few exceptions, be freely combined with the electronics modules for inputs/outputs, either in metal or plastic (➔ table below)
- The electronics modules for inputs/outputs can be combined with various interlinking blocks

- Plastic interlinking blocks (tie rods) and metal interlinking blocks (individual linking) cannot be combined due to their different interlinking systems

Combinations of connection blocks and digital input modules

	Digital electronics modules							
	CPX-4DE	CPX-8DE	CPX-16DE	CPX-L-16DE	CPX-M-16DE-D	CPX-8DE-D	CPX-8NDE	CPX-F8DE-P
Connection blocks, plastic design								
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-4-HAR-4POL	■	■	–	–	–	■	■	–
CPX-AB-ID-P	–	–	–	–	–	–	■	■
Connection blocks, metal design								
CPX-M-AB-4-M12X2-5POL	■	■	–	–	–	■	■	■
CPX-M-AB-4-M12X2-5POL-T	–	–	–	–	–	–	■	■
CPX-M-AB-8-M12X2-5POL	–	–	–	–	■	–	–	–

Terminal CPX

Peripherals overview

Combinations of connection blocks and digital output modules/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
Connection blocks, plastic design							
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-4-HAR-4POL	■	■	–	–	–	–	–
CPX-AB-ID-P	–	–	–	–	–	–	–
Connection blocks, metal design							
CPX-M-AB-4-M12X2-5POL	■	■	■	–	–	–	■
CPX-M-AB-4-M12X2-5POL-T	–	–	–	–	–	–	–
CPX-M-AB-8-M12X2-5POL	–	–	–	–	–	–	–

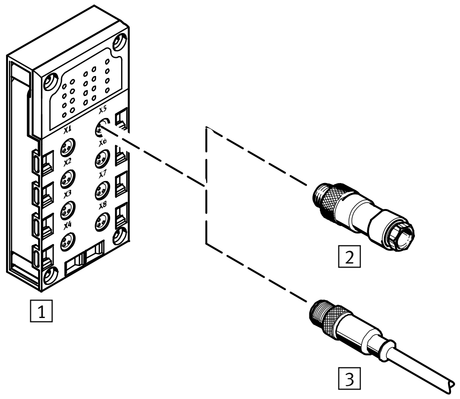
Combinations of connection blocks and analogue electronics modules for inputs/outputs	Analogue electronics modules						
	CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-I	CPX-2AA-U-I	CPX-4AE-P	CPX-4AE-T	CPX-4AE-TC
Connection blocks, plastic design							
CPX-AB-8-M8-3POL	–	–	–	–	–	–	–
CPX-AB-8-M8X2-4POL	–	–	–	–	–	–	–
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-4-HAR-4POL	–	–	–	–	–	■	–
CPX-AB-ID-P	–	–	–	–	–	–	–
Connection blocks, metal design							
CPX-M-AB-4-M12X2-5POL	■	■	■	■	–	■	■
CPX-M-AB-4-M12X2-5POL-T	–	–	–	–	–	–	–
CPX-M-AB-8-M12X2-5POL	–	–	–	–	–	–	–

Terminal CPX

Key features – Electrical components

Electrical connection – Connection block

CPX-AB-8-M8-3POL with M8-3POL connection



- Compact for pre-assembled individual connection
- 8 sockets
- 3-pin design for connecting 1 channel per socket

Note

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

- Tailored to the application
- Perfect fit
- Saves installation space

Combination of connection block and electrical connection technology

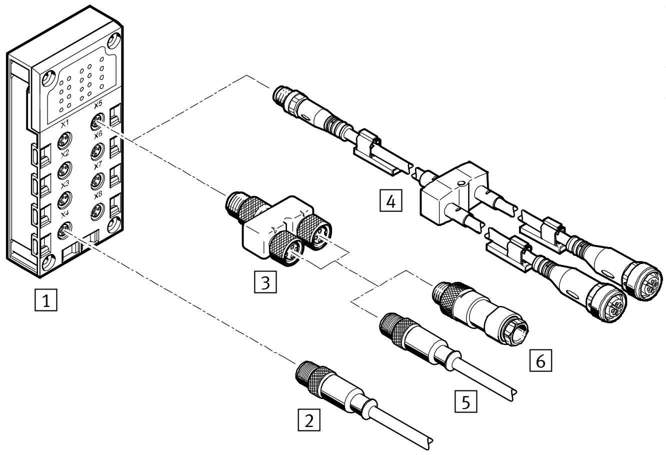
Connection block	Connection technology	Plug connector/connecting cable	Selectable connection technology
[1] CPX-AB-8-M8-3POL	Socket, M8, 3-pin	[2] SEA-GS-M8	Solder lugs
		[2] SEA-3GS-M8-S	Screw terminals
		[3] NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M8, 3-pin
			Socket, M8, 4-pin
			Socket, M12, 5-pin
			Open cable end

Terminal CPX

Key features – Electrical components

Electrical connection – Connection block

CPX-AB-8-M8X2-4POL with M8-4POL connection



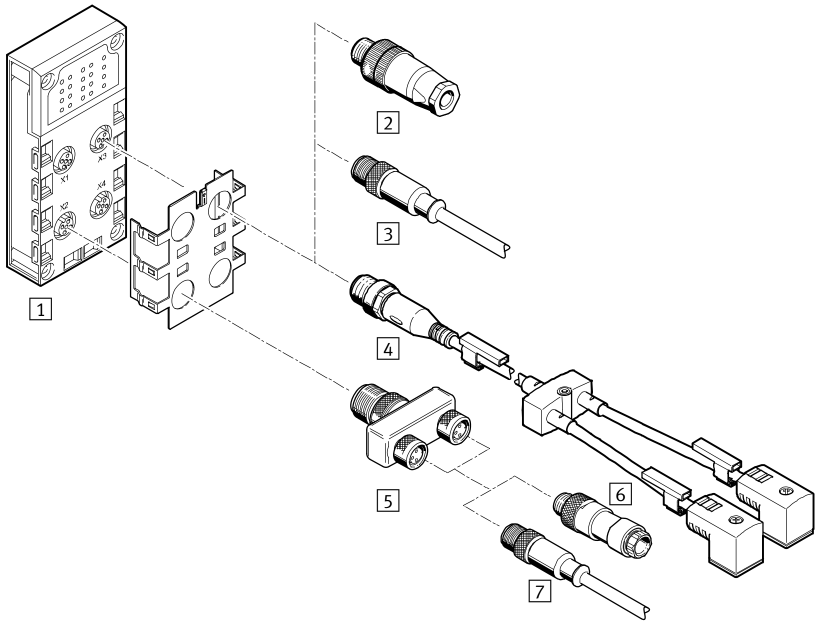
- Compact for pre-assembled individual connection
- 8 sockets
- 4-pin design for connecting 2 channels per socket

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug connector/ connecting cable	Selectable connection technology	Plug connector/ connecting cable	Selectable connection technology
1 CPX-AB-8-M8X2-4POL	Socket, M8, 4-pin	2 NEBU-...-M8G4 (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 (T-adapter)	1x plug M8, 4-pin to 2x socket M8, 3-pin	6 SEA-GS-M8	Solder lugs
				6 SEA-3GS-M8-S	Screw terminals
				5 NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M8, 3-pin
					Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end
		4 NEDY-... (modular system for choice of sensor/actuator distributors)	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, connection pattern H	–	–
			2x socket, connection pattern ZB	–	–
			2x socket, connection pattern ZC	–	–
			2x open cable end	–	–

Electrical connection – Connection block

CPX-AB-4-M12x2-5POL and CPX-AB-4-M12x2-5POL-R with M12-5POL connection



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

Combination of connection block and electrical connection technology

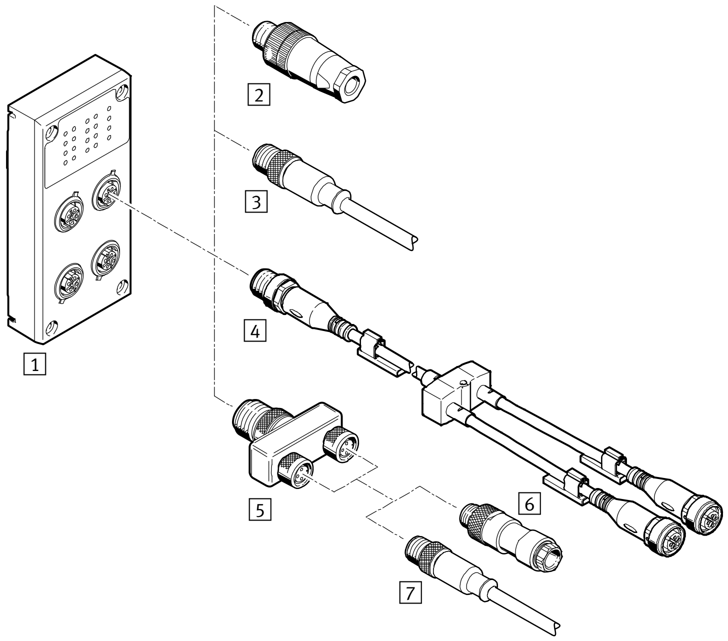
Connection block	Connection technology	Plug connector/ connecting cable	Connection technology	Plug connector/ connecting cable	Connection technology
1 CPX-AB-4-M12x2-5POL CPX-AB-4-M12x2-5POL-R	Socket, M12, 5-pin	2 SEA-GS-7	Screw terminals	–	–
		2 SEA-4GS-7-2,5	Screw terminals	–	–
		2 SEA-GS-9	Screw terminals	–	–
		2 SEA-M12-5GS-PG7	Screw terminals	–	–
		2 SEA-GS-11-DUO	Screw terminals, for two cables	–	–
		2 SEA-5GS-11-DUO	Screw terminals, for two cables	–	–
		3 NEBU-…-M12G5	Socket, M8, 4-pin	–	–
			Socket, M12, 5-pin	–	–
			Open cable end	–	–
		4 NEDY-… (modular system for choice of sensor/actuator distributors)	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, connection pattern H	–	–
			2x socket, connection pattern ZB	–	–
			2x socket, connection pattern ZC	–	–
			2x open cable end	–	–
		5 NEDY-L2R1-V1-M8G3-N-M12G4 (T-adapter)	Plug M12, 4-pin to 2x socket M8, 3-pin	6 SEA-GS-M8	Solder lugs
				6 SEA-3GS-M8-S	Screw terminals
				7 NEBU-…-M8G3 (modular system for choice of connecting cables)	Socket, M8, 3-pin
					Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end
		5 NEDY-L2R1-V1-M12G5-N-M12G4 (T-adapter)	Plug M12, 4-pin to 2x socket M12, 5-pin	6 SEA-GS-7	Screw terminals
				6 SEA-4GS-7-2,5	Screw terminals
				6 SEA-GS-9	Screw terminals
				6 SEA-M12-5GS-PG7	Screw terminals
				6 SEA-GS-11-DUO	Screw terminals, for two cables
				6 SEA-5GS-11-DUO	Screw terminals, for two cables
				7 NEBU-…-M12G5 (modular system for choice of connecting cables)	Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end

Terminal CPX

Key features – Electrical components

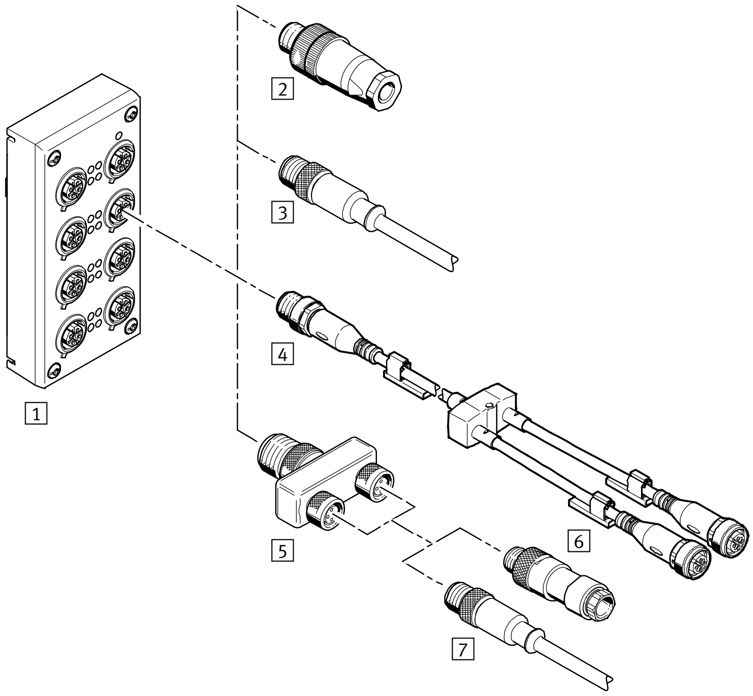
Electrical connection – Connection block (metal design)

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



- Suitable for self-assembly and sturdy with 2 channels per connection
- 4 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

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



- 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.

Terminal CPX

Key features – Electrical components

FESTO

Combination of connection block and electrical connection technology

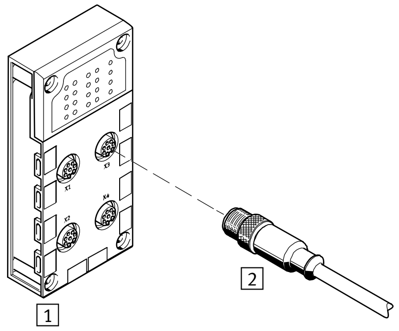
Connection block	Connection technology	Plug connector/ connecting cable	Connection technology	Plug connector/ connecting cable	Connection technology
[1] CPX-M-AB-4-M12X2-5POL CPX-M-AB-8-M12X2-5POL CPX-AB-8-M12X2-5POL	Socket, M12, 5-pin	[2] SEA-GS-7	Screw terminals	–	–
		[2] SEA-4GS-7-2,5	Screw terminals	–	–
		[2] SEA-GS-9	Screw terminals	–	–
		[2] SEA-M12-5GS-PG7	Screw terminals	–	–
		[2] SEA-GS-11-DUO	Screw terminals, for two cables	–	–
		[2] SEA-5GS-11-DUO	Screw terminals, for two cables	–	–
		[3] NEBU-...-M12G5	Socket, M8, 4-pin	–	–
			Socket, M12, 5-pin	–	–
			Open cable end	–	–
		[4] NEDY-... (modular system for choice of sensor/actuator distributors)	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, connection pattern H	–	–
			2x socket, connection pattern ZB	–	–
			2x socket, connection pattern ZC	–	–
			2x open cable end	–	–
		[5] NEDY-L2R1-V1-M8G3-N-M12G4 (T-adapter)	Plug M12, 4-pin to 2x socket M8, 3-pin	[6] SEA-GS-M8	Solder lugs
				[6] SEA-3GS-M8-S	Screw terminals
				[7] NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M8, 3-pin
					Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end
		[5] NEDY-L2R1-V1-M12G5-N-M12G4 (T-adapter)	Plug M12, 4-pin to 2x socket M12, 5-pin	[6] SEA-GS-7	Screw terminals
				[6] SEA-4GS-7-2,5	Screw terminals
				[6] SEA-GS-9	Screw terminals
				[6] SEA-M12-5GS-PG7	Screw terminals
				[6] SEA-GS-11-DUO	Screw terminals, for two cables
				[6] SEA-5GS-11-DUO	Screw terminals, for two cables
				[7] NEBU-...-M12G5 (modular system for choice of connecting cables)	Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end

Terminal CPX

Key features – Electrical components

Electrical connection – Connection block

CPX-AB-4-M12-8POL with M12-8POL connection

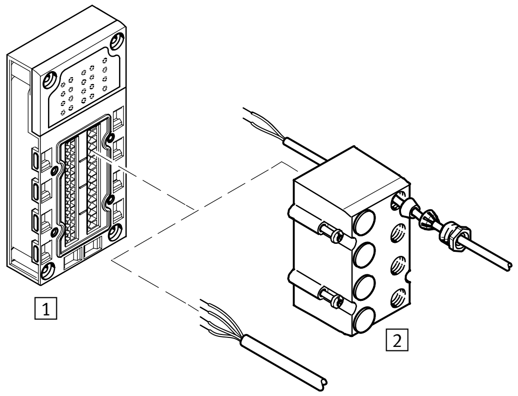


- Connection to cylinder/valve combinations with max. 3 inputs and 2 outputs
- 4 sockets
- 8-pin design per socket

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug connector/connecting cable	Selectable 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



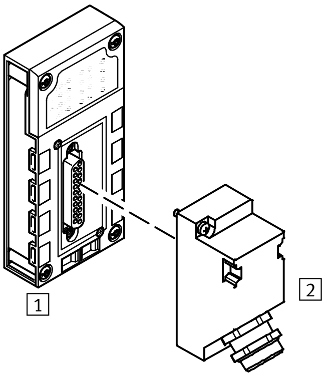
- Quick connection technology for use in control cabinets
- 32 spring-loaded terminals
- 4 spring-loaded terminals per channel
- Wire cross sections 0.05 … 1.5 mm^2
- Optional cover with fittings for IP65, IP67 connection
  - 8 through-holes M9
  - 1 through-hole M16
  - Blanking plug
  - For I/O distributors,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

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug connector/connecting cable	Selectable connection technology
1 CPX-AB-8-KL-4POL CPX-2ZE2DA	Spring-loaded terminals, 32-pin	2 AK-8KL (cover)	–

Electrical connection – Connection block

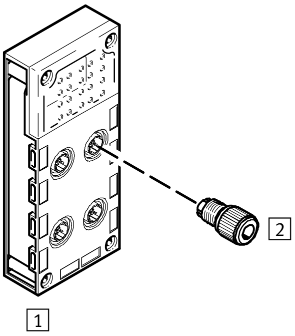
CPX-AB-1-SUB-BU-25POL with Sub-D connection



- Multi-pin plug connection for I/O distributor or console
- One socket
- 25-pin design

Combination of connection block and electrical connection technology				
Connection block	Connection technology		Plug connector/connecting cable	Selectable connection technology
1 CPX-AB-1-SUB-BU-25POL	Socket, Sub-D, 25-pin		2 SD-SUB-D-ST25	Crimp contacts

CPX-AB-4-HAR-4POL with quick connection



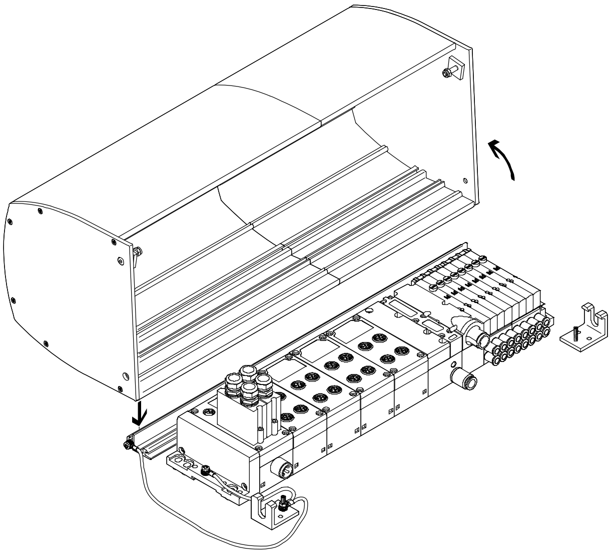
- Sturdy quick connection technology for individual connections
- 4 sockets
- 4-pin design per socket

Combination of connection block and electrical connection technology				
Connection block	Connection technology		Plug connector/connecting cable	Selectable connection technology
1 CPX-AB-4-HAR-4POL	Socket, quick connection, 4-pin		2 SEA-GS-HAR-4POL	Insulation displacement connectors

Hood

Description

➔ 250



The CPX hood CAFC is a space- and cost-saving alternative to a control cabinet.
It is designed as an extruded aluminium profile and is installed on a mounting plate.
The valve terminal (CPX with MPA-S or MPA-L) is well protected and is quick to install without the need for complex control cabinet installation for connecting cables and tubing.

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 (locking of the hood in the open position).
The hood is locked using two side screws (which meet the requirements for a special lock in compliance with ATEX).
The CPX hood can be ordered online using the valve terminal configurator.

Advantages of the CPX hood

- Impact protection (min. 7 J) for the underlying modules in combination with a suitable mounting plate provided by the user
- Protection against electrostatic discharge through the use of electrically conductive materials and the option of connecting an earth wire
- Protection against disconnection of live plug connectors (by securing the hood with at least one special lock to EN 600079-0, 9.2 and 20)
- UV protection for the underlying CPX and MPA modules

Points to note when using the CPX hood

- Only in combination with valve terminal MPA-S and MPA-L
- No bus nodes with push-pull connection (CPX-M-FB34, CPX-M-FB35, CPX-M-FB41)
- CPX power supply via angled plugs, no T-plugs, no push-pull
- Electrical supply plate/additional power supply only possible with angled plug
- No MPA vertical stacking
- Use of larger fittings (for tubing O.D. larger than 12 mm) only possible with the angled design
- Ducted exhaust air only with elbow connector
- The permissible ambient temperature of the valve terminal is reduced by 5 °C

Note

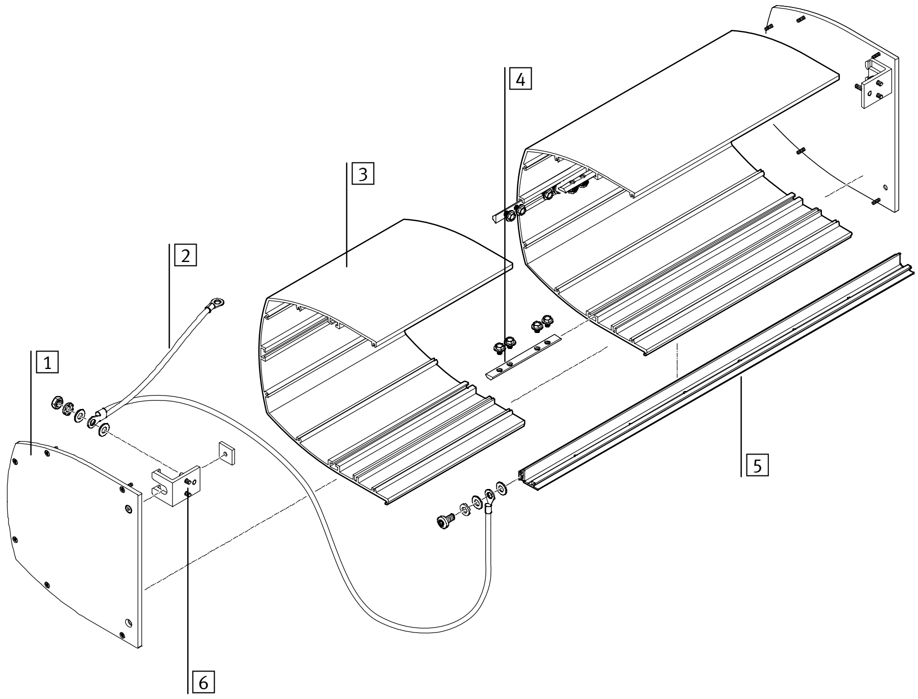
The CPX hood has no influence on the ATEX classification of the valve terminal or of the CPX terminal.

The CPX hood has no influence on the IP protection class of the valve terminal or of the CPX terminal.

The CPX hood does not protect against the effects of the weather in installations that are not in closed spaces.

Hood

Mounting



Procedure:

- Assemble the rail and mounting bracket included in the mounting kit
- Attach the earth cable
- Assemble the hood (if applicable, screw together several hood sections before attaching the side pieces)
- Attach and secure the hood

1	Side piece
2	Earth cable
3	Hood section
4	Slot nut with screws, for joining the hood sections
5	Rail
6	Mounting bracket

Technical data

Weight:

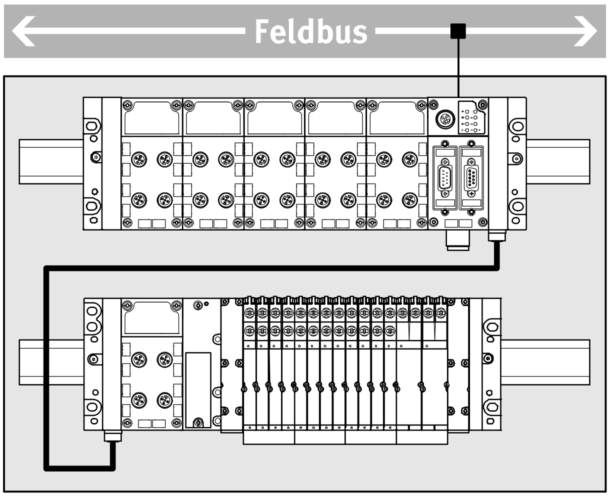
- Hood: approx. 500 g per 100 mm of length
- Mounting rail: approx. 550 g per 1000 mm of length
- Side pieces: approx. 500 g per side

- Ambient temperature –5 … +50 °C

- RoHS-compliant

Extension

Functional 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.
An extensive CPX terminal can fit into limited installation spaces more easily in the form of two 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 are permitted on the first row
- A maximum of 8 CPX modules and a pneumatic interface are permitted in the second row

The number of CPX modules and solenoid coils is additionally 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 power 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

If the 3 m connecting cable is used, the following restrictions are in place:
- There can only be one CPX module in the second row
- An additional power supply for valves is required in order to connect a valve terminal

Positioning output modules in the second row requires a corresponding power supply in the second row:
- Install interlinking block with additional power supply for outputs in the second row to the left of the first output module

Extension – Permissible CPX modules			
	Type	First row	Second row
Control blocks	CPX-FEC CPX-CEC	Permissible, at least one control block or bus node required	Not permissible
Bus node	CPX-FB CPX-M-FB	Permissible, at least one control block or bus node required	Not permissible
Technology modules	CPX-CP CPX-CTEL CPX-CTEL-2 CPX-CM-HPP CPX-CMAX CPX-CMPX CPX-CMIX	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 CPX-GE-EV-S CPX-M-GE-EV-S	Permissible, at least one interlinking block/ end plate with system supply required	Not permissible
Interlinking block with additional power supply	CPX-GE-EV-Z CPX-M-GE-EV-Z CPX-GE-EV-V	Permissible	Permissible
Interlinking block without supply	CPX-GE-EV CPX-M-GE-EV	Permissible	Permissible
Pneumatics interface	VMPA-FB	Not permissible	Permissible
	VMPAL-EPL-CPX	Not permissible	Permissible
	VMPAF-FB	Not permissible	Permissible
	VABA-S6-1	Not permissible	Permissible

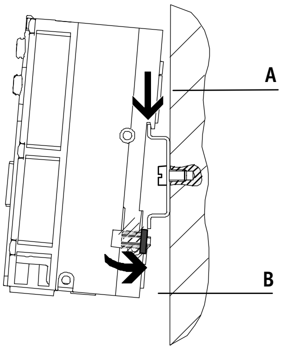
Extension – Maximum number of CPX modules/solenoid coils		
Special features of the design	First row	Second row
CPX terminal with valve terminal		
Connecting cable 3 m	10 CPX modules	Valve terminal MPA-S with: • Pneumatic interface for CPX metal interlinking module • Electrical air supply plate VMPA-FB-SP directly after the pneumatic interface • Electronics modules with galvanic isolation • 128 solenoid coils (64 valve positions)
		Valve terminal VTSA/VTSA-F with: • 1 CPX module with interlinking block with additional power supply for valves • 32 solenoid coils (32 valve positions)
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 manifold blocks MPA-S, depending on the control block/bus node used
• Electrical air supply plates VMPA-FB-SP • Electronics modules with galvanic isolation	10 CPX modules	• 2 … 5 CPX modules, depending on the control block/bus node used • Up to 128 solenoid coils (64 valve positions)
• Control block/bus node in position on the far right of the first row • CPX-FB11 or CPX-CEC not possible	10 CPX modules	• 4 … 5 CPX modules and manifold blocks MPA-S, depending on the control block/bus node used
• CPX-FB13 or CPX-FB36 • Control block/bus node in position on the far right of the first row • Interlinking block with system supply in position on the far right of the first row	10 CPX modules	• 8 CPX modules and manifold blocks MPA-S
• CPX-FB13 or CPX-FB36 • Control block/bus node in position on the far right of the first row • Interlinking block with additional power supply for valves in position on the far right of the first row	10 CPX modules	• 8 CPX modules and manifold blocks MPA-S
• CPX-FB13 or CPX-FB36 • Control block/bus node in position on the far right of the first row • Interlinking block with additional power supply for valves in second row	10 CPX modules	• 8 CPX modules and manifold blocks MPA-S

Extension – Maximum number of CPX modules/solenoid coils		
Special features of the design	First row	Second row
CPX terminal with valve terminal MPA-F		
–	10 CPX modules	• 2 CPX modules • 8 manifold blocks MPA-F
• Interlinking block with additional power supply for valves in second row • Electronics modules with galvanic isolation	10 CPX modules	• 2 CPX modules • 128 solenoid coils (64 valve positions)
• Electrical air supply plates VMPAF-FB-SP • Electronics modules with galvanic isolation	10 CPX modules	• 2 CPX modules • 128 solenoid coils (64 valve positions)
CPX terminal with valve terminal MPA-L		
–	10 CPX modules	• 2 CPX modules (at least one CPX module required) • 16 solenoid coils (valve widths 10 mm and 14 mm) or 8 solenoid coils (valve width 20 mm)
• Interlinking block with additional power supply for valves in second row	10 CPX modules	• 2 CPX modules (at least one CPX module required) • 32 solenoid coils (32 valve positions)
CPX terminal with valve terminal VTSA/VTSA-F		
–	10 CPX modules	• 2 CPX modules • 12 solenoid coils (valve widths 18 mm and 26 mm and 42 mm) or 6 solenoid coils (valve widths 52 mm and 65 mm)
• Interlinking block with additional power supply for valves in second row	10 CPX modules	• 2 CPX modules • 32 solenoid coils (32 valve positions)

Mounting options

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

H-rail mounting



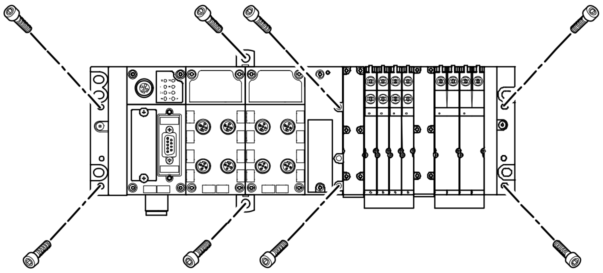
The H-rail mounting is part of the reverse profile of the CPX interlinking blocks. The CPX terminal can be attached to the H-rail using the H-rail mounting kit.
The CPX terminal is mounted on the H-rail for this purpose (see arrow A).
It is then swivelled onto the H-rail and secured in place with the clamping component (see arrow B).
The optional earthing plate enables a connection to be established to the machine potential/earth in one easy step.

For H-rail mounting you will need the following mounting kit:

- CPX-CPA-BG-NRH

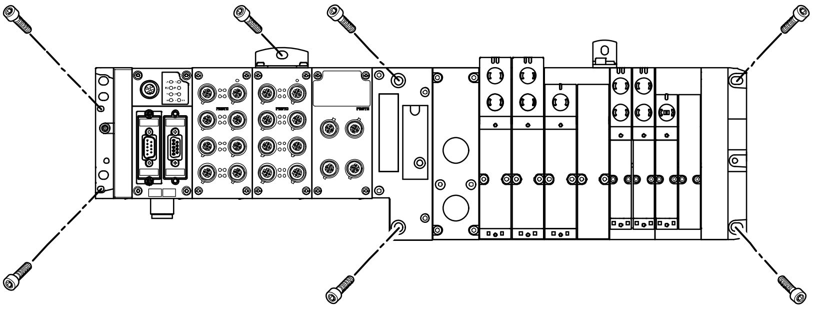
This facilitates mounting of the CPX terminal on H-rails to EN 60715.
An additional mounting kit is required for combination with valve terminals.

Wall mounting, plastic design



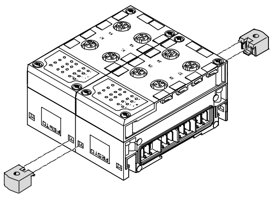
The end plates of the CPX terminal, the valve terminal and the pneumatic interface include mounting holes for wall mounting. Additional mountings for the CPX terminal are available for longer valve terminals. These mountings differ depending on the design of the CPX terminal (plastic or metal).

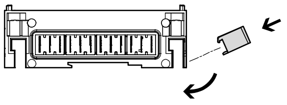
Wall mounting, metal design



Plastic design CPX terminal

Additional mountings

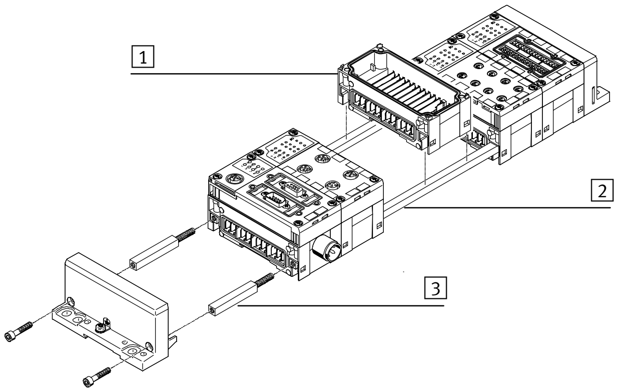




For longer valve terminals, there are additional mounting components for the CPX terminal that can be fitted between two modules.

> Note
>
> In the case of CPX terminals with 4 and more interlinking blocks, additional mountings of the type CPX-BG-RW must be used every 100 or 150 mm. These are supplied pre-assembled.

Interlinking with tie rods

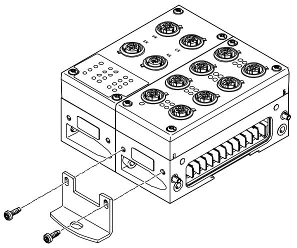


The CPX modules are mechanically connected using special tie rods 2. Two screws in the end plates are all that are needed to assemble the entire unit.
The tie rod ensures that the unit resists high mechanical loads and is therefore the mechanical backbone of the CPX terminal.

The open design enables interlinking blocks 1 to be replaced in the assembled state.
The tie rod expansion kit 3 enables an extra module to be added to the CPX terminal.

CPX terminal in metal design

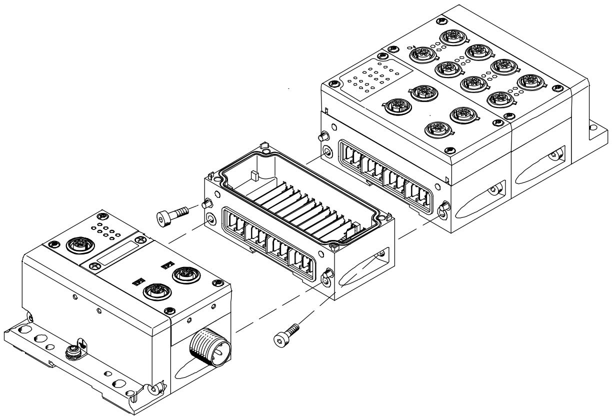
Additional mountings



For longer valve terminals, there are additional mounting brackets for the CPX terminal that can be screwed onto the interlinking blocks.
The mounting bracket CPX-M-BG-VT-2X enables a CPX terminal with valve terminal VTSA/VTSA-F to be mounted on a support system.

> Note
>
> In the case of CPX terminals with 4 and 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.

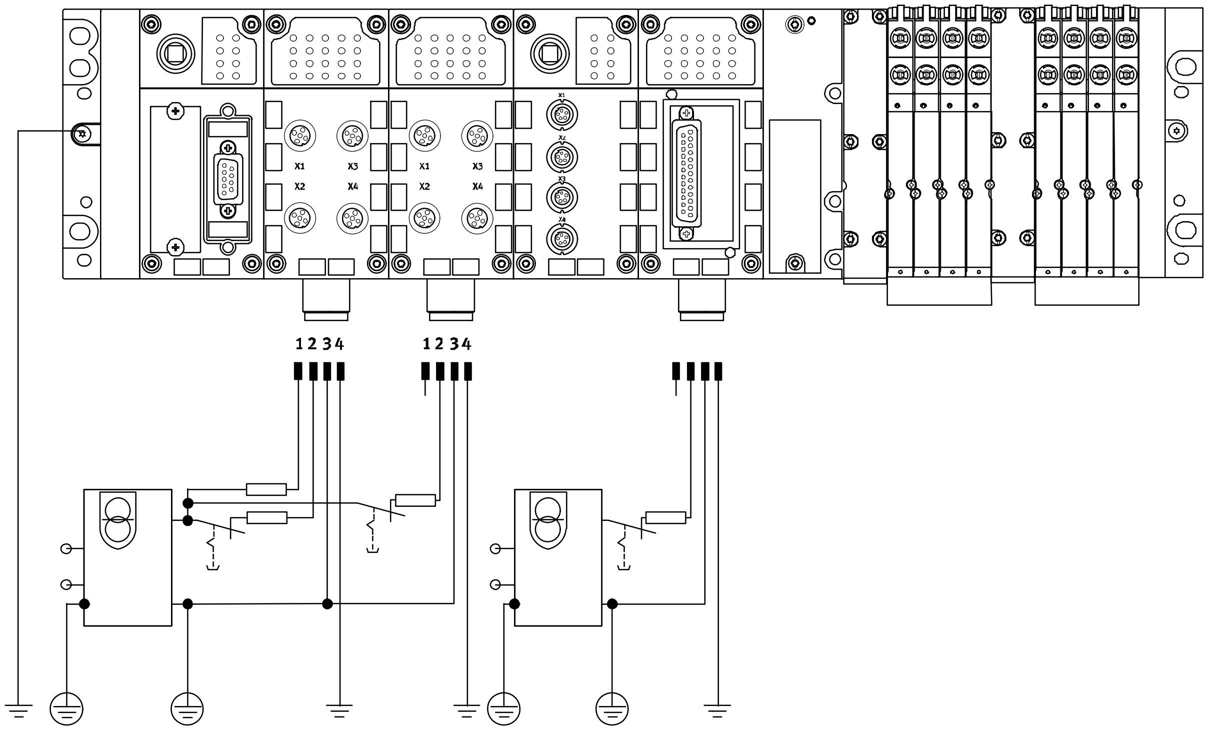
Linking with screws

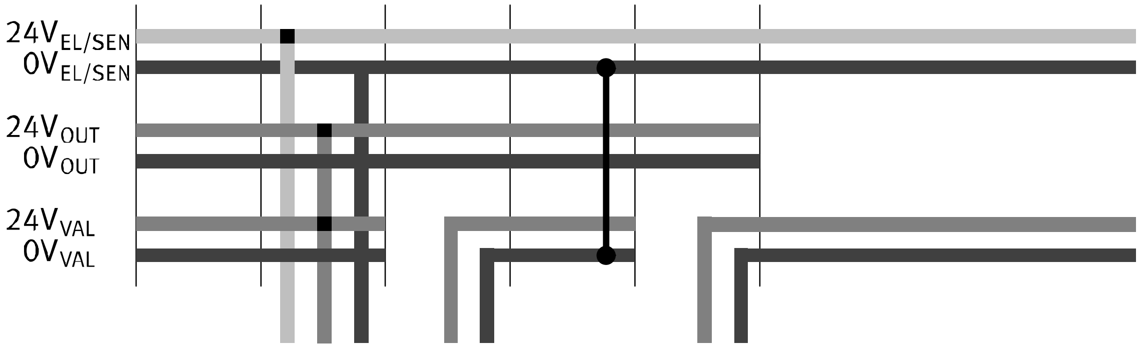


The CPX modules are mechanically connected using a special angled fitting.
The CPX terminal can thus be expanded at any time.

Power supply concept

General





The use of decentralised devices on the fieldbus – particularly with a high degree protection for direct machine mounting – demands a flexible power supply concept. A valve terminal with CPX can, in principle, supply all voltages via a single connection. A distinction is made between the supply for

- Electronics plus sensors
- Valves plus actuators

in this case.

Selectable connection technology:

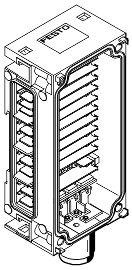
- M18
- 7/8"
- AIDA push-pull

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 segmented into voltage zones. This applies in particular to the separate disconnection of solenoid coils and outputs. The interlinking blocks provide either a space-saving central power supply for the entire CPX terminal or galvanically isolated, all-pin disconnectable potential groups/ voltage segments.

Interlinking blocks

With system supply



Type for plastic design
- CPX-GE-EV-S
- CPX-GE-EV-S-7/8-4POL
- CPX-GE-EV-S-7/8-5POL

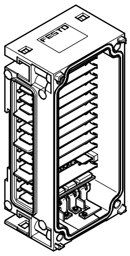
Type for metal design
- CPX-M-GE-EV-S-7/8-CIP-4P
- CPX-M-GE-EV-S-7/8-5POL
- CPX-M-GE-EV-S-PP-5POL

Connection technology
- M18 4-pin
- 7/8" 4-pin
- 7/8" 5-pin

Connection technology
- 7/8" 4-pin
- 7/8" 5-pin
- 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



Type for plastic design
- CPX-GE-EV

Type for metal design
- CPX-M-GE-EV
- CPX-M-GE-EV-FVO

–

–

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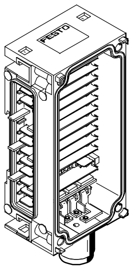
With additional power supply for outputs



Type for plastic design
- CPX-GE-EV-Z
- CPX-GE-EV-Z-7/8-4POL
- CPX-GE-EV-Z-7/8-5POL

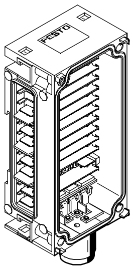
Type for metal design
- CPX-M-GE-EV-Z-7/8-5POL
- CPX-M-GE-EV-Z-PP-5POL

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 the output modules of the CPX terminal

With additional power supply for valves



Type for plastic design
- CPX-GE-EV-V
- CPX-GE-EV-V-7/8-4POL

Connection technology
- M18 4-pin
- 7/8" 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

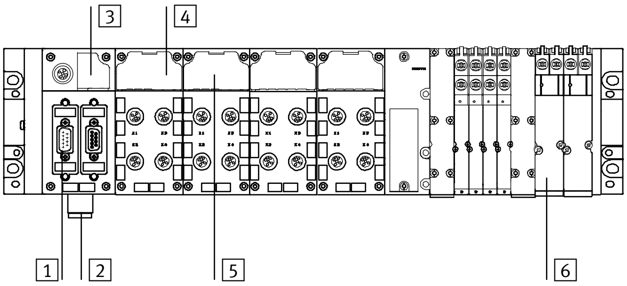
Valve terminal MPA-S has either a 7/8" 5-pin, 7/8" 4-pin, 3-pin M18 or 5-pin AIDA push-pull power supply for one or more valve voltage zones. Galvanically isolated, all pins disconnectable with voltage monitoring in the following MPA module.

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 (➔ 46). The maximum current supply for these interlinking blocks in 8 A.

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 diagnostics for module and solenoid coils
7. MPA pressure sensor – integrated solution on the fieldbus
   - Pre-assembled for ducts 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 an operator unit and diagnostics using a bus interface.

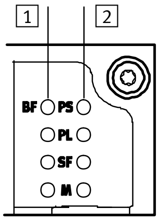
The CPX terminal supports on-the-spot diagnostics via a row of LEDs. This is separate from the connection area and therefore provides good visual access to status and diagnostic information.

Module and channel-specific diagnosis is 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
- Storage of the last 40 causes of errors with error start and error end

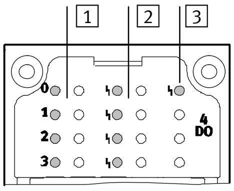
The diagnostic messages can be read out via the bus interface in the higher-order controller and visualised for the central recording and evaluation of error causes. This is done using the individual fieldbus-specific channels. The CPX-FEC and CPX-CEC also offer the option of access via the integrated 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 display 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 fault
   - Modification parameters

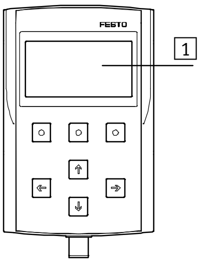
Input/output module status and diagnostic LEDs



1. Status LEDs for the inputs and outputs
   Each input and output channel is assigned a status LED.
2. Channel-oriented diagnostic LEDs
   Depending on the module design, another diagnostic LED is available for each I/O channel
3. Group diagnostic LEDs
   An LED displays the group diagnostics for each module

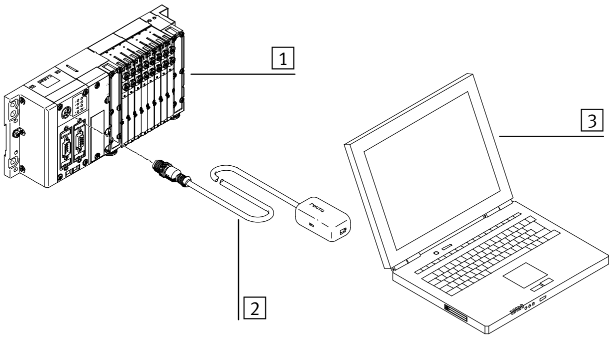
Diagnostics

Display on the operator unit



1 LCD graphical display for on-site plain-text diagnostics
  - Fault location and type
  - Without programming

Display on a PC



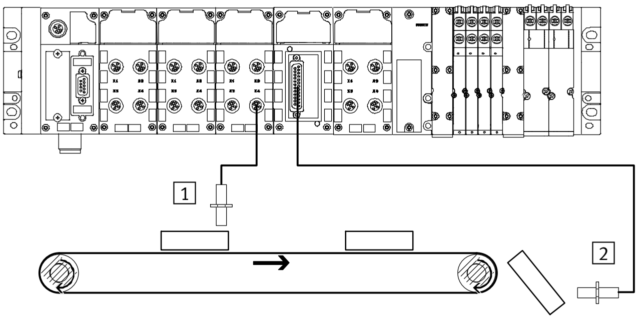
1 CPX terminal with valve terminal
2 Adapter diagnostic interface to USB
3 Laptop/portable device with USB interface and installed FMT software

- Fault location and type
- Without programming
- Storing the configuration
- Preparing screenshots

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 by means of 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 switch-on 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 interrupt.
Depending on the modules used, parameterisation can be performed via the following interfaces:

- Ethernet
- Fieldbus
- Control block direct interface (programming interface)
- Operator unit CPX-MMI



1 Input debounce time 3 ms
2 Input debounce time 0.1 ms

◎ **New**

CPX-FB37, CPX-FB39, CPX-FB40, CPX-M-FB41

Terminal CPX

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 manifold 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-FEC	• TCP/IP • Easy IP • Modbus TCP • HTTP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-CEC	• CoDeSys level 2 • TCP/IP • Easy IP • Modbus TCP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB6	INTERBUS	96 bits	96 bits	96 DI	96 DO	6 AI	6 AO
CPX-FB11	DeviceNet	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB13	PROFIBUS	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB14	CANOpen	256 bits	256 bits	64 DI (+ 64 DI)	64 DO (+ 64 DO)	8 AI (+ 8 AI)	8 AO (+ 8 AO)
CPX-M-FB20	INTERBUS (LWL)	96 bits	96 bits	96 DI	96 DO	6 AI	6 AO
CPX-M-FB21	INTERBUS (LWL)	96 bits	96 bits	96 DI	96 DO	6 AI	6 AO
CPX-FB23-24	CC-Link	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB32	EtherNet/IP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB33	PROFINET RT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-M-FB34	PROFINET RT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-M-FB35	PROFINET RT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB36	EtherNet/IP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB37 ◎	EtherCAT	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA
CPX-FB38	EtherCAT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB39 ◎	Sercos III	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA
CPX-FB40 ◎	POWERLINK	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA
CPX-M-FB41 ◎	PROFINET RT	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA

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

Example CPX-FB6 (INTERBUS)

	Digital inputs	Digital outputs	Notes
3x CPX-8DE	24	–	• The address space is occupied by 7 CPX I/O modules plus pneumatic interface • No additional modules can be configured
1x CPX-8DE-8DA	8	8	
2x CPX-2AE	64	–	
1x CPX-2AA	–	32	
3x VMPA1	–	24	
Allocated address space	96	96	

DI = Digital inputs (1 bit)
DO = Digital outputs (1 bit)
AO = Analogue outputs (16 bits)
AI = Analogue inputs (16 bits)

Overview – Allocated addresses for CPX modules

	Inputs [bit]	Outputs [bit]
CPX-CP-4-FB	16, 32, 48, 64, 80, 96, 128 1)	16, 32, 48, 64, 80, 96, 128 1)
CPX-CTEL-4-M12-5POL	0, 64, 128, 192, 256 1)	0, 64, 128, 192, 256 1)
CPX-CTEL-2-M12-5POL-LK	64, 128, 192, 256 1)	64, 128, 192, 256 1)
CPX-CM-HPP	256	256
CPX-CMAX-C1-1	64	64
CPX-CMPX-C-1-H1	48	48
CPX-CMIX-M1-1	48	48
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 1)
VMPAF-FB-EPL-PS	16	–
VMPAF-FB-EPLM-PS	16	–
VABA-S6-1-X1	–	8, 16, 24, 32 1)
VABA-S6-1-X2	–	8, 16, 24, 32 1)
VABA-S6-1-X2-D	8, 16, 24, 32 1)	8, 16, 24, 32 1)

1) Dependent on the DIL switch setting on the module

Module width
50 mm

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 of those components used.

Example

Protection class 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 protection class are used, the protection level of the entire system is reduced to the protection class of the component with the lowest protection level, for example CageClamp connection block with IP20 protection or MPA pneumatics with IP65 protection.

General technical data			
Module No.			**197330**
Max. no. of modules[1]	Control block		1
	Bus node		1
	I/O modules/CP interface/CTEL interface/ electrical interface CPX-CTEL-2/multi-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		Up to 4 LEDs, bus-specific 4 LEDs, CPX-specific • PS = Power system • PL = Power load • SF = System fault • M = Modify parameter/forcing active
	I/O modules		Min. one group diagnostic LED Channel-oriented status and diagnostic LED, depending on module
	Pneumatic interface		One group diagnostic LED Valve status LED on valve
Diagnostics			• Channel and module-oriented diagnostics for inputs/outputs and valves • Detection of module undervoltage for the different voltage potential values • Storage of the last 40 errors with timestamp (asynchronous access)

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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)

Terminal CPX

Technical data

General technical data			
Module No.			**197330**
Parameterisation			Module-specific and entire system, for example: • Diagnostic behaviour • Condition monitoring • Profile of inputs • Fail-safe response of outputs and valves
Commissioning support			Forcing of inputs and outputs
Protection class to EN 60529			IP65, IP67
Nominal operating voltage		[V DC]	24
Operating voltage range		[V DC]	18 … 30
Current supply	Interlinking block with system supply for		
	electronics plus sensors	[A]	16 (8/10 with 7/8” supply, 5-pin/4-pin)
	actuators plus valves	[A]	16 (8/10 with 7/8” supply, 5-pin/4-pin)
	Additional power supply for actuators	[A]	16 (8/10 with 7/8” supply, 5-pin/4-pin)
	Additional power supply for valves	[A]	16 (10 with 7/8” supply, 4-pin)
Current consumption			Depending on system configuration
Power failure bridging (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		• With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1
	Shock test to DIN IEC 68		• With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1
PWIS classification			PWIS-free (free of paint-wetting impairment substances)
Interference immunity			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 (Protective Extra-Low Voltage)
Materials			End plates: Die-cast aluminium
Grid dimension		[mm]	50

Operating and environmental conditions		
Module No.		**197330**
Ambient temperature	[°C]	–5 … +50
Storage temperature	[°C]	–20 … +70

Certifications – Maximum permissible values

Module No.	**197330**
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA IIC T4 X Gc
ATEX ambient temperature [°C]	−5 ≤ Ta ≤ +50
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
	To EU EMC Directive[1]
Protection class to EN 60529	IP65, IP67
Certification	c UL us - Recognized (OL)
	C-Tick
Explosion protection certification outside the EU	EPL Gc (Ru)

[1] For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

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 value actually 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

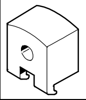
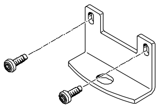
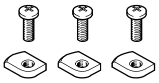
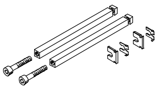
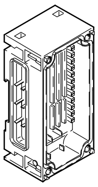
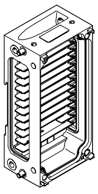
Weight [g]

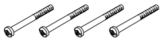
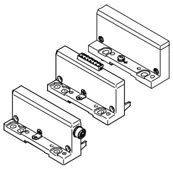
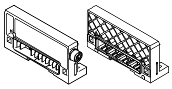
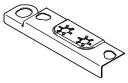
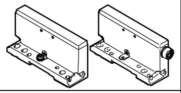
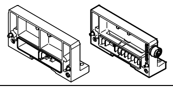
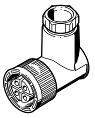
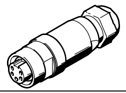
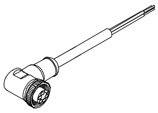
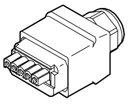
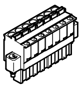
Control block	FEC	140.0
	CEC	155.0
	CEC...V3	135.0
Bus node	FB6	125.0
	FB11	120.0
	FB13	115.0
	FB14	115.0
	FB20	1070.0
	FB21	1255.0
	FB23-24	115.0
	FB32	125.0
	FB33	280.0
	FB34	280.0
	FB35	280.0
	FB36	125.0
	FB37	125.0
	FB38	125.0
	FB39	125.0
	FB40	125.0
	FB41	280.0
I/O module	CPX	38.0
	CPX-L	170.0
Counter module	2ZE2DA	130.0
CP interface	CP	140.0
CTEL interface	CTEL	110.0
Electrical interface	CTEL-2	110.0
Axis interface	CM-HPP	140.0
Axis controller	CMAX	140.0
End-position controller	CMPX	140.0
Measuring module	CMIX	140.0

Connection block	Plastic	70.0
	Metal	175.0
Interlinking block, plastic	Without power supply	100.0
	With system supply	125.0
Interlinking block, metal	Without power supply	169.0
	With system supply, 7/8" 4-pin	228.0
	With system supply, 7/8" 5-pin	187.0
	With system supply, Push-pull	279.0
Tie rod	1-fold	19.0 ±2.5
	2-fold	32.5 ±2.5
	3-fold	46.0 ±2.5
	4-fold	59.5 ±2.5
	5-fold	73.0 ±2.5
	6-fold	86.5 ±2.5
	7-fold	100.0 ±2.5
	8-fold	113.5 ±2.5
	9-fold	127.0 ±2.5
	10-fold	140.5 ±2.5
End plate for plastic version	Left-hand	77.0
	Left-hand, with system supply	145.0
	Right-hand	70.0
End plate for metal version	Left-hand	113.0
	Right-hand	113.0
End plate with extension	Left-hand	190.0
	Right-hand	175.0
Pneumatic interface	MPA-S	238.4
	MPA-F	690.0
	VTSA/VTSA-F	485.0

Terminal CPX

Accessories

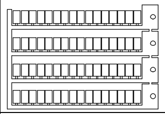
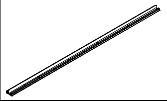
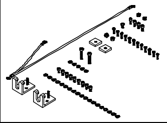
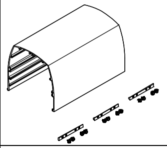
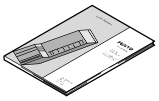
Ordering data – Accessories				
Designation			Part No.	Type
Mounting				
	Attachment for wall mounting (for long valve terminals, 10 pieces), design for plastic manifold sub-bases		**529040**	**CPX-BG-RW-10x**
	Attachment for wall mounting, design for metal manifold sub-bases	2 mounting brackets and 4 screws	**550217**	**CPX-M-BG-RW-2X**
		1 mounting bracket and 2 screws	**2721419**	**CPX-M-BG-VT-2X**
	Mounting for H-rail	CPX without pneumatic components	**526032**	**CPX-CPA-BG-NRH**
		CPX-VTSA		
		CPX-VTSA-F		
		CPX-MPA		
Tie rod				
	Tie rod CPX	Extension 1-fold	**525418**	**CPX-ZA-1-E**
		1-fold	**195718**	**CPX-ZA-1**
		2-fold	**195720**	**CPX-ZA-2**
		3-fold	**195722**	**CPX-ZA-3**
		4-fold	**195724**	**CPX-ZA-4**
		5-fold	**195726**	**CPX-ZA-5**
		6-fold	**195728**	**CPX-ZA-6**
		7-fold	**195730**	**CPX-ZA-7**
		8-fold	**195732**	**CPX-ZA-8**
		9-fold	**195734**	**CPX-ZA-9**
		10-fold	**195736**	**CPX-ZA-10**
Plastic 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" – 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**
		7/8" – 4-pin	**541248**	**CPX-GE-EV-S-7/8-4POL**
	With additional power supply for outputs	M18	**195744**	**CPX-GE-EV-Z**
		M18, for ATEX environment	**8022166**	**CPX-GE-EV-Z-VL**
		7/8" – 5-pin	**541246**	**CPX-GE-EV-Z-7/8-5POL**
		7/8" – 5-pin, for ATEX environment	**8022173**	**CPX-GE-EV-Z-7/8-5POL-VL**
		7/8" – 4-pin	**541250**	**CPX-GE-EV-Z-7/8-4POL**
	With additional power supply for valves	M18	**533577**	**CPX-GE-EV-V**
		M18, for ATEX environment	**8022171**	**CPX-GE-EV-V-VL**
		7/8" – 4-pin	**541252**	**CPX-GE-EV-V-7/8-4POL**
Metal interlinking block				
	Without power supply	–	**550206**	**CPX-M-GE-EV**
	With system supply	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**
		7/8" – 4-pin	**568956**	**CPX-M-GE-EV-S-7/8-CIP-4P**
		Push-pull – 5-pin	**563057**	**CPX-M-GE-EV-S-PP-5POL**
	With additional power supply for outputs	7/8" – 5-pin	**550210**	**CPX-M-GE-EV-Z-7/8-5POL**
		7/8" – 5-pin, for ATEX environment	**8022158**	**CPX-M-GE-EV-Z-7/8-5POL-VL**
		Push-pull – 5-pin	**563058**	**CPX-M-GE-EV-Z-PP-5POL**

Ordering data – Accessories				
Designation			Part No.	Type
Mounting accessories				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	**550218**	**CPX-DPT-30X32-S-4X**
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	**550219**	**CPX-M-M3x22-4x**
		Bus node/metal connection block	**550216**	**CPX-M-M3x22-S-4x**
End plates for plastic version				
	End plate, left-hand	–	**195716**	**CPX-EPL-EV**
		With system supply	**576315**	**CPX-EPL-EV-S**
		With extension	**576314**	**CPX-EPL-EV-X**
	End plate, right-hand	–	**195714**	**CPX-EPR-EV**
		With extension	**576313**	**CPX-EPR-EV-X**
	Earthing element for right-hand/left-hand end plate	5 pieces	**538892**	**CPX-EPFE-EV**
End plates for metal version				
	End plate, left-hand	–	**550212**	**CPX-M-EPL-EV**
		With extension	**576317**	**CPX-M-EPL-EV-X**
	End plate, right-hand	–	**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 mm^2	**18493**	**NTSD-GD-9**
		For 2.5 mm^2	**18526**	**NTSD-GD-13,5**
	Plug socket for mains connection M18x1, angled, 4-pin	For 1.5 mm^2	**18527**	**NTSD-WD-9**
		For 2.5 mm^2	**533119**	**NTSD-WD-11**
	Plug socket for mains connection 7/8”, straight, 5-pin	0.25 … 2.0 mm^2	**543107**	**NECU-G78G5-C2**
	Plug socket for mains connection 7/8”, straight, 4-pin	0.25 … 2.0 mm^2	**543108**	**NECU-G78G4-C2**
	Plug socket for mains connection 7/8", angled, 5-pin – open cable end, 5-wire	2 m	**573855**	**NEBU-G78W5-K-2-N-LE5**
	Connection socket AIDA push-pull, spring-loaded terminal	5-pin	**563059**	**NECU-M-PPG5-C1**
	Straight plug, spring-loaded terminal, for end plate left-hand with system supply	7-pin	**576319**	**NECU-L3G7-C1**

Terminal CPX

Accessories

Ordering data – Accessories

Designation			Part No.	Type
Inscription labels				
	Inscription labels 6x10, 64 pieces, in frames		**18576**	**IBS-6x10**
Hood				
	Mounting rail for securing the cover	1,000 mm	**572256**	**CAFC-X1-S**
	Mounting kit for CPX cover		**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**
Manual				
	CPX System Manual	German	**526445**	**P.BE-CPX-SYS-DE**
		English	**526446**	**P.BE-CPX-SYS-EN**
		Spanish	**526447**	**P.BE-CPX-SYS-ES**
		French	**526448**	**P.BE-CPX-SYS-FR**
		Italian	**526449**	**P.BE-CPX-SYS-IT**
	Operator unit CPX-MMI-1	German	**534824**	**P.BE-CPX-MMI-1-DE**
		English	**534825**	**P.BE-CPX-MMI-1-EN**
		French	**534827**	**P.BE-CPX-MMI-1-FR**
		Italian	**534828**	**P.BE-CPX-MMI-1-IT**
		Spanish	**534826**	**P.BE-CPX-MMI-1-ES**

User manuals – General information

Comprehensive user manuals are vital for the fast and reliable use of fieldbus components.
The manuals provided by Festo contain step-by-step instructions for using CPX terminals:

1. Installation
2. Commissioning and parameterisation
3. Diagnostics

Application-oriented explanations are provided for integration of 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 manual for the configuration you have ordered is supplied automatically.

The documents can be quickly and easily downloaded from the Festo website.
➔ www.festo.com

CPX terminal

FESTO

Overview – User manuals

Type	Title	Description
Pneumatic components		
P.BE-VTSA-44-…	Valve terminals with VTSA and VTSA-F pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the VTSA and VTSA-F pneumatic components.
P.BE-MPA-…	Valve terminals with MPA-S pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the MPA-S pneumatic components.
P.BE-MPAF-…	Valve terminals with MPA-F pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the MPA-F pneumatic components.
P.BE-MPAL-…	Valve terminals	Instructions on assembly, installation, commissioning and diagnostics of the MPA-L pneumatic components.

Terminal CPX

Accessories

Overview – User manuals		
Type	Title	Description
Electronic components		
P.BE-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
P.BE-CPX-FVDA-P2-…	PROFIsafe shut-off module	Connection technology and instructions on mounting, installing and commissioning for the PROFIsafe shut-off module of the type CPX-FVDA-P2
P.BE-CPX-EA-…	CPX-EA modules, digital	Connection technology and assembly, installation and commissioning instructions for digital input and output modules of the type CPX-… as well as VTSA/VTSA-F and MPA-S/F/L pneumatic interface
P.BE-CPX-F8DE-P-…	Input module CPX-F8DE-P	Connection technology and assembly, installation and commissioning instructions for PROFIsafe input module of the type CPX-F8DE-P
P.BE-CPX-2ZE2DA-…	EA module CPX-2ZE2DA	Connection technology and instructions on mounting, installing and commissioning for the counter module of the type CPX-2ZE2DA
P.BE-CPX-AX-…	CPX-EA modules, analogue	Connection technology and assembly, installation and commissioning instructions for analogue input and output modules of the type CPX-…
P.BE-CPX-CP…	CPX CP interface	Instructions on assembly, installation, commissioning and diagnostics of the CP interface
P.BE-CPX-CTEL…	CPX CTEL interface	Instructions on assembly, installation, commissioning and diagnostics of the CPX CTEL master
P.BE-CPX-CTEL-LK…	Electrical interface CPX-CTEL-2	Instructions on assembly, installation, commissioning and diagnostics of the electrical interface CPX for IO-Link
P.BE-CPX-CM-HPP…	CPX axis interface	Instructions on assembly, installation, commissioning and diagnostics of the CPX axis interface (CM-HPP)
P.BE-CPX-CMAX-SYS…	CPX axis controller	Instructions on assembly, installation, commissioning and diagnostics of the CPX axis controller (CMAX)
P.BE-CPX-CMAX-CONTROL…	CPX axis controller	Information on controlling, diagnosing and parameterising the axis controller via the fieldbus
P.BE-CPX-CMPX-SYS…	CPX end-position controller	Instructions on assembly, installation, commissioning and diagnostics of the CPX end-position controller (CMPX)
P.BE-CPX-CMIX…	CPX measuring module	Instructions on assembly, installation, commissioning and diagnostics of the CPX measuring module (CMIX)
P.BE-CPX-FB…	CPX bus node	Instructions on assembly, installation, commissioning and diagnostics of the relevant bus nodes
P.BE-CPX-PNIO…	CPX bus node for PROFINET	Instructions on assembly, installation, commissioning and diagnostics of the relevant bus nodes
P.BE-CPX-FEC…	CPX control block	Instructions on assembly, installation, commissioning and diagnostics of the relevant control block
P.BE-CPX-CEC…	CPX CoDeSys controller (control block)	Instructions on assembly, installation, commissioning and diagnostics of the relevant control block
P.BE-CPX-MMI-1-…	Universal handheld type CPX-MMI-1	Instructions on assembly, installation, commissioning and diagnostics of the CPX operator unit

User manuals – GSD, EDS, etc.

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.

Terminal CPX

Technical data – Operator unit CPX-MMI-1

Width
81 mm

The operator unit is a small, convenient commissioning and service device for the CPX terminal. It provides data polling, configuration and diagnostic functions for CPX terminals. Its extremely flexible application range means that data can be read in or out at any location. IP65 compatibility makes it suitable for use in harsh industrial environments.

Application

Functions

- Advance commissioning through the monitoring/forcing of inputs and outputs without fieldbus master/PLC
- Test function for parameter settings, for example fail-safe of the outputs or switch-on delay of the inputs
- Plain-text diagnostics of module and channel-oriented errors
- Condition monitoring: preselection/loading of counters, activation of the channels to be monitored
- Display of the last 40 error occurrences with timestamp
- Identification of sporadic causes of errors through display of the diagnostic history
- Password protection

Connection

The operator unit is connected to the CPX bus nodes or control block, as appropriate, using a M12 connecting cable.

The voltage for the operator unit is supplied by the CPX component

Communication

Once connected to the CPX terminal, the operator unit loads the available configuration for the I/O modules, valves, etc.

This ensures the availability of up-to-date texts, messages, menus and displays.

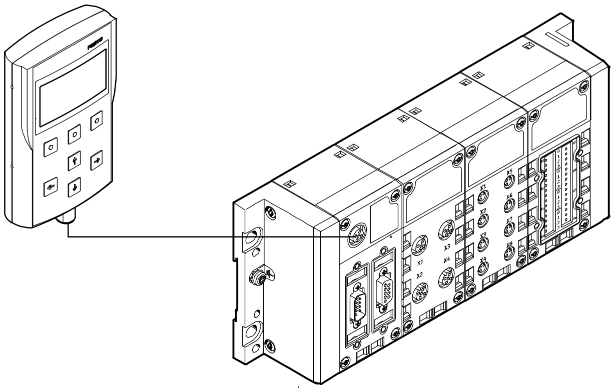
Status information, diagnostic messages and parameter bits are then exchanged during operation.

Assembly

A mounting bracket for the operator unit offers the option of wall or H-rail mounting.

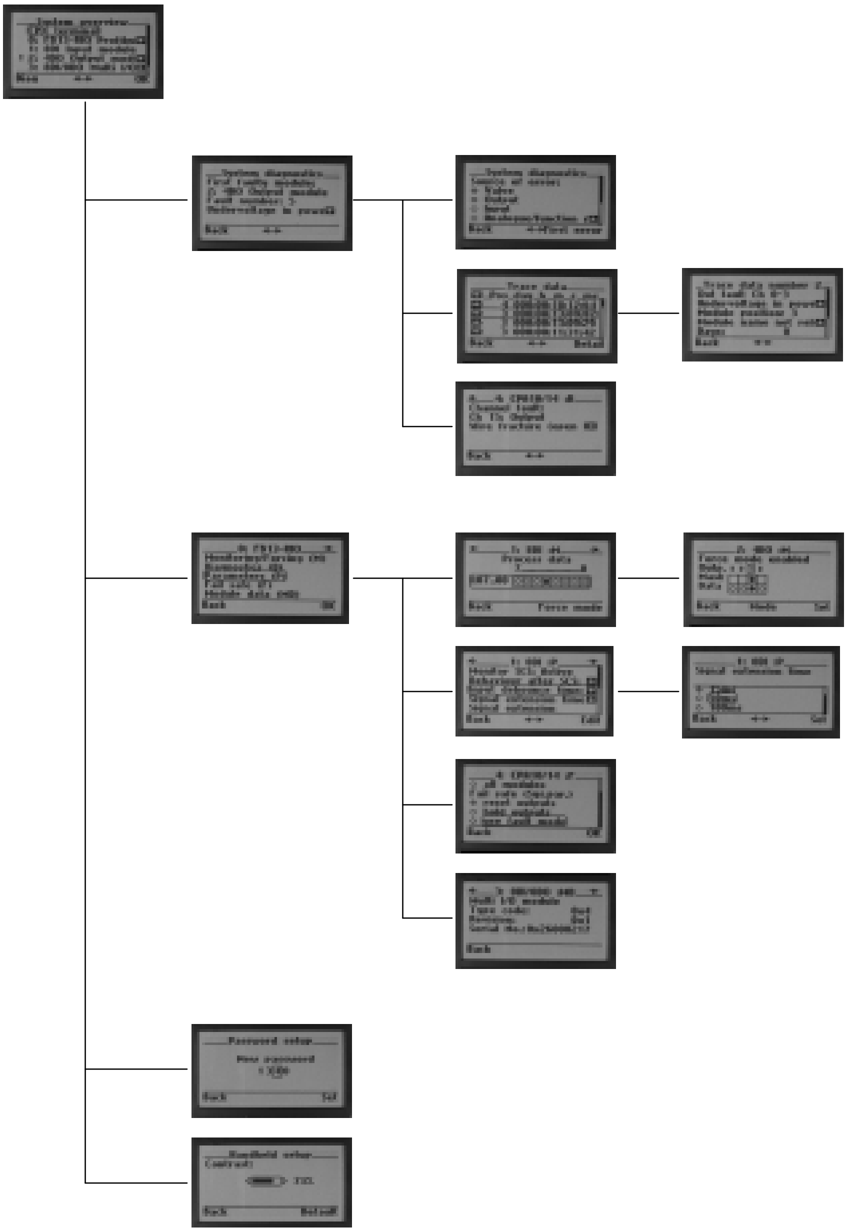
The mounting bracket also has an option for temporary mounting using a hanging device.

Connection



The operator unit is connected to the CPX terminal using a pre-assembled connecting cable.

Function examples



System overview

- Overview of configured modules and current diagnostic messages

Diagnostics

- Fast access to the diagnostic history and the modules with diagnostic messaging
- Display of the last 40 diagnostic messages with timestamp
- Display of the current diagnostic message for a module

Commissioning

- Selection of module-specific data and parameters
- Display and modification of the current status of the inputs and outputs of a module
- Display and modification of the current settings for module-specific parameters

Setup

- Setting of access permission (password)
- Contrast setting of the display

Terminal CPX

Technical data – Operator unit CPX-MMI-1

General technical data		
Type		**CPX-MMI-1**
Data interface		RS232 interface, 57.6 kBaud, M12 socket, 4-pin
Display component		LCD graphical display with background illumination (128 x 64 pixels)
Control elements		7 keys: 4 arrow keys and 3 function keys, touch-sensitive keypad
Electromagnetic compatibility		Interference emission tested to DIN EN 61000-6-4, industry
		Interference immunity tested to DIN EN 61000-6-2, industry
Nominal operating voltage	[V DC]	24, supplied by the connected device
Operating voltage range	[V DC]	18 … 30
Current consumption	[mA]	50 … 60
Protection class to IEC 60529		IP65
Relative air humidity	[%]	90, non-condensing
Vibration resistance		Tested to DIN/IEC 68/EN 60068, Part 2-6 • With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1
Shock resistance		Tested to DIN/IEC 68/EN 60068, Part 2-27 • With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1
Materials		Reinforced PA
Dimensions (W x H x D)	[mm]	81 x 137 x 28
Weight	[g]	150

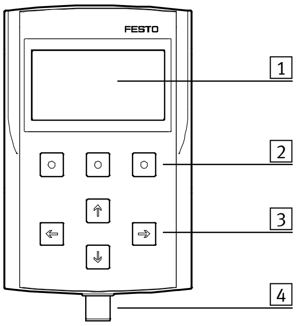
Operating and environmental conditions		
Ambient temperature	[°C]	0 … 50
CE mark (see declaration of conformity)		To EU EMC Directive[1]
		In accordance with EU Explosion Protection Directive (ATEX)
ATEX category	Gas	II 3 G
	Dust	II 3 D
EX-ignition protection type	Gas	Ex nA IIC T6 X Gc
	Dust	Ex tc IIIC T60°C X Dc IP65
ATEX ambient temperature	[°C]	−5 <= Ta <= +50

[1] For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Note

When operating device combinations in hazardous areas, the lowest common zone, temperature class and ambient temperature of the individual devices determine the possible use of the entire module.

Connection and display components

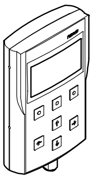
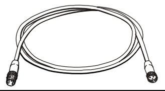
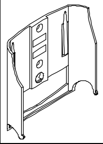
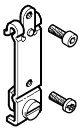
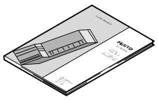


1 Display (LCD display)
2 Function keys
3 Arrow keys
4 M12 interface

Terminal CPX

Accessories – Operator unit CPX-MMI-1

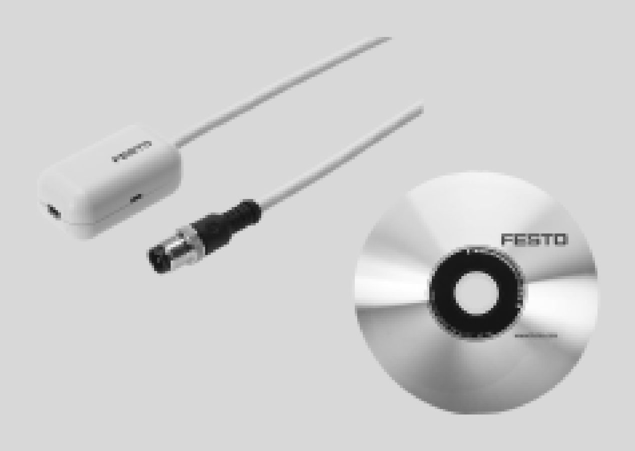
Ordering data

Designation			Part No.	Type
Operator unit				
	Provides data polling, configuration and diagnostic functions for CPX terminals		**529043**	**CPX-MMI-1**
Connecting cable				
	Connecting cable M12-M12, specially for CPX-MMI	1.5 m	**529044**	**KV-M12-M12-1,5**
		3.5 m	**530901**	**KV-M12-M12-3,5**
Mounting				
	Bracket		**534705**	**CPX-MMI-1-H**
	Mounting for H-rail		**536689**	**CPX-MMI-1-NRH**
User manual				
	User manual for operator unit CPX-MMI-1	German	**534824**	**P.BE-CPX-MMI-1-DE**
		English	**534825**	**P.BE-CPX-MMI-1-EN**
		French	**534827**	**P.BE-CPX-MMI-1-FR**
		Italian	**534828**	**P.BE-CPX-MMI-1-IT**
		Spanish	**534826**	**P.BE-CPX-MMI-1-ES**

Function

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 control block CPX-FEC and the bus nodes EtherNet/IP (FB 32), Sercos III (FB 39) and PROFINET (FB 33, FB 34, FB 35, FB 41). The bus nodes or control block can be connected directly to the PC via a USB adapter from Festo.. Similar to the CPX-MMI, diagnostic data such as the error trace or module diagnostics can be read out and parameters can be modified in plain text. In contrast to the CPX-MMI, 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 e-mail. 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 performed without an existing controller infrastructure. It must be noted that with both the CPX-FMT and the CPX-MMI, 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

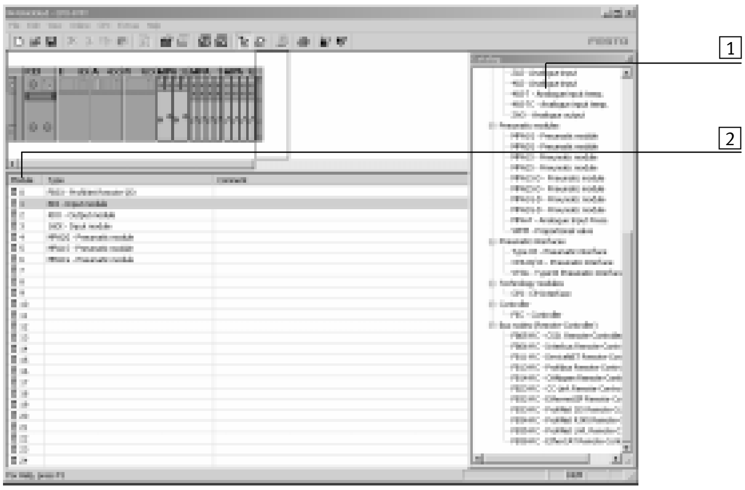
Type			NEFC-M12G5-0.3-U1G5
System requirements	PC		IBM-compatible
	Drive		CD-ROM
	Interfaces		USB port (specification USB 1.1 or higher)
	Operating system		Microsoft Windows 2000 or XP
Functional range			• Configuration and parameterisation • Reading out of system, module, channel diagnostics and error trace • Saving of the configuration as a project • Integration of plug-ins/links to self-executing programs
Scope of delivery			• Adapter M12, 5-pin to mini USB socket • CD-ROM with installation program
Type of mounting			Screw-in
Electrical connection			Plug M12x1, 5-pin
Adapter cable composition			4 x 0.34 mm^2
Cable length		[m]	0.3
Protection class to EN 60529			IP20
CE mark (see declaration of conformity)			To EU EMC Directive
Ambient temperature		[°C]	−5 … +50
Material	Housing		ABS
	Cable sheath		PUR
	Pin contact		Gold-plated brass
Note on materials			RoHS-compliant

Terminal CPX

Technical data – CPX Maintenance Tool

Display components

Creating a device configuration using the editor

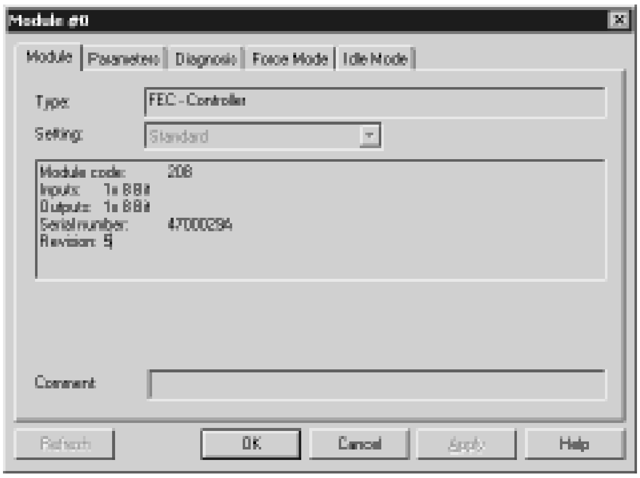


The device configuration can be conveniently generated, parameterised and saved using the drag & drop feature. You can insert and move modules.

1 Module numbers from the graphic system overview

2 Catalogue for selecting required modules

Module overview for a selected module



Type: FEC - Controller

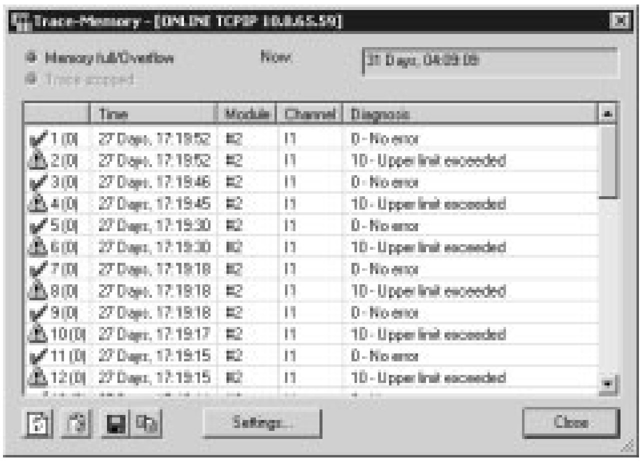
Setting: Standard

Module code: 208
Inputs: 1x 8 Bit
Outputs: 1x 8 Bit
Serial number: 47000294
Revision: 5

Comment:

Displays important module data as well as the number of allocated inputs and outputs.

Diagnostic memory



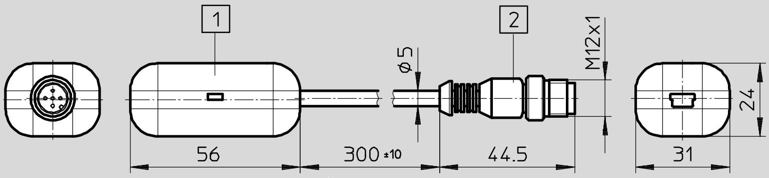
Now: 31 Days, 04:09:09

	Time	Module	Channel	Diagnosis
✓ 1 (0)	27 Days, 17:19:52	#2	I1	0 - No error
⚠ 2 (0)	27 Days, 17:19:52	#2	I1	10 - Upper limit exceeded
✓ 3 (0)	27 Days, 17:19:46	#2	I1	0 - No error
⚠ 4 (0)	27 Days, 17:19:45	#2	I1	10 - Upper limit exceeded
✓ 5 (0)	27 Days, 17:19:30	#2	I1	0 - No error
⚠ 6 (0)	27 Days, 17:19:30	#2	I1	10 - Upper limit exceeded
✓ 7 (0)	27 Days, 17:19:18	#2	I1	0 - No error
⚠ 8 (0)	27 Days, 17:19:18	#2	I1	10 - Upper limit exceeded
✓ 9 (0)	27 Days, 17:19:18	#2	I1	0 - No error
⚠ 10 (0)	27 Days, 17:19:17	#2	I1	10 - Upper limit exceeded
✓ 11 (0)	27 Days, 17:19:15	#2	I1	0 - No error
⚠ 12 (0)	27 Days, 17:19:15	#2	I1	10 - Upper limit exceeded

Faults which occur during operation are entered in a diagnostic memory. The first or the last 40 entries are saved, as well as the respective time measured from the moment the power supply was switched on.

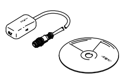
Dimensions Download CAD data ➔ **www.festo.com**

Adapter



1 Mini B 5P USB port
2 Plug M12x1, 5-pin

Ordering data

Designation		Part No.	Type
	CPX Maintenance Tool (CPX-FMT), software and USB-to-M12 adapter	**547432**	**NEFC-M12G5-0.3-U1G5**

Terminal CPX

Technical data – Control block CPX-FEC

← Industrial Ethernet →
← Modbus/TCP →
← EasyIP →

IT services:

← Web →
← E-mail →
← File transfer →

Powerful control block for pre-processing actuation of the CPX modules. The power supply to and communication with other modules takes place via the interlinking block.
In addition to the connection for the Ethernet interface in RJ45 and a programming interface in Sub-D, 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-MMI and CPX-FMT.

Application

Bus connection

The CPX-FEC is a remote controller that can be connected to a master PLC via the bus nodes of the CPX terminal or via Ethernet. At the same time, it is possible to operate the CPX-FEC as a compact stand-alone controller directly on the machine.

Modbus/TCP (code T05)

Transmits data in binary format within TCP/IP packets. This ensures good data throughput.

Operating modes

- Stand-alone/EasyIP
- Fieldbus remote controller
- Modbus/TCP remote controller
- Remote I/O Modbus/TCP

Communication protocols

- PROFIBUS, PROFINET, DeviceNet, INTERBUS, CANopen, EtherCAT and CC-Link via CPX bus node
- Modbus/TCP
- EasyIP
- IP
- TCP
- UDP
- SMTP
- HTTP
- DHCP
- BootP
- TFTP

Setting options

CPX-FEC has the following interfaces for monitoring, programming and commissioning:

- For the CPX-MMI/-FMT
- Serial interface RS232, for example, for a Front End Display (FED)
- Ethernet interface for IT applications
- Remote diagnostics

The operating mode and fieldbus protocol are set using the DIL switch on the CPX-FEC.

The integrated web server offers a convenient means of querying data saved in the CPX-FEC.

General technical data			
Type			**CPX-FEC-1-IE**
Ethernet interface			RJ45 (8-pin, socket)
Data interface			RS232 (Sub-D, 9-pin, socket)
MMI/FMT interface			M12, 5-pin, socket
Baud rate	Ethernet interface	[Mbit/s]	10/100 (to IEEE802.3, 10BaseT)
	Data interface	[kbit/s]	9.6 … 115.2
	MMI/FMT interface	[kbit/s]	56.6
Protocol			• TCP/IP • Easy IP • Modbus TCP • HTTP
Processing time for 1,024 binary instructions		[ms]	Approx. 1
Flags			M0.0 … M9999, addressable as bits or words
	No. of time flags		T0 … T255
	Time range	[s]	0.01 to 655.35
	No. of counting flags		Z0 … Z255
	Counting range		0 to 65535
Register			R0 … R255, addressable as words
Special FE			FE 0 … 255, init flag
IP address setting			BOOTP/DHCP via FST or via MMI/FMT
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64
Program memory	User program	[kB]	250
	Web applications	[kB]	550
Programming language			• IL • LD
Arithmetic functions			+, -, *, :, further functions via functional modules
Functional modules			• CPX diagnostic status • Copy CPX diagnostic trace • Read CPX module diagnostics • Write CPX module parameter • …
No. of programs/tasks			P0 … P63

LED displays (FEC-specific)			RUN = Program is being executed/Modbus connection active
			STOP = Program is stopped/no Modbus connection
			ERR = Error in the program execution
			TP = Status of the Ethernet connection

Device-specific diagnostics			Module and channel-oriented diagnostics via peripherals error
Parameterisation			• Start-up parameterisation via FST • Parameterisation during the operating time via functional module
Control elements			• DIL switch for setting the operating mode • Rotary switch for program selection/program start
Additional functions			• Storage of the last 40 errors with timestamp (access via PCP) • 8-bit system status in image table for inputs • 2-byte inputs and 2-byte outputs, system diagnostics in image table

Terminal CPX

Technical data – Control block CPX-FEC

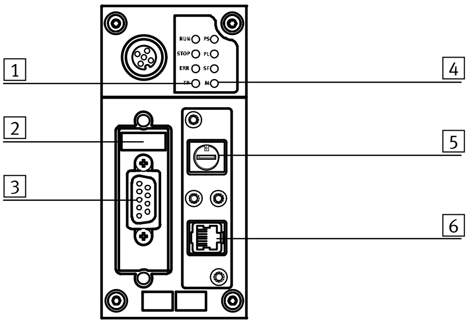
General technical data			
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Residual ripple		[Vss]	4
Current consumption		[mA]	Max. 200
Interference emission			To EN 61000-6-4 (industry)
Interference immunity			To EN 61000-6-2 (industry)
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			Plastic
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55
Weight		[g]	140

Note

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

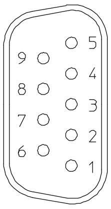
Overview of the operating modes				
	Stand-alone	Remote controller		Remote I/O
		Ethernet	Fieldbus	Modbus/TCP
CPX-FEC function	Control	Control and communication		Ethernet slave
CPX module controlled by	CPX-FEC	CPX-FEC		Higher-order controller
Pre-processing of data in the FEC	Yes	Yes		No
Communication with higher-order controller	No	Via Ethernet • EasyIP • Modbus/TCP	Via fieldbus	Via Ethernet • EasyIP • Modbus/TCP
Web server	Possible	Possible		Possible
Configuration	FST 4.1 or higher	FST 4.1 or higher		Higher-order controller
Parameterisation	Via FST, CPX-MMI/-FMT	Via FST, CPX-MMI/-FMT		Via CPX-MMI/-FMT, Modbus
Order code	T03	T03		T05
Addressing	Changeable	Changeable		Preset
Memory	• 250 kB for user program • 550 kB for web applications	• 250 kB for user program • 550 kB for web applications		• 800 kB for web applications
CPX-MMI/-FMT	Can be connected to CPX-FEC	Can be connected to CPX-FEC		Can be connected to CPX-FEC

Connection and display components

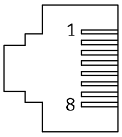


1	Controller and Ethernet LEDs
2	DIL switch for operating mode
3	Programming interface RS232 (9-pin Sub-D, socket)
4	CPX-specific status LEDs
5	16-way rotary switch (program selection)
6	Ethernet connection (8-pin RJ45, socket)

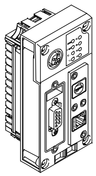
Pin allocation for the programming interface (RS232)

Pin allocation	Pin	Signal	Designation
Sub-D socket			
	1	n.c.	Not connected
	2	RxD	Received data
	3	TxD-P	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
	Housing	Screened	Connection to functional earth (FE)

Pin allocation for the Ethernet interface

Pin allocation	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	Screened	Screened

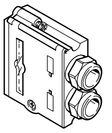
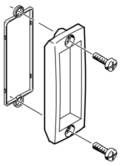
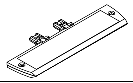
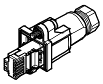
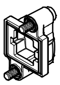
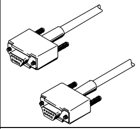
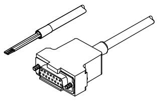
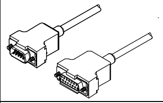
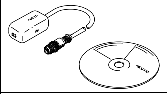
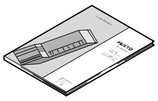
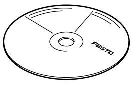
Ordering data

Designation		Part No.	Type
Control block			
	For pre-processing actuation of the CPX modules	**529041**	**CPX-FEC-1-IE**

Terminal CPX

Accessories – Control block CPX-FEC

Ordering data

Designation			Part No.	Type
Bus connection				
	Sub-D plug		**534497**	**FBS-SUB-9-GS-1x9POL-B**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
	RJ45/plug		**534494**	**FBS-RJ45-8-GS**
	Cover for RJ45 connection		**534496**	**AK-RJ45**
	Programming cable		**151915**	**KDI-PPA-3-BU9**
	Connecting cable FED		**539642**	**FEC-KBG7**
	Connecting cable FED		**539643**	**FEC-KBG8**
	Adapter from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	User manual for control block CPX-FEC	German	**538474**	**P.BE-CPX-FEC-DE**
		English	**538475**	**P.BE-CPX-FEC-EN**
		Spanish	**538476**	**P.BE-CPX-FEC-ES**
		French	**538477**	**P.BE-CPX-FEC-FR**
		Italian	**538478**	**P.BE-CPX-FEC-IT**
Software				
	Programming software	German	**537927**	**P.SW-FST4-CD-DE**
		English	**537928**	**P.SW-FST4-CD-EN**

Terminal CPX

Technical data – Control block CPX-CEC

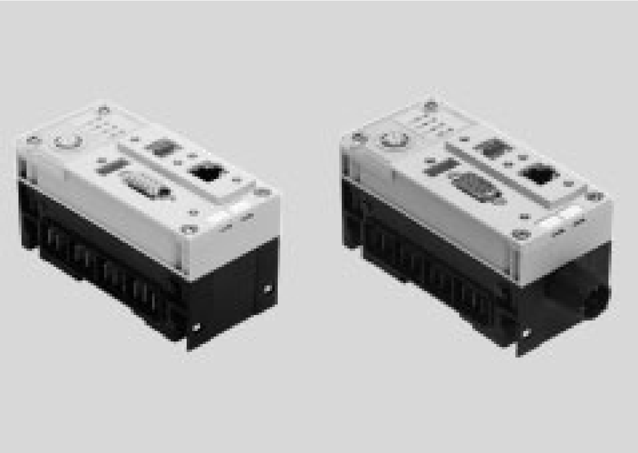
FESTO

← Industrial Ethernet →
← Modbus/TCP →
← EasyIP →

IT services:

← Web →
← E-mail →
← File 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-MMI and CPX-FMT.



Application

Bus connection

The CPX-CEC is a remote controller that can be connected to a master PLC via the fieldbus 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.

Communication protocols

- Fieldbus via CPX fieldbus nodes
- Modbus/TCP
- EasyIP

Operating modes

- Stand-alone
- Remote controller, fieldbus
- Remote controller, Ethernet

Setting options

The CPX-CEC has the following interfaces for monitoring, programming and commissioning:

- For the CPX-MMI/-FMT
- Ethernet interface for IT applications
- Remote diagnostics

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.

Features

- Easy actuation of valve terminal configurations with MPA, VTSA
- Diagnostics with flexible monitoring options for pressure, flow rate, cylinder operating time, air consumption
- Actuation of decentralised installation systems on the basis of CPI actuation of applications in proportional pneumatics
- AS-Interface actuation via gateway
- Connection to all fieldbuses as a remote controller and for pre-processing
- Actuation of electric drives as individual axes via CANopen (CPX-CEC-C1/-M1)
- Early warnings and visualisation options
- Closed-loop pneumatic applications

Terminal CPX

Technical data – Control block CPX-CEC

General technical data			
Protocol			CODESYS Level 2
			EasyIP
			Modbus TCP
			TCP/IP
Processing time			Approx. 200 µs/1 k instruction
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			Diagnostic memory
			Channel and module-oriented diagnostics
			Undervoltage/short circuit of modules
LED displays	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 fault
			M: Modify/forcing active
IP address setting			DHCP
			Via CODESYS
			Via MMI
Function blocks			CPX diagnostic status, copy CPX diagnostic trace, read CPX module diagnostics, etc.
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55

Materials	
Housing	Reinforced PA
	PC
Note on materials	RoHS-compliant

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

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

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

Terminal CPX

Technical data – Control block CPX-CEC

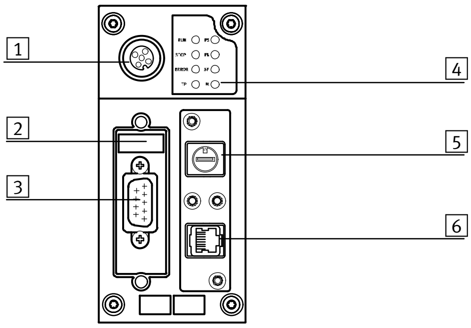
Technical data

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	CAN bus
Parameterisation			CODESYS V2.3	CODESYS V3	CODESYS V3
Configuration support			CODESYS V2.3	CODESYS V3	CODESYS V3
Program memory, user program		[MB]	4	16	16
Flags			CODESYS variable 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	Number		1		
	Connection technology		RJ45 socket, 8-pin		
	Data transmission speed	[Mbps]	10/100		
	Supported protocols		TCP/IP, EasyIP, Modbus TCP		
Fieldbus interface	Number		1		
	Connection technology		Sub-D plug connector, 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

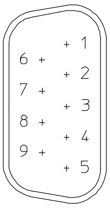
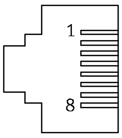
Type			CPX-CEC	CPX-CEC-S1-V3
CPU data	Flash	[MB]	32	32
	RAM	[MB]	32	256
	Processor	[MHz]	400	800
Parameterisation			CODESYS V2.3	CODESYS V3
Configuration support			CODESYS V2.3	CODESYS V3
Additional functions			Diagnostic functions	
			RS232 communication function	
Program memory, user program		[MB]	4	16
Flags			CODESYS variable concept	CODESYS variable concept
	Remanent data	[kB]	30	28
	Global data memory	[MB]	8	–
Control elements			Rotary switch for RUN/STOP	
Ethernet	Number		1	
	Connection technology		RJ45 socket, 8-pin	
	Data transmission speed	[Mbps]	10/100	
	Supported protocols		TCP/IP, EasyIP, Modbus TCP	
Data interface	Number		1	
	Connection technology		Sub-D socket, 9-pin	
	Data transmission speed	[kbps]	9.6 … 230.4	
	Supported protocols		RS232 interface	
	Max. cable length	[m]	–	30
	Galvanic isolation		Yes	

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



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

Pin allocation – CPX-CEC-C1/-M1

	Pin	Signal	Meaning
Fieldbus interface, Sub-D plug connector			
	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	Screening	Plug connector housing must be connected to FE
Ethernet interface, RJ45 plug connector			
	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	Screening	Screening

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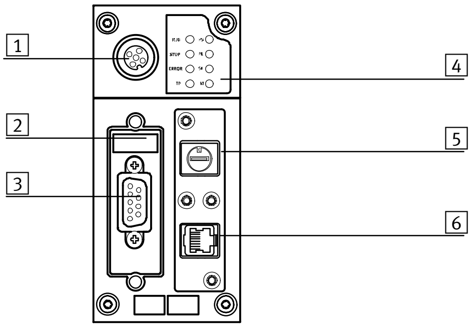
1) If a drive controller with external power supply is connected, CAN ground (optional), pin 6, on the CPX-CEC-C1/-M1 must not be used.

Terminal CPX

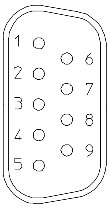
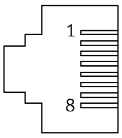
Technical data – Control block CPX-CEC

Connection and display components CPX-CEC/CPX-CEC-S1-V3



- 1 CPX-MMI 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)

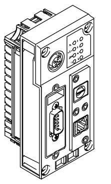
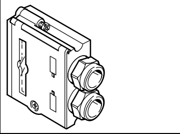
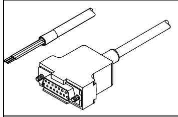
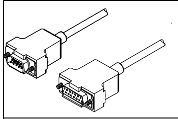
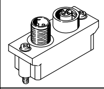
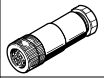
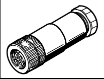
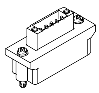
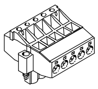
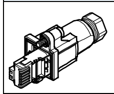
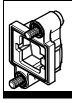
Pin allocation – CPX-CEC/CPX-CEC-S1-V3

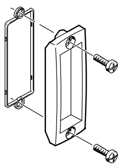
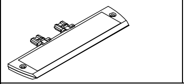
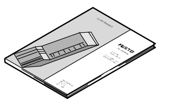
	Pin	Signal	Meaning
Fieldbus interface, Sub-D socket			
	1	n.c.	Not connected
	2	RXD	Received data
	3	TXD	Transmitted data
	4	n.c.	Not connected
	5	GND	Data reference potential
	6	n.c.	Not connected
	7	n.c.	Not connected
	8	n.c.	Not connected
	9	n.c.	Not connected
	Screening	Screening	Connection to functional earth
Ethernet interface, RJ45 plug connector			
	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	Screening	Screening

Terminal CPX

Accessories – Control block CPX-FEC

Ordering data

Designation		Parameterisation	Weight [g]	Part No.	Type
Control block					
	Motion functions for electric drives	CODESYS V2.3	155	**567347**	**CPX-CEC-C1**
		CODESYS V3	135	**3473128**	**CPX-CEC-C1-V3**
	SoftMotion functions for electric drives	CODESYS V3	135	**3472765**	**CPX-CEC-M1-V3**
	RS232 communication function	CODESYS V2.3	155	**567346**	**CPX-CEC**
		CODESYS V3	135	**3472425**	**CPX-CEC-S1-V3**
Fieldbus interface					
	Sub-D plug connector, 9-pin, for CANopen			**532219**	**FBS-SUB-9-BU-2x5POL-B**
	Connecting cable FED			**539642**	**FEC-KBG7**
	Connecting cable FED			**539643**	**FEC-KBG8**
	Micro Style bus connection, 2xM12 for DeviceNet/CANopen			**525632**	**FBA-2-M12-5POL**
	Socket for Micro Style connection, M12			**18324**	**FBSD-GD-9-5POL**
	Plug connector for Micro Style connection, M12			**175380**	**FBS-M12-5GS-PG9**
	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					
	RJ45 plug connector			**534494**	**FBS-RJ45-8-GS**
	Cover for RJ45 connection			**534496**	**AK-Rj45**

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 manifold block		**536593**	**CPX-ST-1**
User documentation				
	Manual for control block CPX-CEC	German	**569121**	**P.BE-CPX-CEC-DE**
		English	**569122**	**P.BE-CPX-CEC-EN**

Terminal CPX

Technical data – Bus node CPX-FB6

INTERBUS

Bus node for handling communication between the electrical CPX terminal and a higher-order master via INTERBUS.
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 four CPX-specific LEDs.
The fieldbus communication status is displayed via four INTERBUS-specific LEDs.

Application

Bus connection

The bus connection is established via a 9-pin Sub-D socket and a 9-pin Sub-D plug with a typical INTERBUS pin allocation.

The bus connector plugs (with IP65/IP67 protection from Festo or IP20 protection from other manufacturers) facilitate the connection of the incoming and outgoing bus cable.

The outgoing bus plug contains the typical INTERBUS RBST bridge for identification of the outgoing bus connection.

The Sub-D interfaces are designed for controlling network components with a fibre-optic cable connection.

INTERBUS implementation

The CPX-FB6 supports the INTERBUS protocol to EN 50254.
In addition to synchronous I/O exchange, the optional PCP channel can be used for parameterisation and diagnostic functions.
The PCP channel provides access to advanced system information and assigns operation parameters 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 96 inputs and 96 outputs, the CPX-FB6 supports a large number of I/O module configurations, including pneumatic interface.

Note

If the PCP channel is used, the maximum number of possible process data bits is reduced by 16.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

General technical data

Type			**CPX-FB6**
Fieldbus interface			Sub-D, 9-pin, socket and pin
Baud rate		[Mbit/s]	0.5 and 2
Bus type			Remote bus
Ident. code			1, 2 or 3 (configuration-specific) 243 (PCP-channel activated)
Profile			12 (I/O device)
PCP channel			Yes, 16 bit (optional via DIL switch)
Configuration support			Icons for CMD software
Max. no. of process data bits	Inputs	[bit]	96
	Outputs	[bit]	96

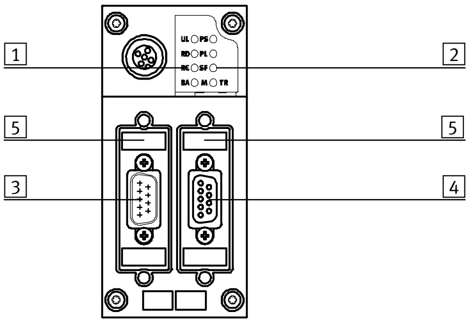
LED displays (bus-specific)			UL = Operating voltage for INTERBUS interface
			RC = Remotebus check
			BA = Bus active
			RD = Remotebus disable
			TR = Transmit/receive

Device-specific diagnostics			Via peripherals error
Parameterisation			• Start-up parameterisation via user functions (CMD) • Via PCP communication
Additional functions			• Storage of the last 40 errors with timestamp (access via PCP) • 8-bit system status in image table for inputs • 2-byte inputs and 2-byte outputs, system diagnostics in image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	125

Note

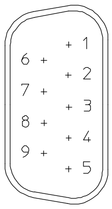
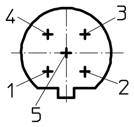
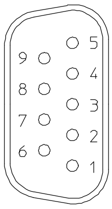
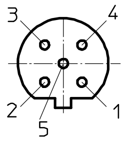
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Connection and display components



1	INTERBUS-specific LEDs
2	CPX-specific status LEDs
3	Fieldbus connection, incoming (9-pin Sub-D plug)
4	Fieldbus connection, outgoing (9-pin Sub-D socket)
5	DIL switch

Pin allocation for the INTERBUS interface

Pin allocation for Sub-D	Pin	Signal	Designation	Pin	Pin allocation for M12
Incoming					
	1	DO1	Data out	1	
	2	DI1	Data in	3	
	3	GND	Reference conductor/ground	5	
	4	n.c.	Not connected	2	
	5	n.c.	Not connected	4	
	6	/DO1	Data out inverse		
	7	/DI1	Data in inverse		
	8	n.c.	Not connected		
	9	n.c.	Not connected		
	Housing	Screened	Connection to FE (functional earth) via R/C combination	Housing	
Outgoing					
	1	DO2	Data out	1	
	2	DI2	Data in	3	
	3	GND	Reference conductor/ground	5	
	4	n.c.	Not connected	2	
	5	+5 V	Station detection[1]	4	
	6	/DO2	Data out inverse		
	7	/DI2	Data in inverse		
	8	n.c.	Not connected		
	9	RBST	Station detection[1]		
	Housing	Screened	Connection to FE (functional earth)	Housing	

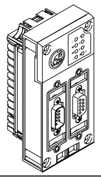
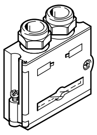
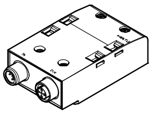
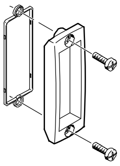
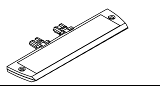
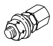
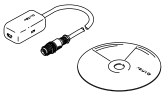
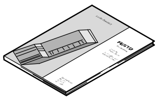
The incoming interface is galvanically isolated from the CPX peripherals. The plug housing is connected to the functional earth FE of the CPX terminal via an R/C combination.

[1] The CPX terminal contains the protocol chip SUPI 3 OPC. This ensures automatic detection of additional connected INTERBUS stations. There is therefore no need for a bridge between pin 5 and pin 9.

Terminal CPX

Accessories – Bus node CPX-FB6

Ordering data

Designation			Part No.	Type
Bus node				
	INTERBUS bus node		**195748**	**CPX-FB6**
Bus connection				
	Sub-D plug	Incoming	**532218**	**FBS-SUB-9-BU-IB-B**
		Outgoing	**532217**	**FBS-SUB-9-GS-IB-B**
	Connection block M12 adapter (B-coded)		**534505**	**CPX-AB-2-M12-RK-IB**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
	Threaded sleeve, 4 pieces		**533000**	**UNC4-40/M3x6**
	Adapter from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	User manual for bus node CPX-FB6	German	**526433**	**P.BE-CPX-FB6-DE**
		English	**526434**	**P.BE-CPX-FB6-EN**
		Spanish	**526435**	**P.BE-CPX-FB6-ES**
		French	**526436**	**P.BE-CPX-FB6-FR**
		Italian	**526437**	**P.BE-CPX-FB6-IT**

Bus node for handling communication between the electrical CPX terminal 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 four 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 connectors or OpenStyle 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 "Predefined Master/Slave Connection Set" as a "Group 2 Only Server".
The polled I/O, change of state or synchronous method is used for the transmission of synchronous 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 synchronous data transmission, asynchronous communication is supported through explicit messaging, which enables detailed device diagnostics and parameterisation.

A comprehensive EDS file supports the display of asynchronous 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.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB11

General technical data			
Type			**CPX-FB11**
Fieldbus interface			Either • Micro Style bus connection: 2xM12 with IP65, IP67 protection • Open Style bus connection: 5-pin terminal strip, IP20
Baud rate		[kbps]	125, 250, 500
Addressing range			0 … 63 Set using DIL switch
Product	Type		Communication adapter (12 dec.)
	Code		4554 dec.
Communication types			Polled I/O, change of state/synchronous, strobed I/O and explicit messaging
Configuration support			EDS file and bitmaps
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64

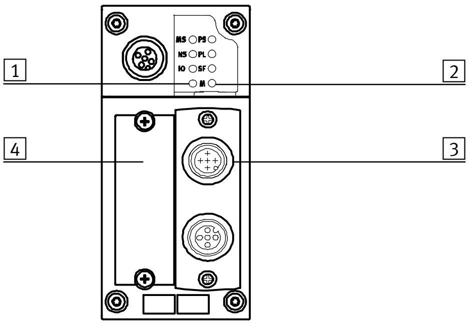
LED displays (bus-specific)			MS = Module status
			NS = Network status
			IO = I/O status

Device-specific diagnostics			Module and channel-oriented diagnostics by means of manufacturer-specific diagnostic object
Parameterisation			• Module and system parameterisation via configuration interface in plain text (EDS) • Online in run or program mode
Additional functions			• Storage of the last 40 errors with timestamp (access via EDS) • 8-bit system status in image table for inputs • 2-byte inputs and 2-byte outputs, system diagnostics in image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	120

Note

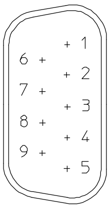
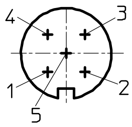
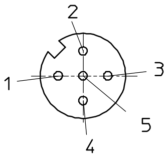
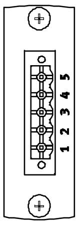
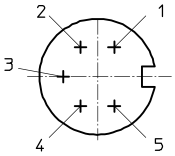
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Connection and display components



1 Bus-specific LEDs
2 CPX-specific status LEDs
3 Selectable fieldbus connection
  Micro Style
  Open Style
4 DIL switch cover

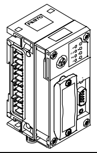
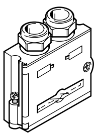
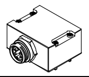
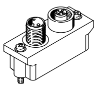
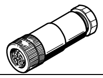
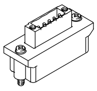
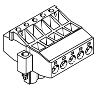
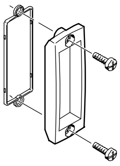
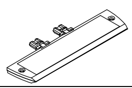
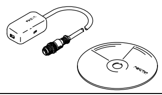
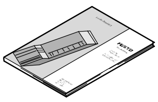
Pin allocation for the DeviceNet interface

Pin allocation	Pin	Signal-specific core colour[1]	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	Blank	Screened	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 for CAN interface
Micro Style bus connection (M12), incoming/outgoing				
Incoming 	1	Blank	Screened	Connection to housing
	2	Red	24 V DC bus	24 V DC supply for 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
Outgoing 	1	Blank	Screened	Connection to housing
	2	Red	24 V DC bus	24 V DC supply for 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	Blank	Screened	Connection to housing
	4	White	CAN_H	Received/transmitted data high
	5	Red	24 V DC bus	24 V DC supply for CAN interface
Bus connection 7/8"				
	1	Black	Screened	Connection to housing
	2	Blue	24 V DC	24 V DC supply for CAN interface
	3	Blank	0 V	0 V CAN interface
	4	White	CAN_H	Received/transmitted data high
	5	Red	CAN_L	Received/transmitted data low

[1] Typical for DeviceNet connecting cables

Terminal CPX

Accessories – Bus node CPX-FB11

Ordering data				
Designation			Part No.	Type
Bus node				
	DeviceNet bus node		**526172**	**CPX-FB11**
Bus connection				
	Sub-D plug		**532219**	**FBS-SUB-9-BU-2x5POL-B**
	Connection block, socket Sub-D 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 MicroStyle connection, M12		**18324**	**FBSD-GD-9-5POL**
	Plug for Micro Style connection, M12		**175380**	**FBS-M12-5GS-PG9**
	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 from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	User manual for bus node CPX-FB11	German	**526421**	**P.BE-CPX-FB11-DE**
		English	**526422**	**P.BE-CPX-FB11-EN**
		Spanish	**526423**	**P.BE-CPX-FB11-ES**
		French	**526424**	**P.BE-CPX-FB11-FR**
		Italian	**526425**	**P.BE-CPX-FB11-IT**

Terminal CPX

Technical data – Bus node CPX-FB13

Bus node for handling communication between the electrical CPX terminal 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 four 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 IP65/IP67 protection from Festo or IP20 protection 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 synchronous I/O exchange, parameterisation and diagnostic functions (DPV0).

In addition to DPV0, asynchronous communication to the advanced specification DPV1 is supported. DPV1 provides asynchronous access to advanced system information and assigns operation parameters 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.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

Technical data – Bus node CPX-FB13

General technical data			
Type			**CPX-FB13**
Fieldbus interface			Sub-D socket, 9-pin (EN 50 170) Galvanically isolated 5 V
Baud rate		[Mbit/s]	0.0096 … 12
Addressing range			1 … 125 Set using DIL switch
Product range			4: Valves
Ident. number			0x059E
Communication types			DPV0: Synchronous communication DPV1: Asynchronous 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			• Start-up parameterisation via configuration interface in plain text (GSD) • Asynchronous parameterisation via DPV1
Additional functions			• Storage of the last 40 errors with timestamp (access via DPV1) • 8-bit system status in image table for inputs • 2-byte inputs and 2-byte outputs, system diagnostics in image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	115

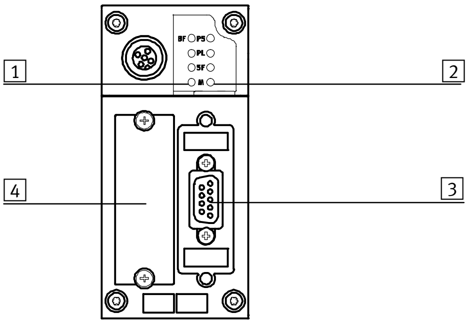
Note

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

Terminal CPX

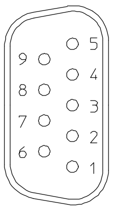
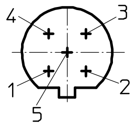
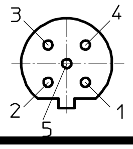
Technical data – Bus node CPX-FB13

Connection and display components



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

Pin allocation for PROFIBUS DP interface

Pin allocation	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[1]	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	Screened	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	Screened	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	Screened	Connection to FE (functional earth)

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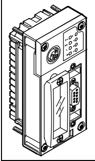
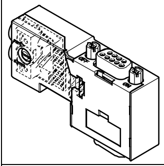
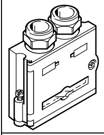
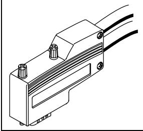
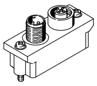
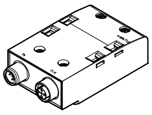
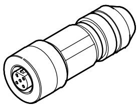
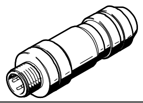
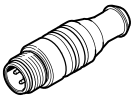
[1] The repeater control signal CNTR-P is realised as a TTL signal.

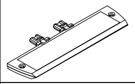
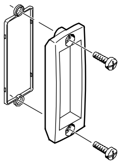
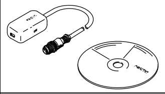
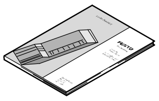
Ordering data

Designation		Part No.	Type
Bus node			
	PROFIBUS bus node	**195740**	**CPX-FB13**
Bus connection			
	Sub-D straight plug connector 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**
	Socket M12x1, 5-pin, straight, for self-assembly of a connecting cable for FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP	**1067905**	**NECU-M-B12G5-C2-PB**
	Plug M12x1, 5-pin, straight, for self-assembly of a connecting cable for 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**

Terminal CPX

Accessories – Bus node CPX-FB13

Ordering data

Designation			Part No.	Type
Bus connection				
	Inscription label holder for connection block M12		**536593**	**CPX-ST-1**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Adapter from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	User manual for bus node CPX-FB13	German	**526427**	**P.BE-CPX-FB13-DE**
		English	**526428**	**P.BE-CPX-FB13-EN**
		Spanish	**526429**	**P.BE-CPX-FB13-ES**
		French	**526430**	**P.BE-CPX-FB13-FR**
		Italian	**526431**	**P.BE-CPX-FB13-IT**

Terminal CPX

Technical data – Bus node CPX-FB14

Bus node for handling communication between the electrical CPX terminal and a CANopen network master or CANopen 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 four CPX-specific LEDs.
The different CANopen statuses and the fieldbus communication status are displayed via three additional LEDs.

Application

Bus connection

The bus connection is established via a 9-pin Sub-D plug (pin) as per the CAN in Automation (CiA) specification DS 102 with additional 24 V CAN transceiver supply (option as per DS 102).

The bus connector plug (with IP65/IP67 protection from Festo or IP20 protection from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

There are four contacts available for the four wires (CAN_L, CAN_H, 24 V, 0 V) of the incoming and outgoing bus cables.

CANopen implementation

The CPX-FB14 supports the CANopen protocol in accordance with the specifications DS 301 V4.01 and DS 401 V2.0.
Implementation is based on the CiA Pre-defined Connection Set.
There are four PDOs available for fast I/O data exchange.

Advanced system information can also be accessed by means of SDO communication. SDO communication also facilitates parameterisation before network startup or 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, the CPX-FB14 supports a large number of I/O module configurations, including pneumatic interface.
By default, 8 byte digital inputs and 8 byte digital outputs can be addressed via PDO 1.

8 analogue input channels and 8 analogue output channels can be addressed via PDO 2 and 3. Status and diagnostic information can be evaluated via PDO 4.
Additional 8 byte digital inputs and outputs as well as 8 analogue input and output channels can be addressed via mapping.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB14

General technical data			
Type			**CPX-FB14**
Fieldbus interface			Sub-D pin, 9-pin (to DS 102) Bus interface galvanically isolated via optocoupler 24 V supply for CAN interface via bus
Baud rate		[kbit/s]	125; 250; 500 and 1,000 can be set via DIL switch
Addressing range			Node ID 1 … 127 Set using DIL switch
Product range			Digital inputs and outputs
Communication profile			DS 301, V4.01
Device profile			DS 401, V2.0
Number	PDO		4 Tx/4 Rx
	SDO		1 server SDO
Configuration support			EDS file and bitmaps
Max. address capacity	Inputs	[byte]	16 digital, 16 analogue channels
	Outputs	[byte]	16 digital, 16 analogue channels

LED displays (bus-specific)			MS = Module status
			NS = Network status
			IO = I/O status

Device-specific diagnostics			Via emergency message Object 1001, 1002 and 1003
Parameterisation			Via SDO
Additional functions			• Storage of the last 40 errors with timestamp (access via SDO) • 8-bit system status via transmit PDO 4 (default) • 2-byte inputs and 2-byte outputs, system diagnostics via PDO 4 • Minimum boot-up • Variable PDO mapping • Emergency message • Node guarding • Heart beat
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	115

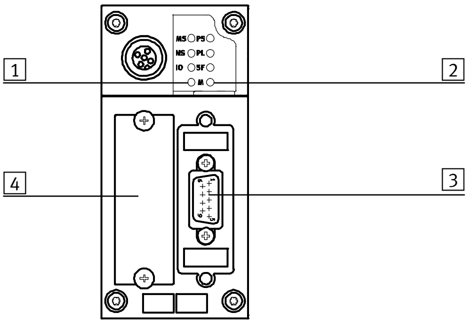
Note

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

Terminal CPX

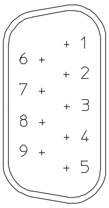
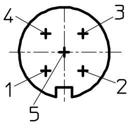
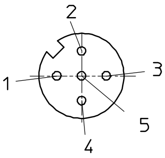
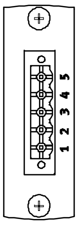
Technical data – Bus node CPX-FB14

Connection and display components



1 Bus-specific LEDs
2 CPX-specific status LEDs
3 Fieldbus connection (9-pin Sub-D, plug)
4 DIL switch cover

Pin allocation for the CANopen interface

Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	Received/transmitted data low
	3	CAN_GND	0 V CAN interface
	4	n.c.	Not connected
	5	CAN_Shld	Optional screened connection
	6	GND	Ground[1]
	7	CAN_H	Received/transmitted data high
	8	n.c.	Not connected
	9	CAN_V+	24 V DC supply for CAN interface
	Housing	Screened	Connection to FE (functional earth)
Micro Style bus connection (M12)			
Incoming 	1	Screened	Connection to FE (functional earth)
	2	CAN_V+	24 V DC supply for CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Outgoing 	1	Screened	Connection to FE (functional earth)
	2	CAN_V+	24 V DC supply for CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Open Style bus connection			
	1	CAN_GND	0 V CAN interface
	2	CAN_L	Received/transmitted data low
	3	Screened	Connection to FE (functional earth)
	4	CAN_H	Received/transmitted data high
	5	CAN_V+	24 V DC supply for CAN interface

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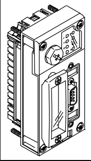
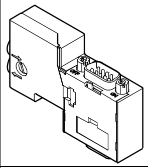
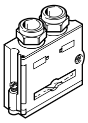
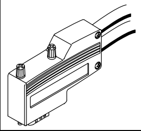
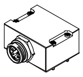
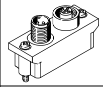
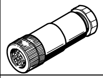
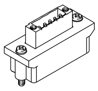
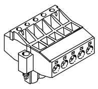
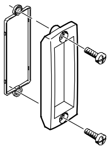
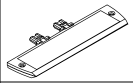
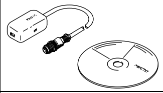
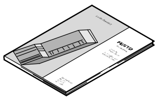
[1] Connected internally via Pin 3

Terminal CPX

Accessories – Bus node CPX-FB14

Ordering data

Designation			Part No.	Type
Bus node				
	CANopen bus node		**526174**	**CPX-FB14**
Bus connection				
	Sub-D socket for CANopen with terminating resistor and programming interface		**574588**	**NECU-S1W9-C2-ACO**
	Sub-D plug		**532219**	**FBS-SUB-9-BU-2x5POL-B**
	Sub-D plug, angled		**533783**	**FBS-SUB-9-WS-CO-K**
	Connection block, Sub-D socket, 9-pin, plug 7/8", 5-pin		**571052**	**CPX-AB-1-7/8-DN**
	Micro Style bus connection, 2xM12, 5-pin		**525632**	**FBA-2-M12-5POL**
	Fieldbus socket for Micro Style connection, M12, 5-pin		**18324**	**FBSD-GD-9-5POL**
	Plug for Micro Style connection, M12, 5-pin		**175380**	**FBS-M12-5GS-PG9**
	Open Style bus connection		**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 from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	User manual for bus node CPX-FB14	German	**526409**	**P.BE-CPX-FB14-DE**
		English	**526410**	**P.BE-CPX-FB14-EN**
		Spanish	**526411**	**P.BE-CPX-FB14-ES**
		French	**526412**	**P.BE-CPX-FB14-FR**
		Italian	**526413**	**P.BE-CPX-FB14-IT**

Terminal CPX

Technical data – Bus node CPX-M-FB20/CPX-M-FB21

Bus node for handling communication between the electrical terminal CPX and a higher-order master via INTERBUS.
The bus node processes communication with the I/O modules.
The status of the terminal CPX is displayed as a common message via 4 CPX-specific LEDs.
The fieldbus communication status is displayed via 6 INTERBUS-specific LEDs.

Application

Bus connection

The bus connection is established via a socket with INTERBUS Rugged Line connection technology and the associated plug, with fibre-optic cables used for the power supply to the valve terminal and data transmission.

The bus node is used as a remote I/O. It supports processing of max. 96 inputs and 96 outputs or max. 6 analogue I/O channels.

The I/O area is divided into:

- Digital I/O
- Analogue I/O
- System status/system diagnostics (optional)
- PCP channel (optional)

INTERBUS implementation

The CPX-M-FB20 and CPX-M-FB21 support the INTERBUS protocol to EN 50254.
In addition to cyclic I/O exchange, the optional PCP channel can be used for parameterisation and diagnostic functions.

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.

The PCP channel provides access to advanced system information and assigns operation parameters while the controller is running via the user program.

Note

If the PCP channel is used, the maximum number of possible process data bits is reduced by 16.

Special features in combination with CPX-FB20/CPX-FB21

- Remote Controller operating mode is not supported.
  A CPX-FEC/CPX-CEC cannot be used in combination with CPX FB20/CPX-FB21 in a terminal CPX.
- Power is supplied via the fieldbus connection. It is therefore not possible to use an interlinking block with system supply within a terminal CPX with CPX-M-FB20/CPX-M-FB21.
- Only the valve terminals VTSA and VTSA-F with pneumatic interface VABA-S6-1-X2 can be selected as the pneumatic part.

Terminal CPX

Technical data – Bus node CPX-M-FB20/CPX-M-FB21

General technical data			
Type			**CPX-M-FB20/CPX-M-FB21**
Fieldbus interface			Rugged Line fibre-optic cable connection
Baud rate		[Mbit/s]	0.5 and 2
Bus type			Remote bus
Max. address capacity	Inputs	[bit]	96
	Outputs	[bit]	96

LED displays	INTERBUS-specific		BA = Bus active
			FO1 = Fibre-optic cable 1
			FO2 = Fibre-optic cable 2
			RC = Remotebus check
			RD = Remotebus disable
			UL = Operating voltage for INTERBUS interface

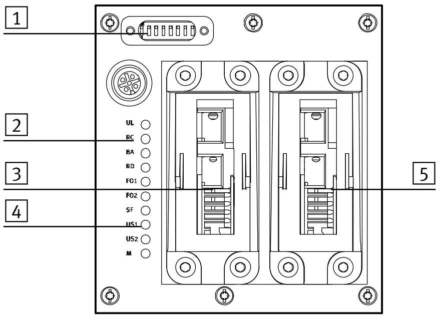
	CPX-specific		M = Parameterisation
			SF = System fault
			US1 = Electronics supply, sensor supply
			US2 = Load supply

Device-specific diagnostics			• Diagnostic memory • Channel and module-oriented diagnostics • Module undervoltage
Parameterisation			• Diagnostic behaviour • Fail-safe response • Forcing of channels • Signal setup • System parameters
Additional functions			• Module and system parameterisation via operator units • System status can be represented using process data • Additional diagnostic interface for operator units
Operating elements			DIL switches
Operating voltage	Nominal value	[V DC]	24 (polarity-safe)
	Permissible range	[V DC]	18 … 30
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 90
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
CE marking (see declaration of conformity)			To EU EMC Directive
Housing materials			Aluminium
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	100 x 110 x 130
Product weight	CPX-FB20	[g]	1,070
	CPX-FB21	[g]	1,255

Note

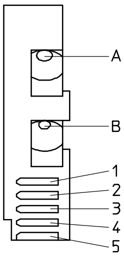
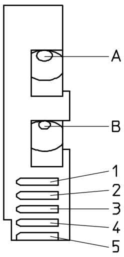
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Connection and display components



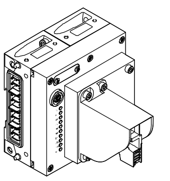
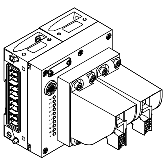
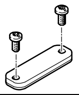
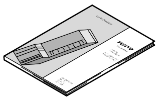
1 DIL switch
2 INTERBUS-specific LEDs
3 Fieldbus connection, incoming
4 CPX-specific status LEDs
5 Fieldbus connection, outgoing

Pin allocation for INTERBUS interface

FOC pin allocation	Pin	Wire colour	Designation
Incoming			
	A	Black	Transmitted data
	B	Orange	Received data
	1	–	24 V supply for electronics and inputs
	2	–	0 V supply for electronics and inputs
	3	–	24 V supply for valves and outputs
	4	–	0 V supply for valves and outputs
	5	–	Functional earth
Outgoing			
	A	Orange	Transmitted data
	B	Black	Received data
	1	–	24 V supply for electronics and inputs
	2	–	0 V supply for electronics and inputs
	3	–	24 V supply for valves and outputs
	4	–	0 V supply for valves and outputs
	5	–	Functional earth

Terminal CPX

Accessories – Bus node CPX-M-FB20/CPX-M-FB21

Ordering data				
Designation			Part No.	Type
Bus node				
	INTERBUS bus node, incoming fieldbus connection		**572334**	**CPX-M-FB20**
	INTERBUS bus node, incoming and outgoing fieldbus connection		**572221**	**CPX-M-FB21**
Bus connection				
	Blanking plate for covering the DIL switches		**572818**	**CPX-M-FB21-IB-RL**
Manual				
	Manual – Bus nodes CPX-M-FB20 and CPX-M-FB21	German	**575107**	**P.BE-CPX-FB20/21-DE**
		English	**575108**	**P.BE-CPX-FB20/21-EN**
		Spanish	**575109**	**P.BE-CPX-FB20/21-ES**
		French	**575110**	**P.BE-CPX-FB20/21-FR**
		Italian	**575111**	**P.BE-CPX-FB20/21-IT**

Bus node for handling communication between the electrical CPX terminal 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 fieldbus communication status is displayed via 4 CC-Link-specific LEDs.

Application

Bus connection

The bus connection can be selected when ordering and is established by means of a screw terminal with IP20 protection, a Sub-D plug with IP65/IP67 protection from Festo or IP20 protection 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) or in the operator unit (CPX-MMI-1) 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 64 bytes of digital I/O and 64 bytes of analogue I/O each.
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 32 bytes of digital I/O and 14 bytes of analogue I/O each.

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

Points to note in connection with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEC, 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 interlinking of 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 actuation of the peripherals:

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB23-24

General technical data

Type				**CPX-FB23-24**
Fieldbus interface				Either • Sub-D socket, 9-pin • Sub-D plug, for self-assembly • Screw terminal strip, IP20
Baud rates			[kbps]	156 … 10,000
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
				ERROR = Communication error
				SD = Send data
				RD = Receive data

Device-specific diagnostics				• Diagnostic memory • Channel and module-oriented diagnostics • Module undervoltage
Parameterisation				• Diagnostic behaviour • Fail-safe response • Forcing of channels • Signal setup • System parameters
Additional functions				• System status can be displayed using process data • Additional diagnostic interface for operator units
Control elements				DIL switches
Operating voltage	Nominal value		[V DC]	24
	Permissible range		[V DC]	18 … 30
Current consumption			[mA]	Typically 200
Protection class to EN 60529				IP65, IP67
Temperature range	Operation		[°C]	–5 … +50
	Storage/transport		[°C]	–20 … +70
Materials				PA reinforced, PC
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 50
Product weight			[g]	115

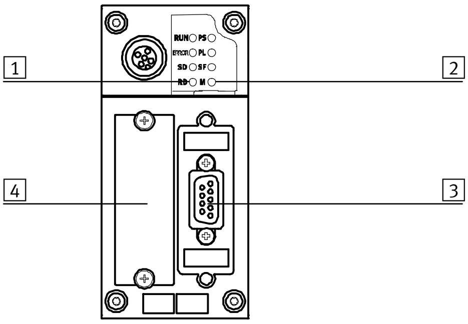
Note

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

Terminal CPX

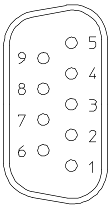
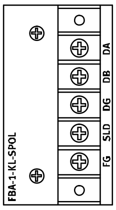
Technical data – Bus node CPX-FB23-24

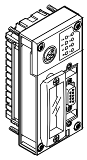
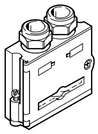
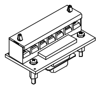
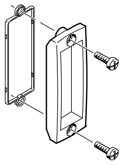
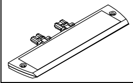
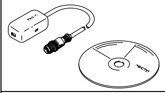
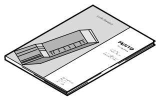
Connection and display components



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

Pin allocation for the CC-Link interface

Pin allocation	Pin	Signal	Designation
Sub-D socket			
	1	n.c.	Not connected
	2	DA	Data A
	3	DG	Data reference potential
	4	n.c.	Not connected
	5	FE1)	Functional earth
	6	n.c.	Not connected
	7	DB	Data B
	8	n.c.	Not connected
	9	n.c.	Not connected
Screw terminal bus connection			
	1	FG	Functional earth/housing
	2	SLD	Screening
	3	DG	Data reference potential
	4	DB	Data B
	5	DA	Data A

Ordering data				
Description			Part No.	Type
Bus node				
	CC-Link bus node		**526176**	**CPX-FB23-24**
Bus connection				
	Sub-D plug		**532220**	**FBS-SUB-9-GS-2x4POL-B**
	Screw terminal bus connection		**197962**	**FBA-1-KL-5POL**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
	Adapter from 5-pin M12 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**	**P.BE-CPX-FB23-24-DE**
		English	**526404**	**P.BE-CPX-FB23-24-EN**
		Chinese	**8026069**	**P.BE-CPX-FB23-24-ZH**

← Industrial Ethernet →
← EtherNet/IP →

IT services:
← Web →

Bus node for handling communication between the electrical CPX terminal 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 four CPX-specific LEDs.

Application

Bus connection

The bus connection is established via an M12 plug, D-coded to IEC947-5-2 with IP65, IP67 protection.

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

EtherNet/IP implementation

The CPX-FB32 supports the two remote I/O and remote controller operating modes.
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 actuation 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 data of the device from the automation network.
The EtherNet/IP node for CPX supports the transmission technology that conforms to DIN EN 50173/CAT 5.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB32

General technical data			
Type			**CPX-FB32**
Fieldbus interface			Socket M12, D-coded, 4-pin
Baud rate		[Mbit/s]	10/100, full/half duplex
IP addressing			Via DHCP, DIL switch or network software
Max. address capacity, inputs		[byte]	64
Max. address capacity, outputs		[byte]	64

LED displays (bus-specific)			MS = Module status
			NS = Network status
			IO = I/O status
			TP = Link/traffic

Device-specific diagnostics			System, module and channel-oriented diagnostics
Parameterisation			• Start-up parameterisation • Asynchronous parameterisation via Explicit Messaging
Additional functions			• Storage of the last 40 errors with timestamp (access via system diagnostics) • 8-bit system status in image table for inputs • 2-byte I/O, system diagnostics via image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 65
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	– 5… +50
	Storage/transport	[°C]	–20 … +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	125

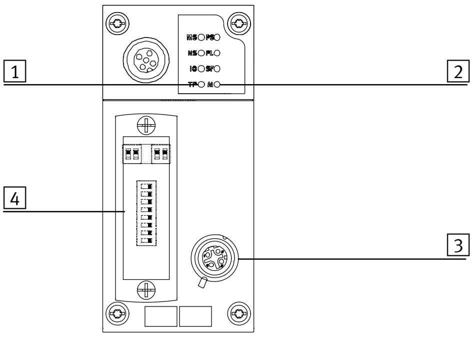
Note

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

Terminal CPX

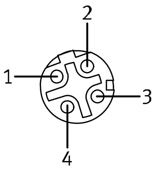
Technical data – Bus node CPX-FB32

Connection and display components



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

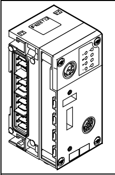
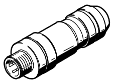
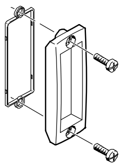
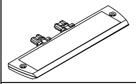
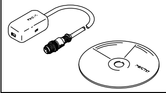
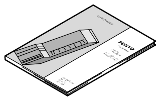
Pin allocation for the fieldbus interface

Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing		Screened

Terminal CPX

Accessories – Bus node CPX-FB32

Ordering data

Designation			Part No.	Type
Bus node				
	EtherNet/IP bus node		**541302**	**CPX-FB32**
Bus connection				
	Plug M12x1, 4-pin, D-coded		**543109**	**NECU-M-S-D12G4-C2-ET**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
	Adapter from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	User manual for bus node CPX-FB32	German	**693134**	**P.BE-CPX-FB32-DE**
		English	**693135**	**P.BE-CPX-FB32-EN**
		Spanish	**693136**	**P.BE-CPX-FB32-ES**
		French	**693137**	**P.BE-CPX-FB32-FR**
		Italian	**693138**	**P.BE-CPX-FB32-IT**

Terminal CPX

Technical data – Bus node CPX-FB33

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 four 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 IEC61076-2-101 with IP65, IP67 protection.
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 Mbit/s

PROFINET implementation

The CPX-FB33 supports 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, memory stick and a diagnostic interface.
The purpose of the memory stick is to guarantee fast replacement of the bus node in the event of an error.
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, depending on the function, changed via an MMI.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

General technical data			
Type			**CPX-FB33**
Fieldbus interface			2x socket M12, D-coded, 4-pin
Baud rate		[Mbit/s]	100
Protocol			PROFINET RT
			PROFINET IRT
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64

LED displays	(bus-specific)		M/P = Maintenance/PROFIenergy
			NF = Network fault
			TP1 = Network active port 1
			TP2 = Network active port 2

	(product-specific)		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault

Device-specific diagnostics			• Channel and module-oriented diagnostics • Undervoltage of modules • Diagnostic memory
Configuration support			GSDML file
Parameterisation			• System parameters • Diagnostic behaviour • Signal setup • Fail-safe response • Forcing of channels
Additional functions			• Start-up parameterisation in plain text via fieldbus • Fast startup (FSU) • Channel-oriented diagnostics via fieldbus • Asynchronous data access via fieldbus • System status can be represented using process data • Additional diagnostic interface for operator units • Asynchronous data access via Ethernet
Control elements			• DIL switch • Optional memory card
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
Current consumption		[mA]	Typically 120
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	– 5… +50
	Storage/transport	[°C]	–20 … +70
Materials	Housing		Die-cast aluminium
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	280

Note

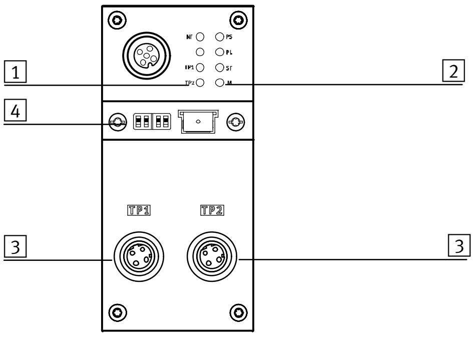
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Note

Always use screws appropriate to the interlinking block (metal or plastic):

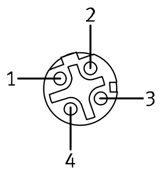
- Self-tapping screws for plastic interlinking blocks
- Screws with metric thread for metal interlinking blocks

Connection and display components

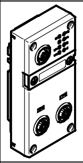
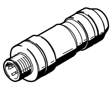
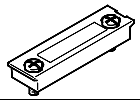
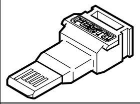
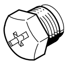
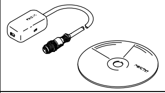
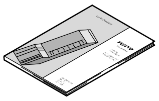


1	Bus-specific status LEDs
2	CPX-specific status LEDs
3	Fieldbus connection (4-pin socket M12, D-coded)
4	Transparent cover for DIL switch and memory card

Pin allocation for the fieldbus interface

Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing		Screened

Ordering data

Designation			Part No.	Type
Bus node				
	PROFINET bus node		**548755**	**CPX-FB33**
Bus connection				
	Plug M12x1, 4-pin, D-coded		**543109**	**NECU-M-S-D12G4-C2-ET**
	Transparent cover for DIL switch and memory card		**548757**	**CPX-AK-P**
	Memory card for PROFINET bus node, 2 MB		**568647**	**CPX-SK-2**
	Cover cap for sealing unused bus connections (10 pieces)		**165592**	**ISK-M12**
	Screws for attaching an inscription label holder to the bus node (12 pieces)		**550222**	**CPX-M-M2,5X8-12X**
	Adapter from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	Electronics manual, CPX bus node, type CPX-FB33	German	**548759**	**P.BE-CPX-PNIO-DE**
		English	**548760**	**P.BE-CPX-PNIO-EN**
		Spanish	**548761**	**P.BE-CPX-PNIO-ES**
		French	**548762**	**P.BE-CPX-PNIO-FR**
		Italian	**548763**	**P.BE-CPX-PNIO-IT**

Technical data – Bus node CPX-M-FB34

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

Application

Bus connection

The bus connection is established via two RJ45 push-pull sockets to IEC61076-3-106 and IEC60603 with IP65, IP67 protection.

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 Mbit/s

PROFINET implementation

The CPX-M-FB34 supports the PROFINET protocol based on the Ethernet standard and the 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 transmit 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, memory stick and a diagnostic interface.
The purpose of the memory stick is to guarantee fast replacement of the bus node in the event of an error.
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, depending on the function, changed via an MMI.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

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

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

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

Terminal CPX

Technical data – Bus node CPX-M-FB34

General technical data			
Type			**CPX-M-FB34**
Fieldbus interface			2x RJ45 push-pull socket, AIDA
Baud rate		[Mbit/s]	100
Protocol			PROFINET RT
			PROFINET IRT
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64

LED displays	(bus-specific)		M/P = Maintenance/PROFIenergy
			NF = Network fault
			TP1 = Network active port 1
			TP2 = Network active port 2

	(product-specific)		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault

Device-specific diagnostics			• Channel and module-oriented diagnostics • Undervoltage of modules • Diagnostic memory
Configuration support			GSDML file
Parameterisation			• System parameters • Diagnostic behaviour • Signal setup • Fail-safe response • Forcing of channels
Additional functions			• Start-up parameterisation in plain text via fieldbus • Fast startup (FSU) • Channel-oriented diagnostics via fieldbus • Asynchronous data access via fieldbus and via Ethernet • System status can be represented using process data • Additional diagnostic interface for operator units
Control elements			DIL switch, optional memory card
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 120
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	– 5… +50
	Storage/transport	[°C]	–20 … +70
Material of housing			Die-cast aluminium
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 80
Weight		[g]	280

Note

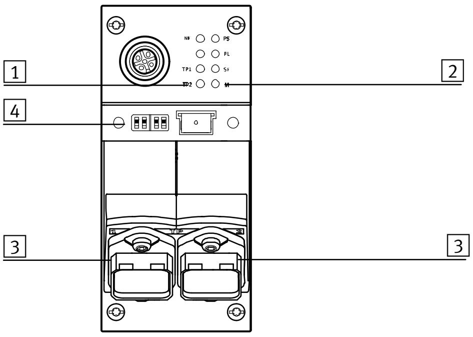
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Note

Always use screws appropriate to the interlinking block (metal or plastic):

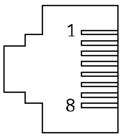
- Self-tapping screws for plastic interlinking blocks
- Screws with metric thread for metal interlinking blocks

Connection and display components



1 Bus-specific status LEDs
2 CPX-specific status LEDs
3 Fieldbus connection
(8-pin RJ45 socket)
4 DIL switch and memory card

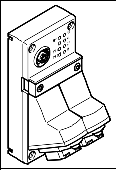
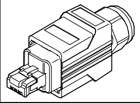
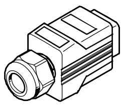
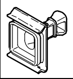
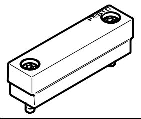
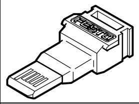
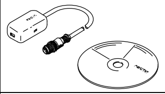
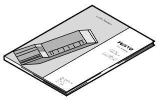
Pin allocation for the fieldbus interface

Pin allocation	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	Screened	Screened

Terminal CPX

Accessories – Bus node CPX-M-FB34

Ordering data

Designation			Part No.	Type
Bus node				
	PROFINET bus node		**548751**	**CPX-M-FB34**
Bus connection				
	RJ45 plug, 8-pin, push-pull		**552000**	**FBS-RJ45-PP-GS**
	Cover cap for bus connection		**548753**	**CPX-M-AK-C**
	Cover cap for bus connection		**2873540**	**CPX-M-AK-D**
	Cover for DIL switch and memory card		**548754**	**CPX-M-AK-M**
	Memory card for PROFINET bus node, 2 MB		**568647**	**CPX-SK-2**
	Screws for attaching an inscription label holder to the bus node (12 pieces)		**550222**	**CPX-M-M2,5X8-12X**
	Adapter from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	Electronics manual, CPX bus node, type CPX-M-FB34	German	**548759**	**P.BE-CPX-PNIO-DE**
		English	**548760**	**P.BE-CPX-PNIO-EN**
		Spanish	**548761**	**P.BE-CPX-PNIO-ES**
		French	**548762**	**P.BE-CPX-PNIO-FR**
		Italian	**548763**	**P.BE-CPX-PNIO-IT**

New
CPX-M-FB41

Terminal CPX

Technical data – Bus node CPX-M-FB35/CPX-M-FB41

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 to IP65, IP67.

The connections on the CPX-M-FB35 are equivalent 100BaseFX Ethernet ports that are brought together via an internal switch.

Fibre-optic cables made from plastic (POF, 980/1000 µm) are also suitable for transmission.

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

PROFINET implementation

The CPX-M-FB35/CPX-M-FB41 supports the PROFINET protocol based on 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. Furthermore, non real-time critical information such as diagnostic information, configuration information, etc. can be transferred.
The Ethernet bandwidth is sufficient to transmit 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, memory stick and a diagnostic interface. The purpose of the memory stick is to guarantee fast replacement of the bus node in the event of an error.
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, depending on the function, changed via an MMI.

Points to note in connection with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEC, 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 interlinking 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

Terminal CPX

Technical data – Bus node CPX-M-FB35/CPX-M-FB41

General technical data				
Type			**CPX-M-FB35**	**CPX-M-FB41**
Fieldbus interface			2x SCRJ push-pull socket, AIDA	1x SCRJ push-pull socket, AIDA
Baud rate		[Mbps]	100	
Protocol			PROFINET RT	PROFINET RT
			PROFINET IRT	–
Max. address capacity	Inputs	[byte]	64	
	Outputs	[byte]	64	

LED displays	(bus-specific)		M/P = Maintenance/PROFIenergy
			NF = Network fault
			TP1 = Network active port 1
			TP2 = Network active port 2
				NF = Network fault
				TP1 = Network active port 1

	(product-specific)		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault	

Device-specific diagnostics			• Channel and module-oriented diagnostics • Undervoltage of modules • Diagnostic memory	
Configuration support			GSDML file	
Parameterisation			• System parameters • Diagnostic behaviour • Signal setup • Fail-safe response • Forcing of channels	
Additional functions			• Start-up parameterisation in plain text via fieldbus • Fast start-up (FSU) • Channel-oriented diagnostics via fieldbus • Acyclic data access via fieldbus and via Ethernet • System status can be displayed using process data • Additional diagnostic interface for operator unit	
Control elements			DIL switch, optional memory card	
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	18 … 30	
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 150	Typically 125
Degree of protection to EN 60529			IP65, IP67	
Temperature range	Operation	[°C]	– 5… +50	
	Storage/transport	[°C]	–20 … +70	
Housing material			Die-cast aluminium	
Note on materials			RoHS-compliant	
Grid dimension		[mm]	50	
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 80	
Product weight		[g]	280	

Note

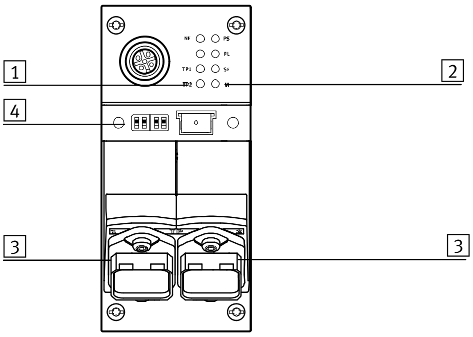
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Note

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

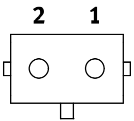
- Self-tapping screws for polymer interlinking blocks
- Screws with metric thread for metal interlinking blocks

Connection and display components



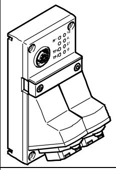
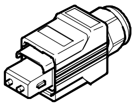
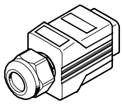
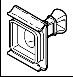
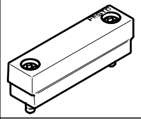
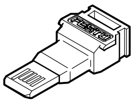
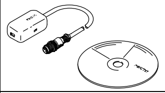
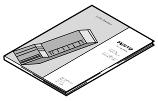
1 Bus-specific status LEDs
2 CPX-specific status LEDs
3 Fieldbus connection (SCRJ socket, 2-pin)
4 DIL switch and memory card

Pin allocation for the fieldbus interface

Terminal allocation	Pin	Signal	Designation
SCRJ socket			
	1	TX	Outgoing
	2	RX	Incoming

Terminal CPX

Accessories – Bus node CPX-M-FB35/CPX-M-FB41

Ordering data				
Description			Part No.	Type
Bus node				
	PROFINET bus node	2x SCRJ push-pull socket, AIDA	**548749**	**CPX-M-FB35**
		1x SCRJ push-pull socket, AIDA	**3228960**	**CPX-M-FB41**
Bus connection				
	SCRJ plug, 2-pin, push-pull		**571017**	**FBS-SCRJ-PP-GS**
	Cover cap for bus connection		**548753**	**CPX-M-AK-C**
	Cover cap for bus connection		**2873540**	**CPX-M-AK-D**
	Cover for DIL switch and memory card		**548754**	**CPX-M-AK-M**
	Memory card for PROFINET bus node, 2MB		**568647**	**CPX-SK-2**
	Screws for attaching an inscription label to the bus node (12 pieces)		**550222**	**CPX-M-M2,5X8-12X**
	5-pin M12 adapter for mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User documentation				
	Electronics manual, CPX bus node, type CPX-M-FB35/CPX-M-FB41	German	**548759**	**P.BE-CPX-PNIO-DE**
		English	**548760**	**P.BE-CPX-PNIO-EN**
		Spanish	**548761**	**P.BE-CPX-PNIO-ES**
		French	**548762**	**P.BE-CPX-PNIO-FR**
		Italian	**548763**	**P.BE-CPX-PNIO-IT**

Terminal CPX

Technical data – Bus node CPX-FB36

Industrial Ethernet
EtherNet/IP

IT services:

Web

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 terminal CPX 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 IEC947-5-2 with IP65, IP67 protection.

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 actuation 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 data of the device from the automation network.
The EtherNet/IP node for CPX supports the transmission technology that conforms to DIN EN 50173/CAT 5.

Points to note in connection with CPX-FEC/CPX-CEC

When combining a bus node with a control block (CPX-FEC, CPX-CEC, in fieldbus remote controller operating mode), the connected I/Os 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 via interlinking of 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 actuation of the peripherals:

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB36

General technical data			
Type			**CPX-FB36**
Fieldbus interface			2x M12x1 socket, D-coded, 4-pin
Baud rates		[Mbit/s]	10/100
Protocol			EtherNet/IP
			Modbus TCP
Max. address capacity, inputs		[byte]	64
Max. address capacity, outputs		[byte]	64

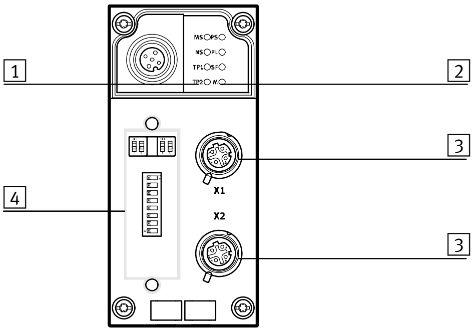
LED displays (bus-specific)			MS = Module status
			NS = Network status
			TP1 = Network active port 1
			TP2 = Network active port 2

Device-specific diagnostics			• Module and channel-oriented diagnostics • Module undervoltage • Diagnostic memory
Configuration support			• EDS file • L5K export with CPX-FMT
Parameterisation			• Diagnostic behaviour • Fail-safe response • Forcing of channels • Idle mode characteristics • Signal setup • System parameters
Additional functions			• EtherNet/IP Quickconnect • Ring topology (DLR) • Acyclic data access via "Explicit Message" and Ethernet • Integrated switch • IP addressing via DHCP, DIL switch or operator unit • Channel-oriented diagnostics via fieldbus • Start-up parameterisation in plain text via fieldbus • System status can be represented using process data • Additional diagnostic interface for operator units
Control elements			DIL switches
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
Current consumption (at nominal voltage, without MMI)		[mA]	Typically 100
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA reinforced
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Product weight		[g]	125

Note

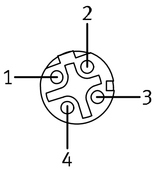
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Connection and display components



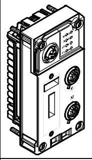
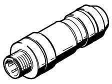
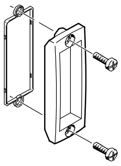
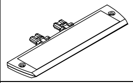
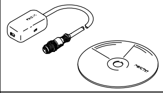
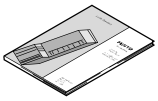
1 Bus-specific status LEDs
2 CPX-specific status LEDs
3 Fieldbus connection (4-pin socket M12, D-coded)
4 Transparent DIL switch cover

Pin allocation for the fieldbus interface

Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing	FE	Screening

Terminal CPX

Accessories – Bus node CPX-FB36

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**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
	5-pin M12 to mini USB socket adapter and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
Manual				
	Electronics manual, CPX bus node, type CPX-FB36	German	**8024074**	**P.BE-CPX-FB36-DE**
		English	**8024075**	**P.BE-CPX-FB36-EN**
		Spanish	**8024076**	**P.BE-CPX-FB36-ES**
		French	**8024077**	**P.BE-CPX-FB36-FR**
		Italian	**8024078**	**P.BE-CPX-FB36-IT**
		Chinese	**8024079**	**P.BE-CPX-FB36-ZH**

Terminal CPX

Technical data – Bus node CPX-FB37

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 terminal CPX is displayed as a common message via 4 CPX-specific LEDs.
The fieldbus communication status is displayed via 4 bus-specific LEDs.

Application

Bus connection

The bus connection is established via two M12x1 sockets, D-coded to IEC61076-2-101 with degree of protection to 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 based on 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. Furthermore, non real-time critical information such as diagnostic information, configuration information, etc. can be transferred.

The data bandwidth is sufficient to transmit 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 an MMI/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-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEC, 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 interlinking 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

Terminal CPX

Technical data - Bus node CPX-FB37

General technical data			
Type			**CPX-FB37**
Fieldbus interface			2x M12x1 socket, 4-pin, D-coded
Baud rates		[Mbps]	100
Protocol			EtherCAT
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64

LED displays	Bus-specific		Error = Communication error
			L/A1 = Network active port 1
			L/A2 = Network active port 2
			Run = Communication status

	Product-specific		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault

Device-specific diagnostics			• Channel and module-oriented diagnostics • Undervoltage of modules • Diagnostic memory
Configuration support			ESI file
Parameterisation			• System parameters • Diagnostic behaviour • Signal setup • Fail-safe response • Forcing of channels
Additional functions			• System status can be displayed using process data • Additional diagnostic interface for operator units • Emergency message • Acyclic data access via fieldbus • Diagnostic object • Compatibility mode for the CPX-FB38 • Modular device profile (MDP) • Variable PDO mapping
Control elements			DIL switches
Operating voltage	Nominal value	[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
Grid dimension		[mm]	50
Dimensions (incl. 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

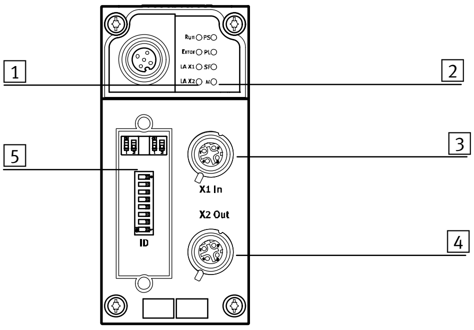
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal or polymer:

- Self-tapping screws for polymer interlinking blocks
- Screws with metric thread for metal interlinking blocks

Terminal CPX

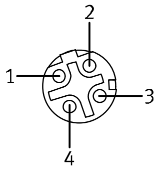
Technical data – Bus node CPX-FB37

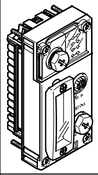
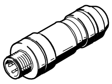
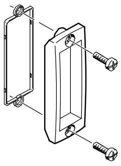
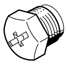
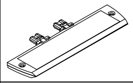
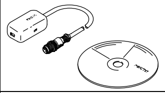
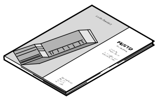
Connection and display components



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

Pin allocation for the fieldbus interface

Terminal allocation	Pin	Signal	Designation
M12x1 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing	FE	Screening

Ordering data				
Description			Part No.	Type
Bus node				
	EtherCAT bus node		**2735960**	**CPX-FB37**
Bus connection				
	Plug connector M12x1, 4-pin, D-coded		**543109**	**NECU-M-S-D12G4-C2-ET**
	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**
	5-pin M12 adapter for mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User documentation				
	Electronics manual, CPX bus node, type CPX-FB37	German	**8029674**	**P.BE-CPX-FB37-DE**
		English	**8029675**	**P.BE-CPX-FB37-EN**
		Spanish	**8029676**	**P.BE-CPX-FB37-ES**
		French	**8029677**	**P.BE-CPX-FB37-FR**
		Italian	**8029678**	**P.BE-CPX-FB37-IT**
		Chinese	**8029679**	**P.BE-CPX-FB37-ZH**

Terminal CPX

Technical data – Bus node CPX-FB38

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 four CPX-specific LEDs.

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

Application

Bus connection

The bus connection is established via two M12 sockets, D-coded to IEC61076-2-101 with IP65, IP67 protection.

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 Mbit/s

EtherCAT implementation

The CPX-FB38 supports the EtherCAT protocol based on the Ethernet standard and the 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 transmit 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 an MMI/FMT.

Special points in combination with CPX-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEX, 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 is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

The remaining address capacity of the control block or CPX system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

General technical data			
Type			**CPX-FB38**
Fieldbus interface			2x M12x1 socket, 4-pin, D-coded
Baud rate		[Mbit/s]	100
Max. address capacity, inputs		[byte]	64
Max. address capacity, outputs		[byte]	64

LED displays	(bus-specific)		Error = Communication error
			L/A1 = Network active port 1
			L/A2 = Network active port 2
			Run = Communication status

	(product-specific)		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault

Device-specific diagnostics			• Channel and module-oriented diagnostics • Undervoltage of modules • Diagnostic memory
Configuration support			XML file
Parameterisation			• System parameters • Diagnostic behaviour • Signal setup • Fail-safe response • Forcing of channels
Additional functions			• System status can be represented using process data • Additional diagnostic interface for operator units
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 100
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials	Housing		Reinforced PA
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	125

Note

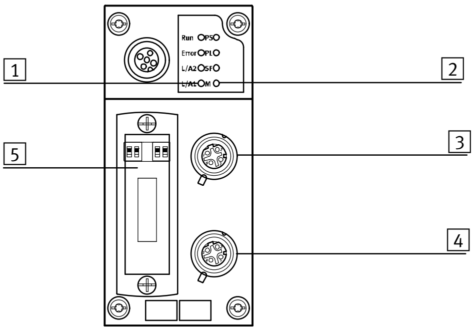
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Note

Always use screws appropriate to the interlinking block (metal or plastic):

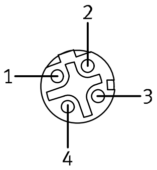
- Self-tapping screws for plastic interlinking blocks
- Screws with metric thread for metal interlinking blocks

Connection and display components



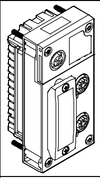
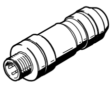
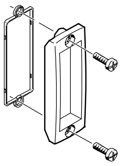
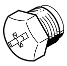
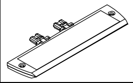
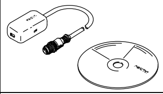
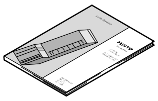
1 Bus-specific status LEDs
2 CPX-specific status LEDs
3 Fieldbus connection, output
(4-pin socket M12x1, D-coded)
4 Fieldbus connection, input
(4-pin socket M12x1, D-coded)
5 Transparent DIL switch cover

Pin allocation for the fieldbus interface

Pin allocation	Pin	Signal	Designation
M12x1 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing		Screened

Terminal CPX

Accessories – Bus node CPX-FB38

Ordering data				
Designation			Part No.	Type
Bus node				
	EtherCAT bus node		**552046**	**CPX-FB38**
Bus connection				
	M12x1 plug, 4-pin, D-coded		**543109**	**NECU-M-S-D12G4-C2-ET**
	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 from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User manual				
	Electronics manual, CPX bus node, type CPX-FB38	German	**562524**	**P.BE-CPX-FB38-DE**
		English	**562525**	**P.BE-CPX-FB38-EN**
		Spanish	**562526**	**P.BE-CPX-FB38-ES**
		French	**562527**	**P.BE-CPX-FB38-FR**
		Italian	**562528**	**P.BE-CPX-FB38-IT**

Terminal CPX

Technical data – Bus node CPX-FB39

Sercos

IT services:

Web

Bus node for handling communication between the electrical CPX terminal 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 M12x1 plug connectors, D-coded to IEC947-5-2 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 II 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. You can also transmit information that is not real-time critical, such as diagnostics or configuration information.

Web servers

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-FEC/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-FEC, 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 interlinking 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

Terminal CPX

FESTO

Technical data – Bus node CPX-FB39

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 displays	Bus-specific		S = Sercos LED
			SD = Sercos sub-device LED
			TP1 = Network active port 1
			TP2 = Network active port 2

	Product-specific		M = Modify, parameterisation
			PL = Load supply
			PS = Electronics supply, sensor supply
			SF = System fault

Device-specific diagnostics			• Module and channel-oriented diagnostics • Undervoltage of modules • Diagnostic memory
Configuration support			SDDML file
Parameterisation			• Diagnostic behaviour • Fallback output data • Forcing of channels • Signal setup • System parameters
Additional functions			• Acyclic and cyclic data access via Sercos • IP addressing via Sercos parameters or operator unit • Channel-oriented diagnostics via fieldbus • Start-up parameterisation in plain text via fieldbus • System status can be displayed using process data • Additional diagnostic interface for operator units
Control elements			DIL switches
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
Current consumption (at nominal voltage, without MMI)		[mA]	Typically 100
Degree of protection to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	– 5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA reinforced
Note on materials			RoHS compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Product weight		[g]	125

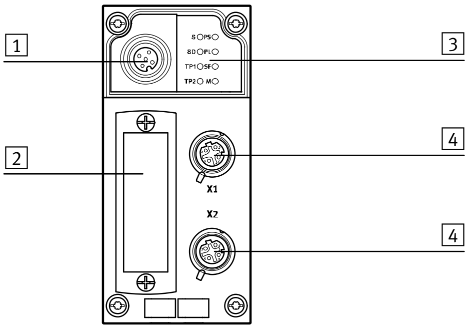
Note

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

Terminal CPX

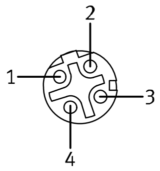
Technical data – Bus node CPX-FB39

Connection and display components



1. Service interface for operator unit CPX-MMI or 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 connection (M12x1 socket, 4-pin, D-coded)

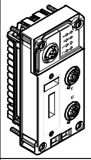
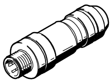
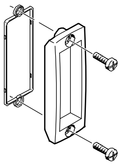
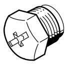
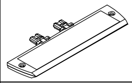
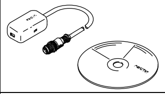
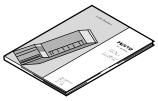
Pin allocation for the fieldbus interface

Terminal allocation	Pin	Signal	Designation	
M12x1 socket, D-coded				
	1	TD+	Transmitted data+	**Note** The CPX-FB39 has the capability for automatic detection of transmit and receive cables (Auto-MDI/MDI-X Auto-Crossover). RD and TD signal pairs are automatically swapped if required.
	2	RD+	Received data+	
	3	TD-	Transmitted data-	
	4	RD-	Received data-	
	Housing	FE	Screening	

Terminal CPX

Accessories – Bus node CPX-FB39

Ordering data

Description			Part No.	Type
Bus node				
	Ethernet Sercos III bus node		**2093101**	**CPX-FB39**
Bus connection				
	Plug connector M12x1, 4-pin, D-coded		**543109**	**NECU-M-S-D12G4-C2-ET**
	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**
	5-pin M12 to mini USB socket adapter and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User Documentation				
	User Documentation for bus node CPX-FB39	German	**8028632**	**P.BE-CPX-FB39-DE**
		English	**8028633**	**P.BE-CPX-FB39-EN**
		Spanish	**8028634**	**P.BE-CPX-FB39-ES**
		French	**8028635**	**P.BE-CPX-FB39-FR**
		Italian	**8028636**	**P.BE-CPX-FB39-IT**
		Chinese	**8028637**	**P.BE-CPX-FB39-ZH**

Terminal CPX

Technical data – Bus node CPX-FB40

Ethernet POWERLINK

IT services:

Web

Bus node for handling communication between the electrical CPX terminal 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 connector, D-coded to IEC947-5-2 with degree of protection to 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 reserved on the Ethernet lines exclusively for transferring real-time data. Only network participants which have previously been polled 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 directly 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-FEC/CPX-CEC

When a bus node is combined with a control block (CPX-FEC, 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 interlinking 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

Terminal CPX

Technical data – Bus node CPX-FB40

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 displays	Bus-specific		BE = POWERLINK error
			BS = POWERLINK status
			L/A1 = Link/activity port 1
			L/A2 = Link/activity port 2

	Product-specific		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault

Device-specific diagnostics			• Module and channel-oriented diagnostics • Undervoltage of modules • Diagnostic memory
Configuration support			• XDC file • XDD file
Parameterisation			• Diagnostic behaviour • Fail-safe response • Forcing of channels • Signal setup • System parameters
Additional functions			• Acyclic data access via "SDO" and Ethernet • Integrated hub • IP addressing via DHCP, DIL switch or operator unit • Channel-oriented diagnostics via fieldbus • Start-up parameterisation in plain text via fieldbus • System status can be displayed using process data • Additional diagnostic interface for operator units
Control elements			DIL switches
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 … 30
	Protection against incorrect polarity		For operating voltage
Current consumption (at nominal voltage, without MMI)		[mA]	Typically 100
Degree of protection to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Materials			PA reinforced
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Product weight		[g]	125

Note

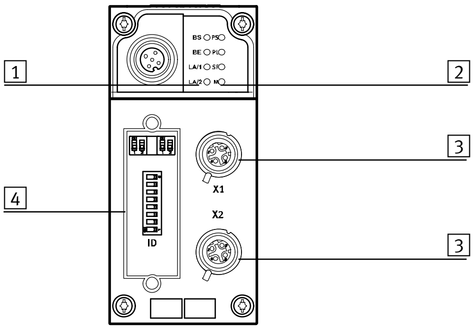
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX

Technical data – Bus node CPX-FB40

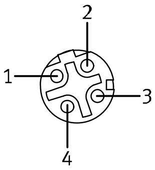
FESTO

Connection and display components



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

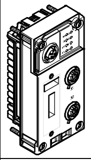
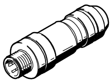
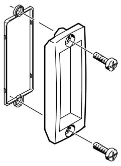
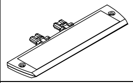
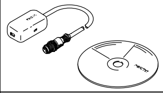
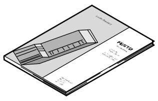
Pin allocation for the fieldbus interface

Terminal allocation	Pin	Signal	Designation
M12x1 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing	FE	Screening

Terminal CPX

Accessories – Bus node CPX-FB40

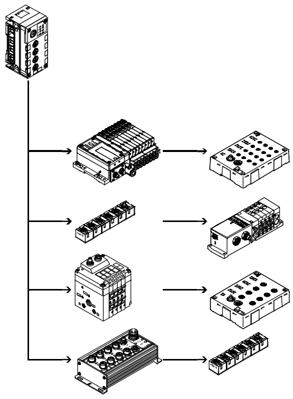
Ordering data

Description			Part No.	Type
Bus node				
	Ethernet POWERLINK bus node		**2474896**	**CPX-FB40**
Bus connection				
	M12x1 plug connector, 4-pin, D-coded		**543109**	**NECU-M-S-D12G4-C2-ET**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
	5-pin M12 adapter for mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
User documentation				
	User documentation for bus node CPX-FB40	German	**8028650**	**P.BE-CPX-FB40-DE**
		English	**8028651**	**P.BE-CPX-FB40-EN**
		Spanish	**8028652**	**P.BE-CPX-FB40-ES**
		French	**8028653**	**P.BE-CPX-FB40-FR**
		Italian	**8028654**	**P.BE-CPX-FB40-IT**
		Chinese	**8028655**	**P.BE-CPX-FB40-ZH**

→ Internet: www.festo.com/catalogue/...

Terminal CPX

Technical data – CPX-CP interface



The CPX-CP electrical interface establishes the connection to CP modules of the CPI installation system via prefabricated 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.

The CP electrical interface is supported by all CPX bus nodes and the CPX-FEC.

Application

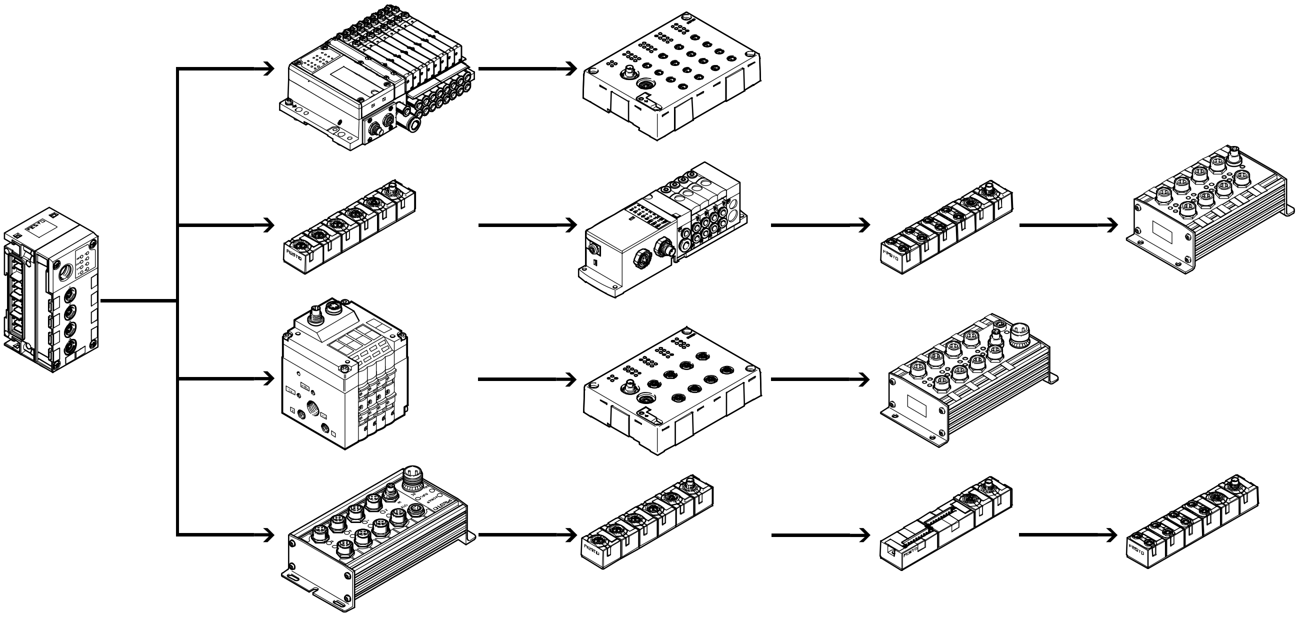
CP connection

As well as transmitting the communication data, the max. four CP strings of a CPX-CP interface also transmit the supply voltage to the connected sensors and the load supply to the valves (or outputs). Both circuits are supplied separately with 24 V, but with 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 following combinations are made possible by the CP interface:

- 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 decentrally

Configuration example – CP interface with CP modules



Terminal CPX

Technical data – CPX-CP interface

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

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.

The following CP module variants are available:

- Input modules with 8 or 16 digital inputs (connection technology M8, M12 and CageClamp)
- 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 for all functions by the CPX-MMI or CPX-FMT operator unit
- 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/O each) possible

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

Note

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

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 remanently.

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

Terminal CPX

Technical data – CPX-CP interface

General technical data			
Type			**CPX-CP-4-FB**
Brief description			CP interface
Max. number of	CP strings		4
	CP modules per string		4
	Outputs per string		32
	Inputs per string		32
CP connection			M9 socket, 5-pin
Baud rate		[kbit/s]	1,000
Cycle time	CP modules without CPI functionality	[ms]	4
	CP modules with CPI functionality	[ms]	2

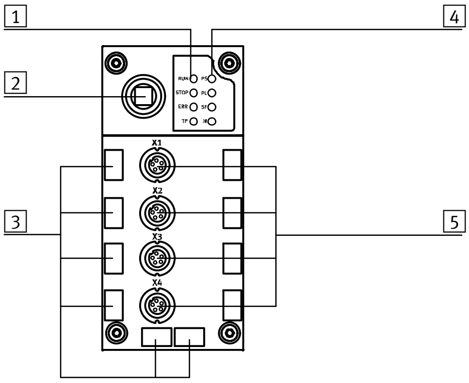
LED displays			L1 … 4 = Status of the CP string 1 … 4
			PS = Electronic supply, sensor supply
			PL = Load supply
			RN = Status of the CP system
			SF = System fault

Device-specific diagnostics			Via bus node
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)
	Permissible range	[V DC]	18 … 30
	Power failure buffering	[ms]	20
Supply voltage of sensors		[V DC]	24 ±25% coming from bus node
Load voltage of actuators		[V DC]	24 ±10% coming from bus node
Current consumption	Without CP modules	[A]	Max. 0.2
	Per CP string	[A]	Max. 1.6
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	−5 … +50
	Storage/transport	[°C]	−20 … +70
Materials			PA
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 45
Weight		[g]	140

Note

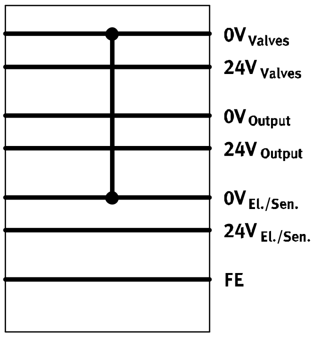
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Connection and display 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

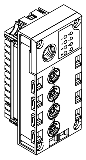
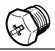
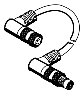
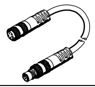
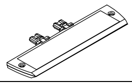
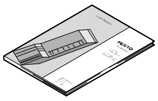


The module combines the 0 V potential of the power supply for electronics and sensors with the 0 V potential of the power supply for valves.
If all poles of the valves of a pneumatic interface connected to the right of the CP interface are to be switched off, an appropriate interlinking block with additional power supply must be used to the right of the CP interface.

Terminal CPX

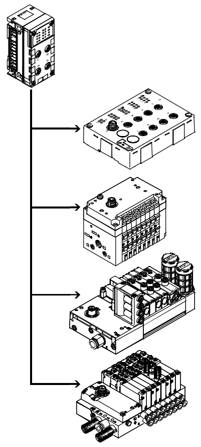
Accessories CPX-CP interface

Ordering data

Designation			Part No.	Type
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 manual				
	User manual for CPX-CP interface	German	**539293**	**P.BE-CPX-CP-DE**
		English	**539294**	**P.BE-CPX-CP-EN**
		Spanish	**539295**	**P.BE-CPX-CP-ES**
		French	**539296**	**P.BE-CPX-CP-FR**
		Italian	**539297**	**P.BE-CPX-CP-IT**

Terminal CPX

Technical data – Interface CPX-CTEL



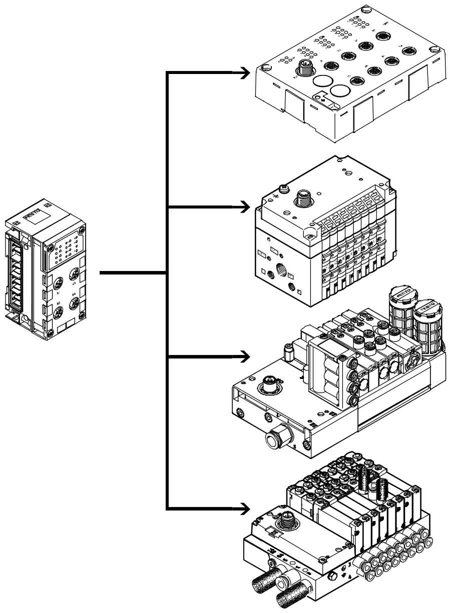
The electrical interface CPX-CTEL master establishes the connection to modules with I-Port interface (device) from the CTEL/CTEU series. The I/O data from the connected devices is transferred to the connected CPX bus node and therefore transferred to the higher-level controller via fieldbus.
A maximum of 4 devices can be connected to a CPX-CTEL master via appropriate 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 for the connected sensors and the load supply for the valves (or outputs). Both circuits are supplied separately with 24 V, with a separate reference potential.
The connecting cables used must meet the increased requirements resulting from their double function as a signal line and power supply cable.

Sample configuration – CPX-CTEL master with CTEL modules



The CPX-CTEL master provides four I-Port interfaces to which one device each can be connected. 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 valve terminal can be connected to each I-Port.

The restrictions compared to IO-Link include:

- Permanently set baud rate of 230.4 kbit/s
- 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

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

The decentralised arrangement of the modules and valve terminals with I-Port enables them to be mounted near the cylinders and actuators/sensors to be controlled. This allows the use of shorter air supply lines and sensor connecting cables or possibly smaller valves, which saves costs.

Several CPX-CTEL masters can be combined in one CPX terminal, depending on the address capacity of the bus node.
Example:

- CPX-FB13 (512 I/O)
- Max. 2 CPX-CTEL masters (256 I/O each) possible

Configuration

Setting

The precise number of I/O bytes made available is geared towards the requirements of the connected devices and the selected operating mode.
The operating mode and configuration presetting of the CPX-CTEL master can be defined by the user.
DIL switches are used for selecting the operating mode and making the setting for manual configuration.
These DIL switches are not required during operation and are only accessible in unassembled condition.

Manual configuration

With manual configuration (tool change mode), the number of inputs and outputs in the process image of the CPX system or higher-level fieldbus can be manually defined via the DIL switches.

The process image then always has the same number of bytes, regardless of the connected devices.
The defined I/O length always applies to all four I-Ports (max. 8 bytes per I-Port).

Automatic configuration

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

Power supply for I-Port devices

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

- One for operating the device and the inputs connected to it
- One for outputs and valves connected to the device

The power supply for devices and inputs comes from the power supply for the electronics and sensors of the CPX terminal.
The power supply for outputs and valves comes from the power supply for the valves of the CPX terminal.
The interlinking block with additional power supply enables a separate voltage supply for valves and outputs. This allows this supply voltage to be switched off separately.
In other words, the valves and outputs of the connected I-Port devices can be switched off separately without having to switch off the devices themselves.

Terminal CPX

Technical data – Interface CPX-CTEL

General technical data			
Type			**CPX-CTEL-4-M12-5POL**
Protocol			I-Port
Max. address capacity	Outputs	[bit]	256
	Inputs	[bit]	256
I-Port connection			4x M12 socket, 5-pin, A-coded
Number of I-Port interfaces			4
Max. cable length		[m]	20
Internal cycle time		[ms]	1 per 8 bits of user data
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply

LED displays			X1 … 4 = Status of the I-Port interface 1 … 4
			PS = Electronics supply
			PL = Load supply
			ϟ = Module fault

Diagnostics			• Communication error • Module short circuit • Module-oriented diagnostics • Undervoltage
Parameterisation			• Diagnostic behaviour • Failsafe per channel • Forces per channel • Idle mode per channel • Module parameters • Tool change mode
Additional functions			Tool change mode
Operating elements			DIL switch
Operating voltage	Nominal value	[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. residual output current per channel		[A]	4x 1.6
Protection class to EN 60529			IP65, IP67
Temperature range	Operating	[°C]	−5 … +50
	Storage/transport	[°C]	−20 … +70
Materials			PA reinforced, PC
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55
Product weight		[g]	110

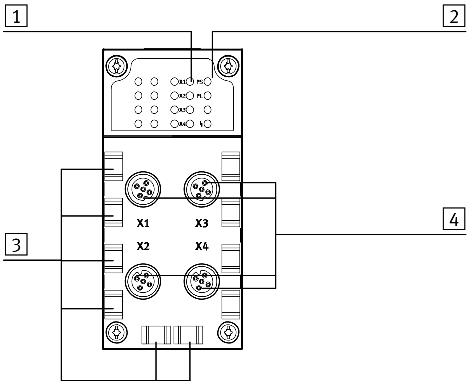
Note

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

Terminal CPX

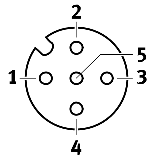
Technical data – Interface CPX-CTEL

Connection and display components



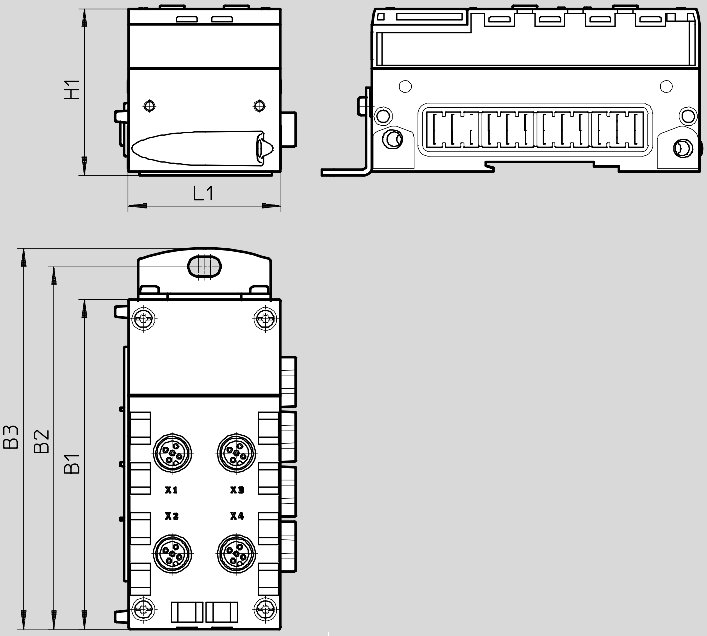
- 1 Status LEDs for I-Port interfaces
- 2 CPX-specific status LEDs
- 3 Holders for inscription labels (IBS 6x10)
- 4 I-Port interfaces for up to 4 devices

Pin allocation – I-Port interface

Pin allocation	Pin	Signal	Designation
	1	24 V_{SEN}	24 V DC supply voltage for electronics and inputs
	2	24 V_{VAL}	24 V DC load voltage supply for valves and outputs
	3	0 V_{SEN}	0 V DC supply voltage for electronics and sensors
	4	C/Q $_{\text{I-Port}}$	Communication signal C/Q, data cable
	5	0 V_{VALVES}	0 V DC load voltage supply for valves and outputs

Dimensions

Download CAD data ➔ **www.festo.com**

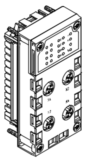
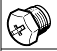
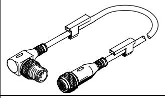
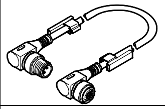
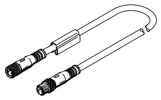
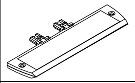
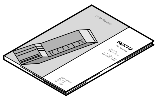


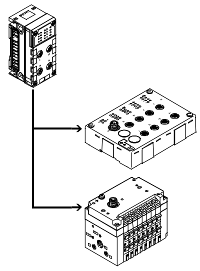
Type	B1	B2	B3	H1	L1
CPX-CTEL-4-M12-5POL	108.1	118.9	124.9	55.1	50

Terminal CPX

Accessories – Interface CPX-CTEL

Ordering data

Designation				Part No.	Type
CPX-CTEL master					
	Interface for max. 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**
	Connecting cable M12-M12, 5-pin • Straight socket • Angled plug	Cable characteristics: standard	0.5 m	**8003617**	**NEBU-M12G5-K-0.5-M12W5**
			2 m	**8003618**	**NEBU-M12G5-K-2-M12W5**
	Connecting cable M12-M12, 5-pin • Angled socket • Angled plug	Cable characteristics: standard	0.5 m	**570733**	**NEBU-M12W5-K-0.5-M12W5**
			2 m	**570734**	**NEBU-M12W5-K-2-M12W5**
	Connecting cable M12-M12, 5-pin • Straight socket • Staright plug	Cable characteristics: Suitable for chain link trunking	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 manifold block			**536593**	**CPX-ST-1**
Manual					
	Manual CPX-CTEL master	German		**574600**	**P.BE-CPX-CTEL-DE**
		English		**574601**	**P.BE-CPX-CTEL-EN**
		Spanish		**574602**	**P.BE-CPX-CTEL-ES**
		French		**574603**	**P.BE-CPX-CTEL-FR**
		Italian		**574604**	**P.BE-CPX-CTEL-IT**



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 of 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 an electrical interface CPX-CTEL-2-... via the corresponding M12 interfaces.

Application

IO-Link interface

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 IO-Link interfaces to the outside, on each of which one device can be connected.
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 presettings.
Selection of the operating mode and the setting for 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.

Restrictions

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 per port for inputs and outputs
- 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 the operation of 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 supplied by the power supply for the electronics and sensors of the CPX terminal.
The power supply for the outputs and valves is supplied by the power supply for the valves of the CPX terminal.
The interlinking block with additional supply ensures a separate the 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.

Technical data – Interface CPX-CTEL-2

General technical data			
Type			**CPX-CTEL-2-M12-5POL-LK**
Protocol			IO-Link, master version V 1.0
Max. address capacity	Outputs	[bit]	256
	Inputs	[bit]	256
I-Port connection			2x socket M12, 5-pin, A-coded
Number of IO-Link interfaces			2
Max. cable length		[m]	20
Internal cycle time		[ms]	1 per 8 bits of user data
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply

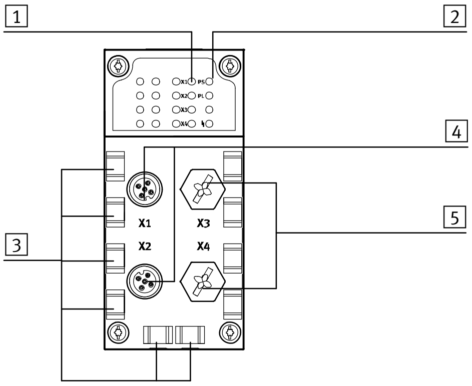
LED displays			X1 … 2 = status of the IO-Link interface 1 … 2
			PS = Electronic supply
			PL = Load supply
			ϟ = Module error

Diagnostics			• Communication error • Module short circuit • Module-oriented diagnostics • Undervoltage
Parameterisation			• Diagnostic behaviour • Fail-safe mode per channel • Forcing per channel • Idle mode per channel • Module parameters
Additional functions			–
Control elements			DIL switches
Operating voltage	Nominal value	[V DC]	24 (polarity-safe)
	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]	2 x 1.6
Max. residual 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			PA reinforced, PC
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55
Product weight		[g]	110

Note

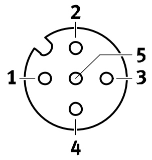
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Connection and display 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 devices
5 Unoccupied connections

Pin allocation of IO-Link interface

Pin allocation	Pin	Signal	Designation
	1	24 V_{SEN}	24 V DC supply voltage for electronics and inputs
	2	24 V_{VAL}	24 V DC load voltage supply for valves and outputs
	3	0 V_{SEN}	0 V DC supply voltage for electronics and sensors
	4	C/Q $_{I\text{-}PORT}$	Communication signal C/Q, data cable
	5	0 V_{VALVES}	0 V DC load voltage supply for valves and outputs

Dimensions

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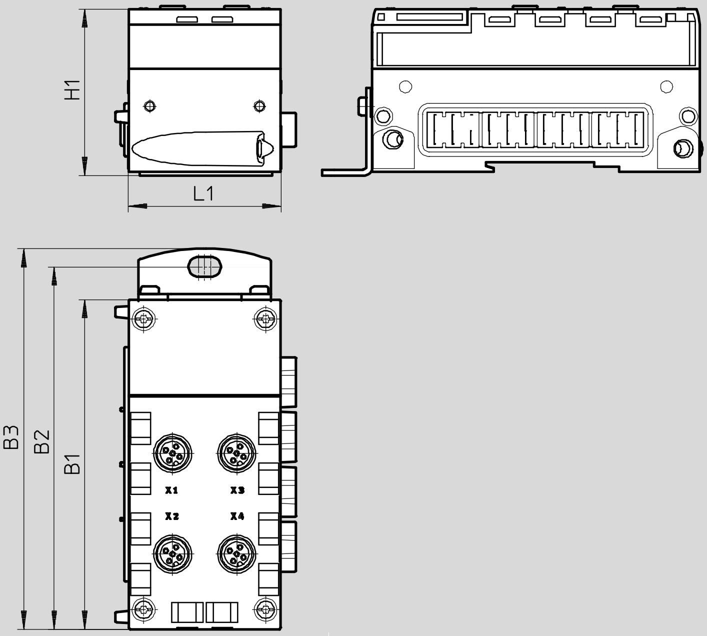
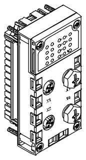
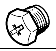
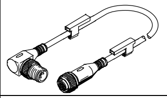
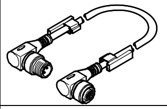
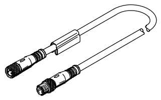
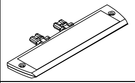
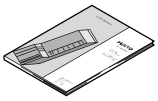


Type	B1	B2	B3	H1	L1
CPX-CTEL-2-M12-5POL-LK	108.1	118.9	124.9	55.1	50

Terminal CPX

Interface accessories CPX-CTEL-2

Ordering data

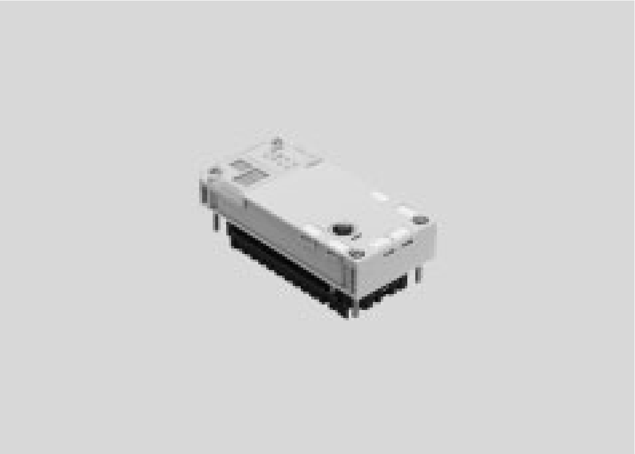
Designation				Part No.	Type
CPX CTEL-Master, IO-Link					
	Interface for max. 2 I/O modules and valve terminals with IO-Link interface (devices)			**2900543**	**CPX-CTEL-2-M12-5POL-LK**
Bus connection					
	Cover cap	M12		**165592**	**ISK-M12**
	Connecting cable M12-M12, 5-pin • Straight socket • Angled plug	Cable characteristics: standard	0.5 m	**8003617**	**NEBU-M12G5-K-0.5-M12W5**
			2 m	**8003618**	**NEBU-M12G5-K-2-M12W5**
	Connecting cable M12-M12, 5-pin • Angled socket • Angled plug	Cable characteristics: standard	0.5 m	**570733**	**NEBU-M12W5-K-0.5-M12W5**
			2 m	**570734**	**NEBU-M12W5-K-2-M12W5**
	Connecting cable M12-M12, 5-pin • Straight socket • Staright plug	Cable characteristics: Suitable for chain link trunking	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 for CPX CTEL-Master	German		**8034115**	**P.BE-CPX-CTEL-LK-DE**
		English		**8034116**	**P.BE-CPX-CTEL-LK-EN**
		Spanish		**8034117**	**P.BE-CPX-CTEL-LK-ES**
		French		**8034118**	**P.BE-CPX-CTEL-LK-FR**
		Italian		**8034119**	**P.BE-CPX-CTEL-LK-IT**
		Swedish		**8034120**	**P.BE-CPX-CTEL-LK-ZH**

Control block CPX-CM-HPP

Technical data

The control block CPX-CM-HPP is a module in the CPX terminal for controlling electric drives.
The control component is independent of the bus node used. This means that Festo's electric drive technology is compatible with all industrial communication interfaces.
The control block does not need to be programmed.

- Max. 4 individual electric axes can be controlled via CAN bus
- No programming required
- Standardised communication with the drives via the Festo Handling and Positioning Profile (FHPP)
- Quick configuration and diagnostics via the operator unit CPX-MMI
- Simple, flexible and cost-effective

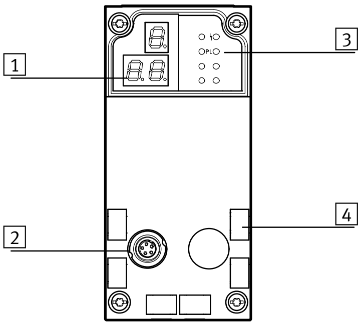


General technical data		
Fieldbus interface		1x socket M9, 5-pin
Protocol		FHPP
Max. address volume for inputs	[byte]	32
Max. address volume for outputs	[byte]	32
LED display (product-specific)		Error: Error
		PL: Power supply
Device-specific diagnostics		Diagnostic memory
		Channel and module-oriented diagnostics
		Undervoltage/short circuit of modules
Parameterisation		Forcing of channels
		System parameters
Configuration support		Operator unit CPX-MMI
Total number of axes		4
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 … 30
Power failure buffering	[ms]	10
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 80
Protection class to EN 60529 (plug connector plugged in)		IP65, IP67
Dimensions W x L x H (incl. interlinking block)	[mm]	50 x 107 x 55
Product weight (without interlinking block)	[g]	140
Materials		
Housing		PA, reinforced
		PC
Note on materials		RoHS-compliant

Technical data – Interfaces		
Interface		
Control interface		CAN-Bus
Baud rate	[Mbps]	1

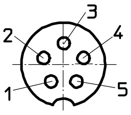
Operating and environmental conditions		
Ambient temperature	[°C]	–5 … +50
Storage temperature	[°C]	–20 … +70
CE mark (see declaration of conformity)		To EU Low Voltage Directive

Connection and display components



1 3-digit display
2 Control interface
3 LED display, product-specific
4 Inscription labels

Pin allocation – Control interface

	Pin	Signal	Meaning
Socket M9, 5-pin			
	1	n.c.	Not connected
	2	n.c.	Not connected
	3	CAN_GND	CAN ground
	4	CAN_H	CAN high
	5	CAN_L	CAN low
	Housing	Screened	Cable screen must be connected to functional earth (FE)

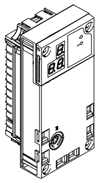
Permitted bus nodes/FEC

Bus node/FEC	Protocol	Max. no. of CPX-CM-HPP modules
CPX-FEC	–	2
CPX-CEC...	–	0
CPX-FB6	INTERBUS	0
CPX-FB11	DeviceNet	2
CPX-FB13	PROFIBUS	2
CPX-FB14	CANopen	1
CPX-M-FB20	INTERBUS	0
CPX-M-FB21	INTERBUS	0
CPX-FB23-24	CC-Link	1 (function module F23)
		0 (function module F24)
CPX-FB32	EtherNet/IP	2
CPX-FB33	PROFINET RT, M12	2
CPX-M-FB34	PROFINET RT, RJ45	2
CPX-M-FB35	PROFINET RT, SCRJ	2
CPX-FB36	EtherNet/IP	2
CPX-FB37	EtherCAT	2
CPX-FB38	EtherCAT	2
CPX-FB39	Sercos III	2
CPX-FB40	POWERLINK	2
CPX-M-FB41	PROFINET RT	2

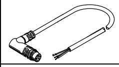
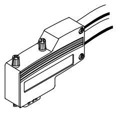
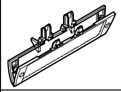
Control block CPX-CM-HPP

Accessories

Ordering data

Designation		Part No.	Type
Control block			
	Max. 4 individual electric axes can be controlled via CAN bus	**562214**	**CPX-CM-HPP**

Ordering data – Bus connection

Designation			Part No.	Type
Connecting cable				
	Connecting cable	2 m	**563711**	**NEBC-M9W5-K-2-N-LE3**
		5 m	**563712**	**NEBC-M9W5-K-5-N-LE3**
	Plug for CAN bus interface, Sub-D, 9-pin, without terminating resistor		**533783**	**FBS-SUB-9-WS-CO-K**
Inscription label				
	Inscription label holder for manifold block		**536593**	**CPX-ST-1**
Documentation				
	Manual – Control block CPX-CM-HPP	German	**568683**	**P.BE-CPX-CM-HPP-DE**
		English	**568684**	**P.BE-CPX-CM-HPP-EN**

Axis controllers CPX-CMAX

Technical data

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

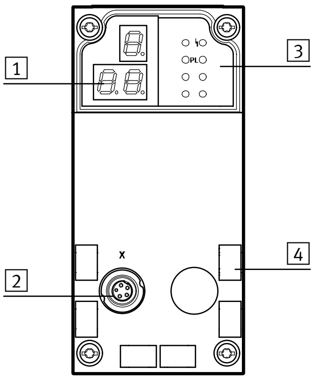
General technical data			
Operating voltage			
Operating voltage range		[V DC]	18 … 30
Nominal operating voltage		[V DC]	24
Current consumption at nominal operating voltage		[mA]	200
Fuse protection (short circuit)			Electronic
Power failure bridging		[ms]	10
Load voltage			
Load voltage range		[V DC]	20 … 30
Nominal load voltage		[V DC]	24
Perm. load current		[A]	2.5
Fuse protection (short circuit)			Electronic
Number of axis strings			1
Axes per string			1
Length of connecting cable to axis		[m]	≤ 30
Max. no. of modules			7
Display			7-segment display
Assigned addresses	Outputs	[bit]	8x8
	Inputs	[bit]	8x8
Operating modes			Record Select mode
			Direct mode
Controller types			Position control
			Force control
Diagnostics			Module-orientated
			Via local 7-segment display
Status display			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
Product weight		[g]	140
Dimensions	Length	[mm]	107
	Width	[mm]	50
	Height	[mm]	55

Axis controllers CPX-CMAX

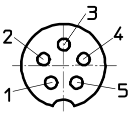
Technical data

Operating and environmental conditions		
Ambient temperature	[°C]	–5 … +50
Relative air humidity	[%]	5 … 95, non-condensing
Protection class to IEC 60529		IP65

Connection and display components



1 3-digit display
2 Control interface
3 Status LEDs
4 Inscription labels

Pin allocation – 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	Screened	Cable screening

Permitted bus nodes/FEC

Bus node/FEC	Protocol	Max. no. of CMAX modules
CPX-FEC	–	8
CPX-CEC…	–	8
CPX-FB6	INTERBUS	1
CPX-FB11	DeviceNet[1]	8
CPX-FB13	PROFIBUS[2]	8
CPX-FB14	CANopen	4
CPX-M-FB20	INTERBUS	1
CPX-M-FB21	INTERBUS	1
CPX-FB23-24	CC-Link	4 (function module F23)
		8 (function module F24)
CPX-FB32	EtherNet/IP	8
CPX-FB33	PROFINET RT, M12	8
CPX-M-FB34	PROFINET RT, RJ45	8
CPX-M-FB35	PROFINET RT, SCRJ	8
CPX-FB36	EtherNet/IP	8
CPX-FB37	EtherCAT	8
CPX-FB38	EtherCAT	8
CPX-FB39	Sercos III	8
CPX-FB40	POWERLINK	8
CPX-M-FB41	PROFINET RT	8

[1] With Revision 20 (R20)
[2] With Revision 23 (R23)

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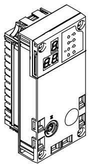
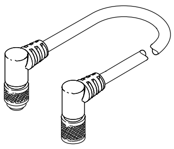
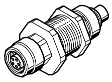
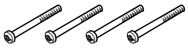
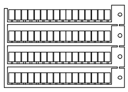
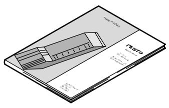
Axis controllers CPX-CMAX

Accessories

Ordering data

	Brief description		Part No.	Type
Axis controller				
	Order code in the 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**
	Connector for control 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	64 pieces	**18576**	**IBS-6X10**
User manual				
	Axis controller description CPX-CMAX[1]	German	**559750**	**P.BE-CPX-CMAX-SYS-DE**
		English	**559751**	**P.BE-CPX-CMAX-SYS-EN**
		Spanish	**559752**	**P.BE-CPX-CMAX-SYS-ES**
		French	**559753**	**P.BE-CPX-CMAX-SYS-FR**
		Italian	**559754**	**P.BE-CPX-CMAX-SYS-IT**

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

End-position controllers CPX-CMPX

Technical data

The end-position controller CPX-CMPX is intended exclusively for use in valve terminals CPX.

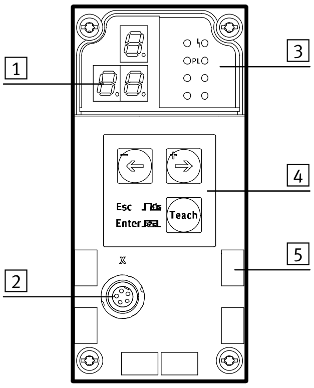
General technical data			
Operating voltage			
Operating voltage range		[V DC]	18 … 30
Nominal operating voltage		[V DC]	24
Current consumption at nominal operating voltage		[mA]	80
Load voltage			
Load voltage range		[V DC]	20 … 30
Nominal load voltage		[V DC]	24
Perm. load current		[A]	2.5
Number of axes per module			1
Length of connecting cable to axis		[m]	≤ 30
Max. no. of modules			9
Display			7-segment display
Control elements			3 keys
Assigned addresses	Outputs	[bit]	6x8
	Inputs	[bit]	6x8
Diagnostics			Module-orientated
			Via local 7-segment display
			Via operator unit CPX-MMI-1
Status display			Module status
			Power Load
Control interface			
Data			CAN bus with Festo protocol
			Digital
Electrical connection			5-pin
			M9
			Socket
Materials: Housing			Reinforced PA
Product weight		[g]	240
Dimensions	Length	[mm]	107
	Width	[mm]	50
	Height	[mm]	55

End-position controllers CPX-CMPX

Technical data

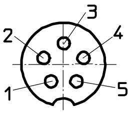
Operating and environmental conditions		
Ambient temperature	[°C]	−5 … +50
Relative air humidity	[%]	5 … 95, non-condensing
Protection class to IEC 60529		IP65
CE mark (see declaration of conformity)		To EU EMC Directive

Connection and display components



1	3-digit display
2	Control interface
3	Status LEDs
4	Operating buttons
5	Inscription labels

Pin allocation – 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	Screened	Cable screening

Permitted bus nodes/FEC

Bus node/FEC	Protocol	Max. no. of CMPX modules
CPX-FEC	–	9
CPX-CEC…	–	9
CPX-FB6	INTERBUS	2
CPX-FB11	DeviceNet[1)]	9
CPX-FB13	PROFIBUS[2)]	9
CPX-FB14	CANopen	5
CPX-M-FB20	INTERBUS	2
CPX-M-FB21	INTERBUS	2
CPX-FB23-24	CC-Link	5 (function module F23)
		9 (function module F24)
CPX-FB32	EtherNet/IP	9
CPX-FB33	PROFINET RT, M12	9
CPX-M-FB34	PROFINET RT, RJ45	9
CPX-M-FB35	PROFINET RT, SCRJ	9
CPX-FB36	EtherNet/IP	9
CPX-FB37	EtherCAT	9
CPX-FB38	EtherCAT	9
CPX-FB39	Sercos III	9
CPX-FB40	POWERLINK	9
CPX-M-FB41	PROFINET RT	9

1) With Revision 20 (R20)
2) With Revision 23 (R23)

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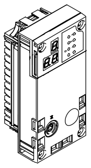
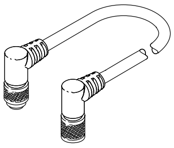
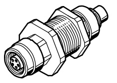
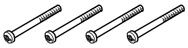
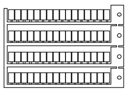
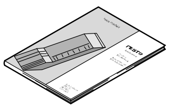
End-position controllers CPX-CMPX

Accessories

Ordering data

	Brief description		Part No.	Type
End-position controller				
	Order code in the CPX configurator: T20		**548931**	**CPX-CMPX-C-1-H1**
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**
	Connector for control 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	64 pieces	**18576**	**IBS-6X10**
User manual				
	End-position controller description CPX-CMPX[1]	German	**555479**	**P.BE-CPX-CMPX-SYS-DE**
		English	**555480**	**P.BE-CPX-CMPX-SYS-EN**
		Spanish	**555481**	**P.BE-CPX-CMPX-SYS-ES**
		French	**555482**	**P.BE-CPX-CMPX-SYS-FR**
		Italian	**555483**	**P.BE-CPX-CMPX-SYS-IT**

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[1] User manual in paper form is not included in the scope of delivery.

Measuring modules CPX-CMIX

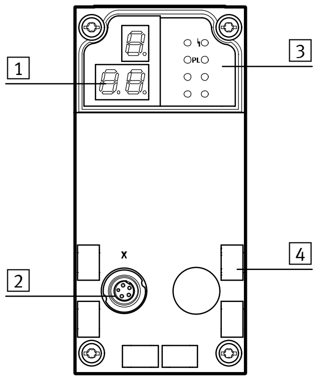
Technical data

The measuring module CPX-CMIX 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]	80
Protection against short circuit			Yes
Power failure bridging		[ms]	10
No. of axis strings			1
Axes per string			1
Length of connecting cable to axis		[m]	≤ 30
Max. no. of modules			9
Display			7-segment display
Assigned addresses	Outputs	[bit]	6x8
	Inputs	[bit]	6x8
Diagnostics			Channel and module-oriented
			Via local 7-segment display
			Undervoltage of modules
			Undervoltage of measuring system
Status display			Power Load
			Error
Control interface			
Data			CAN bus with Festo protocol
			Digital
Electrical connection			5-pin
			M9
			Socket
Materials: Housing			Reinforced PA
Note on materials			RoHS-compliant
Product weight		[g]	140
Dimensions	Length	[mm]	107
	Width	[mm]	50
	Height	[mm]	55

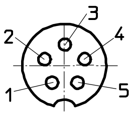
Operating and environmental conditions		
Ambient temperature	[°C]	–5 … +50
Relative air humidity	[%]	5 … 95, non-condensing
Protection class to IEC 60529		IP65

Connection and display components



1 3-digit display
2 Control interface
3 Status LEDs
4 Inscription labels

Pin allocation – 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	Screened	Cable screening

Permitted bus nodes/FEC

Bus node/FEC	Protocol	Max. no. of CMIX modules
CPX-FEC	–	9
CPX-CEC…	–	9
CPX-FB6	INTERBUS	2
CPX-FB11	DeviceNet[1)	9
CPX-FB13	PROFIBUS[2)	9
CPX-FB14	CANopen	5
CPX-M-FB20	INTERBUS	2
CPX-M-FB21	INTERBUS	2
CPX-FB23-24	CC-Link	5 (function module F23)
		9 (function module F24)
CPX-FB32	EtherNet/IP	9
CPX-FB33	PROFINET RT, M12	9
CPX-M-FB34	PROFINET RT, RJ45	9
CPX-M-FB35	PROFINET RT, SCRJ	9
CPX-FB36	EtherNet/IP	9
CPX-FB37	EtherCAT	9
CPX-FB38	EtherCAT	9
CPX-FB39	Sercos III	9
CPX-FB40	POWERLINK	9
CPX-M-FB41	PROFINET RT	9

1) With Revision 20 (R20)
2) With Revision 23 (R23)

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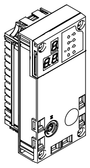
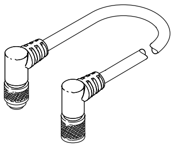
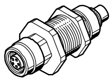
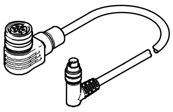
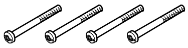
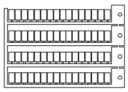
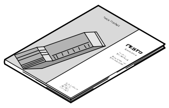
Measuring modules CPX-CMIX

Accessories

Ordering data

	Brief description		Part No.	Type
Measuring module				
	Order code in the CPX configurator: T23		**567417**	**CPX-CMIX-M1-1**
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**
	Connector for control cabinet through-feed		**543252**	**KVI-CP-3-SSD**
	For displacement encoder MME Connection between displacement encoder MME and measuring module CPX-CMIX	2 m	**575898**	**NEBP-M16W6-K-2-M9W5**
Screws				
	For mounting on the metal interlinking block		**550219**	**CPX-M-M3X22-4X**
Inscription labels				
	Inscription labels 6x10, in frames	64 pieces	**18576**	**IBS-6X10**
User manual				
	Measuring module description CPX-CMIX[1]	German	**567053**	**P.BE-CPX-CMIX-DE**
		English	**567054**	**P.BE-CPX-CMIX-EN**
		Spanish	**567055**	**P.BE-CPX-CMIX-ES**
		French	**567056**	**P.BE-CPX-CMIX-FR**
		Italian	**567057**	**P.BE-CPX-CMIX-IT**

[1] User manual in paper form is not included in the scope of delivery.

Terminal CPX

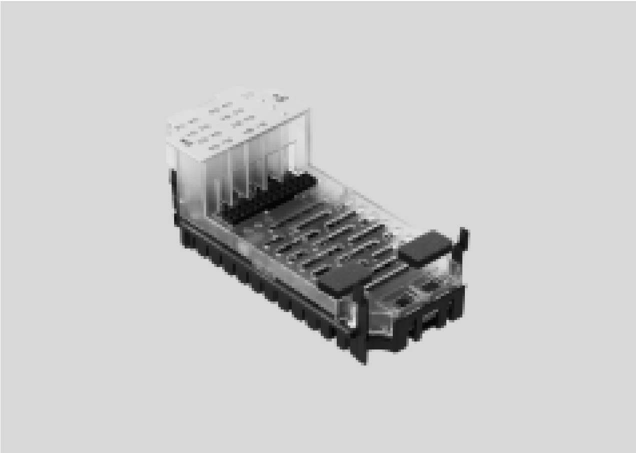
Technical data – Input module, digital

Function

Digital input modules enable the connection of two-wire and three-wire sensors (proximity sensors, 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).

Applications

- Input modules for 24 V DC sensor supply voltage
- PNP or NPN logic
- Supports connection blocks with M12, M8, Sub-D, Harax 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 protection



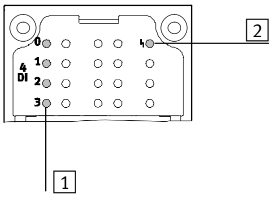
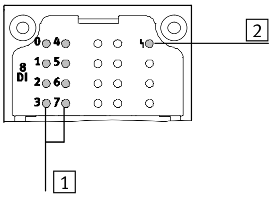
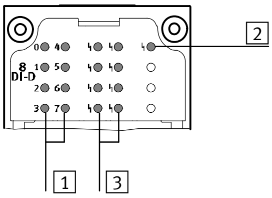
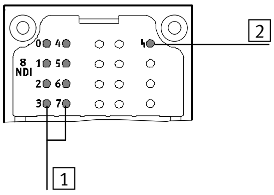
General technical data

Type			CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE
No. of inputs			4	8	8	8
Max. residual current of inputs per module		[A]	0.7	1	0.7	0.7
Fuse protection			Internal electronic fuse for each module	Internal electronic fuse for each module	Internal electronic fuse for each channel	Internal electronic fuse for each module
Intrinsic current consumption at operating voltage		[mA]	Typically 15			
Operating voltage	Nominal value	[V DC]	24			
	Permissible range	[V DC]	18 … 30			
Electrical isolation	Channel – channel		No			
	Channel – internal bus		No			
Switching level	Signal 0	[V DC]	≤ 5			≥ 11
	Signal 1	[V DC]	≥ 11			≤ 5
Input debounce time		[ms]	3 (0.1, 10, 20 parameterisable)			
Input characteristic curve			IEC 1131 Part 2			
Switching logic			Positive logic (PNP)			Negative logic (NPN)
LED displays	Group diagnostics		1	1	1	1
	Channel diagnostics		–	–	8	–
	Channel status		4	8	8	8
Diagnostics			Short circuit/overload per channel			
Parameterisation			• Module monitoring • Behaviour after short circuit • Input debounce time • Signal stretching time			
Protection class to EN 60529			Depending on connection block			
Temperature range	Operation	[°C]	–5 … +50			
	Storage/transport	[°C]	–20 … +70			
Materials			Reinforced PA, PC			
Grid dimension		[mm]	50			
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50			
Weight		[g]	38			

Terminal CPX

Technical data – Input module, digital

Connection and display components

CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE
			

1 Status LEDs (green)

2 Error LED (red, module error)

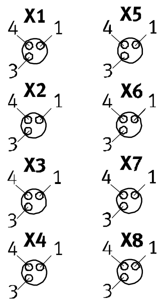
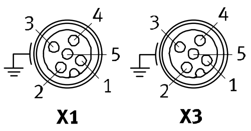
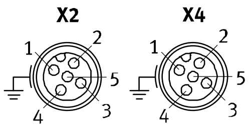
3 Channel-specific error LEDs (red)

Allocation to inputs
➔ Pin allocation for module

Connection block/digital input module combinations

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-AB-4-HAR-4POL	**525636**	■	■	■	■
CPX-M-AB-4-M12x2-5POL	**549367**	■	■	■	■

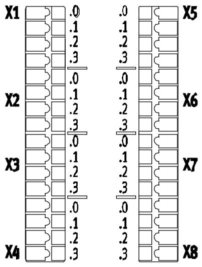
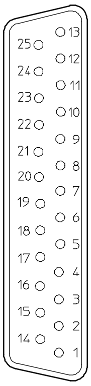
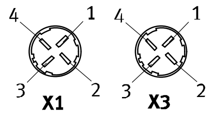
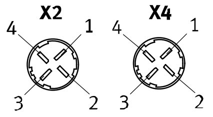
Pin allocation

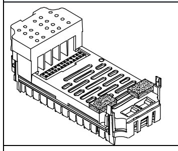
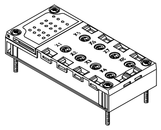
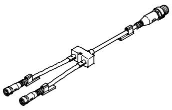
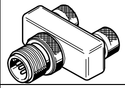
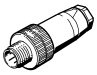
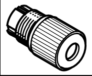
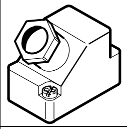
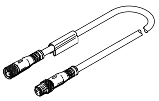
Connection block inputs	CPX-4DE		CPX-8DE, CPX-8DE-D and CPX-8NDE	
CPX-AB-8-M8-3POL				
	X1.1: 24 V_{SEN} X1.3: 0 V_{SEN} X1.4: Input x	X5.1: 24 V_{SEN} X5.3: 0 V_{SEN} X5.4: Input x+2	X1.1: 24 $V_{SEN\ x}$ X1.3: 0 $V_{SEN\ x}$ X1.4: Input x	X5.1: 24 $V_{SEN\ x+4}$ X5.3: 0 $V_{SEN\ x+4}$ X5.4: Input x+4
	X2.1: 24 V_{SEN} X2.3: 0 V_{SEN} X2.4: Input x+1	X6.1: 24 V_{SEN} X6.3: 0 V_{SEN} X6.4: Input x+3	X2.1: 24 $V_{SEN\ x+1}$ X2.3: 0 $V_{SEN\ x+1}$ X2.4: Input x+1	X6.1: 24 $V_{SEN\ x+5}$ X6.3: 0 $V_{SEN\ x+5}$ X6.4: Input x+5
	X3.1: 24 V_{SEN} X3.3: 0 V_{SEN} X3.4: Input x+1	X7.1: 24 V_{SEN} X7.3: 0 V_{SEN} X7.4: Input x+3	X3.1: 24 $V_{SEN\ x+2}$ X3.3: 0 $V_{SEN\ x+2}$ X3.4: Input x+2	X7.1: 24 $V_{SEN\ x+6}$ X7.3: 0 $V_{SEN\ x+6}$ X7.4: Input x+6
	X4.1: 24 V_{SEN} X4.3: 0 V_{SEN} X4.4: n.c.	X8.1: 24 V_{SEN} X8.3: 0 V_{SEN} X8.4: n.c.	X4.1: 24 $V_{SEN\ x+3}$ X4.3: 0 $V_{SEN\ x+3}$ X4.4: Input x+3	X8.1: 24 $V_{SEN\ x+7}$ X8.3: 0 $V_{SEN\ x+7}$ X8.4: Input x+7
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R[1] and CPX-M-AB-4-M12X2-5POL				
	X1.1: 24 V_{SEN} X1.2: Input x+1 X1.3: 0 V_{SEN} X1.4: Input x X1.5: FE	X3.1: 24 V_{SEN} X3.2: Input x+3 X3.3: 0 V_{SEN} X3.4: Input x+2 X3.5: FE	X1.1: 24 $V_{SEN\ x}$ X1.2: Input x+1 X1.3: 0 $V_{SEN\ x}$ X1.4: Input x X1.5: FE	X3.1: 24 $V_{SEN\ x+4}$ X3.2: Input x+5 X3.3: 0 $V_{SEN\ x+4}$ X3.4: Input x+4 X3.5: FE
	X2.1: 24 V_{SEN} X2.2: n.c. X2.3: 0 V_{SEN} X2.4: Input x+1 X2.5: FE	X4.1: 24 V_{SEN} X4.2: n.c. X4.3: 0 V_{SEN} X4.4: Input x+3 X4.5: FE	X2.1: 24 $V_{SEN\ x+2}$ X2.2: Input x+3 X2.3: 0 V_{SENx+2} X2.4: Input x+2 X2.5: FE	X4.1: 24 $V_{SEN\ x+6}$ X4.2: Input x+7 X4.3: 0 $V_{SEN\ x+6}$ X4.4: Input x+6 X4.5: FE

[1] Speedcon quick lock, screening additionally on metal thread

Terminal CPX

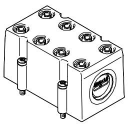
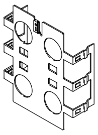
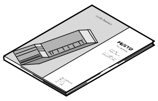
Technical data – Input module, digital

Pin allocation				
Connection block inputs	CPX-4DE		CPX-8DE, CPX-8DE-D and CPX-8NDE	
CPX-AB-8-KL-4POL				
	X1.0: $24\ V_{SEN}$ X1.1: $0\ V_{SEN}$ X1.2: Input x X1.3: FE	X5.0: $24\ V_{SEN}$ X5.1: $0\ V_{SEN}$ X5.2: Input x+2 X5.3: FE	X1.0: $24\ V_{SEN\ x}$ X1.1: $0\ V_{SEN\ x}$ X1.2: Input x X1.3: FE	X5.0: $24\ V_{SEN\ x+4}$ X5.1: $0\ V_{SEN\ x+4}$ X5.2: Input x+4 X5.3: FE
	X2.0: $24\ V_{SEN}$ X2.1: $0\ V_{SEN}$ X2.2: Input x+1 X2.3: FE	X6.0: $24\ V_{SEN}$ X6.1: $0\ V_{SEN}$ X6.2: Input x+3 X6.3: FE	X2.0: $24\ V_{SEN\ x+1}$ X2.1: $0\ V_{SEN\ x+1}$ X2.2: Input x+1 X2.3: FE	X6.0: $24\ V_{SEN\ x+5}$ X6.1: $0\ V_{SEN\ x+5}$ X6.2: Input x+5 X6.3: FE
	X3.0: $24\ V_{SEN}$ X3.1: $0\ V_{SEN}$ X3.2: Input x+1 X3.3: FE	X7.0: $24\ V_{SEN}$ X7.1: $0\ V_{SEN}$ X7.2: Input x+3 X7.3: FE	X3.0: $24\ V_{SEN\ x+2}$ X3.1: $0\ V_{SEN\ x+2}$ X3.2: Input x+2 X3.3: FE	X7.0: $24\ V_{SEN\ x+6}$ X7.1: $0\ V_{SEN\ x+6}$ X7.2: Input x+6 X7.3: FE
	X4.0: $24\ V_{SEN}$ X4.1: $0\ V_{SEN}$ X4.2: n.c. X4.3: FE	X8.0: $24\ V_{SEN}$ X8.1: $0\ V_{SEN}$ X8.2: n.c. X8.3: FE	X4.0: $24\ V_{SEN\ x+3}$ X4.1: $0\ V_{SEN\ x+3}$ X4.2: Input x+3 X4.3: FE	X8.0: $24\ V_{SEN\ x+7}$ X8.1: $0\ V_{SEN\ x+7}$ X8.2: Input x+7 X8.3: FE
CPX-AB-1-SUB-BU-25POL				
	1: Input x 2: Input x+1 3: Input x+1 4: n.c. 5: $24\ V_{SEN}$ 6: $0\ V_{SEN}$ 7: $24\ V_{SEN}$ 8: $0\ V_{SEN}$ 9: $24\ V_{SEN}$ 10: $24\ V_{SEN}$ 11: $0\ V_{SEN}$ 12: $0\ V_{SEN}$ 13: FE	14: Input x+2 15: Input x+3 16: Input x+3 17: n.c. 18: $24\ V_{SEN}$ 19: $24\ V_{SEN}$ 20: $24\ V_{SEN}$ 21: $24\ V_{SEN}$ 22: $0\ V_{SEN}$ 23: $0\ V_{SEN}$ 24: $0\ V_{SEN}$ 25: FE Housing: FE	1: Input x 2: Input x+1 3: Input x+2 4: Input x+3 5: $24\ V_{SEN\ x+1}$ 6: $0\ V_{SEN\ x+1}$ 7: $24\ V_{SEN\ x+3}$ 8: $0\ V_{SEN\ x+3}$ 9: $24\ V_{SEN\ x}$ 10: $24\ V_{SEN\ x+2}$ 11: $0\ V_{SEN\ x}$ 12: $0\ V_{SEN\ x+2}$ 13: FE	14: Input x+4 15: Input x+5 16: Input x+6 17: Input x+7 18: $24\ V_{SEN\ x+4}$ 19: $24\ V_{SEN\ x+5}$ 20: $24\ V_{SEN\ x+6}$ 21: $24\ V_{SEN\ x+7}$ 22: $0\ V_{SEN\ x+2\ and\ 3}$ 23: $0\ V_{SEN\ x+2\ and\ 3}$ 24: $0\ V_{SEN\ x+2\ and\ 3}$ 25: FE Housing: FE
CPX-AB-4-HAR-4POL				
	X1.1: $24\ V_{SEN}$ X1.2: Input x+1 X1.3: $0\ V_{SEN}$ X1.4: Input x	X3.1: $24\ V_{SEN}$ X3.2: Input x+3 X3.3: $0\ V_{SEN}$ X3.4: Input x+2	X1.1: $24\ V_{SEN\ x}$ X1.2: Input x+1 X1.3: $0\ V_{SEN\ x}$ X1.4: Input x	X3.1: $24\ V_{SEN\ x+4}$ X3.2: Input x+5 X3.3: $0\ V_{SEN\ x+4}$ X3.4: Input x+4
	X2.1: $24\ V_{SEN}$ X2.2: n.c. X2.3: $0\ V_{SEN}$ X2.4: Input x+1	X4.1: $24\ V_{SEN}$ X4.2: n.c. X4.3: $0\ V_{SEN}$ X4.4: Input x+3	X2.1: $24\ V_{SEN\ x+2}$ X2.2: Input x+3 X2.3: $0\ V_{SEN\ x+2}$ X2.4: Input x+2	X4.1: $24\ V_{SEN\ x+6}$ X4.2: Input x+7 X4.3: $0\ V_{SEN\ x+6}$ X4.4: Input x+6

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), advanced diagnostic function			**541480**	**CPX-8DE-D**
	8 digital inputs, negative logic (NPN)			**543813**	**CPX-8NDE**
Connection block					
	Plastic	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 clip terminal, 32-pin		**195708**	**CPX-AB-8-KL-4POL**
		1x Sub-D socket, 25-pin		**525676**	**CPX-AB-1-SUB-BU-25POL**
		4x socket, quick connection, 4-pin		**525636**	**CPX-AB-4-HAR-4POL**
	Metal	4x socket, M12, 5-pin		**549367**	**CPX-M-AB-4-M12X2-5POL**
Distributor					
	Modular system for sensor/actuator distributor			–	**NEDY-...** ➔ Internet: nedy
	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					
	Plug	M8, 3-pin	solderable	**18696**	**SEA-GS-M8**
			screw-in	**192009**	**SEA-3GS-M8-S**
		M12, 4-pin, PG7		**18666**	**SEA-GS-7**
		M12, PG7, 4-pin for cable ∅ 2.5 mm		**192008**	**SEA-4GS-7-2,5**
		M12, 4-pin, PG9		**18778**	**SEA-GS-9**
		M12, 4 pin for 2 cables		**18779**	**SEA-GS-11-DUO**
		M12 for 2 cables, 5-pin		**192010**	**SEA-5GS-11-DUO**
		M12, 5-pin		**175487**	**SEA-M12-5GS-PG7**
	HARAX plug, 4-pin			**525928**	**SEA-GS-HAR-4POL**
	Sub-D plug, 25-pin			**527522**	**SD-SUB-D-ST25**
Connecting cable					
	Connecting cable M8-M8		0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**
			1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**
			2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**
			5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**
	Modular system for connecting cables			–	**NEBU-...** ➔ Internet: nebu

Terminal CPX

Accessories – Input module, digital

Ordering data				
Designation			Part No.	Type
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Screening plate				
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
User manual				
	User manual	German	**526439**	**P.BE-CPX-EA-DE**
		English	**526440**	**P.BE-CPX-EA-EN**
		Spanish	**526441**	**P.BE-CPX-EA-ES**
		French	**526442**	**P.BE-CPX-EA-FR**
		Italian	**526443**	**P.BE-CPX-EA-IT**

Terminal CPX

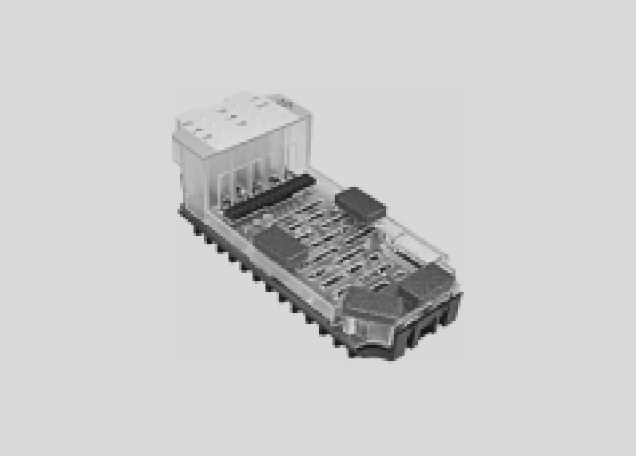
Technical data – PROFIsafe input module

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.

Scope of application

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



Description

Module-based passivation

While channel-by-channel 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-by-channel passivation

In the case of channel-by-channel 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.

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 five independent clock outputs available for safe operation of passive sensors; the pulse patterns are used in some operating modes to detect crossovers in the signal paths.

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

Range of applications

- 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 different 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 circuit 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 switches
- Protective door with two NO switches

Terminal CPX

Technical data – PROFIsafe input module

General technical data			
Type			**CPX-F8DE-P**
Number of inputs			8
Safety function			Reliable detection and evaluation of input statuses
Max. address capacity	Inputs	[byte]	6
	Outputs	[byte]	7
Max. cable length		[m]	200
Max. power supply	Per module	[A]	3
Current consumption of module		[mA]	Typ. 35 (power supply for electronics)
Operating voltage	Nominal value	[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
Electrical isolation	Channel – channel		No
Input characteristic			To IEC 61131-2, type 2
Switching logic	Inputs		PNP (positive switching)
Safety integrity level	As per EN62061		Reliable detection and evaluation of input statuses up to SIL CL3
	As per EN61508		Reliable detection and evaluation of input statuses up to SIL3
Performance Level	As per ISO13849		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			01/205/5444.00/15
LED displays	Group diagnostics		1
	Channel diagnostics		8
	Channel status		8
	Failsafe protocol active		1
Diagnostics			• Short circuit per channel • Undervoltage • Overvoltage • Excessive temperature • Crossover per channel • Wire break per channel • Communication • Process data error • Self test
Control elements			DIL switches
Degree of protection to EN 60529			Depending on connection block
Grid dimension		[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 55

Terminal CPX

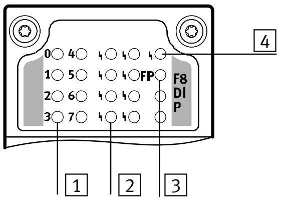
Technical data – PROFIsafe input module

Materials	
Note on materials	RoHS compliant

Operating and environmental conditions		
Ambient temperature	[°C]	−5 … +50
Storage temperature	[°C]	−20 … +70
CE marking (see declaration of conformity)		To EC Machinery Directive
Approval certificate		c UL us Recognised (OL)

Connection and display components

CPX-F8DE-P



1 Channel-related status LEDs (green):
2 Channel-related error LEDs (red)
3 Fail-safe protocol active (green)
4 Error LED (red, module error)

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-FB33	**548755**	■
CPX-M-FB34	**548751**	■
CPX-M-FB35	**548749**	■

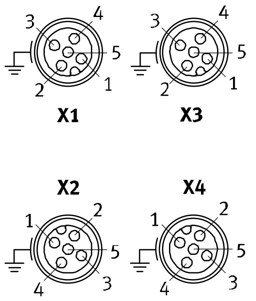
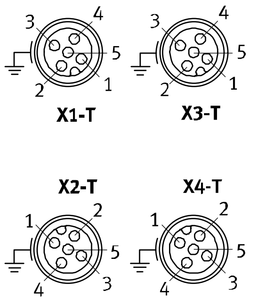
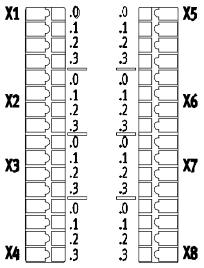
Note

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

Terminal CPX

Technical data – PROFIsafe input module

Connection block/PROFIsafe input module combinations		
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 allocation		
Connection block inputs	CPX-F8DE-P	
CPX-M-AB-4-M12X2-5POL		
	X1.1: 24 V_{SEN} X1.2: Input x+1 X1.3: 0 V_{SEN} X1.4: Input x X1.5: FE	X3.1: 24 V_{SEN} X3.2: Input x+5 X3.3: 0 V_{SEN} X3.4: Input x+4 X3.5: FE
	X2.1: 24 V_{SEN} X2.2: Input x+3 X2.3: 0 V_{SEN} X2.4: Input x+2 X2.5: FE	X4.1: 24 V_{SEN} X4.2: Input x+7 X4.3: 0 V_{SEN} X4.4: Input x+6 X4.5: FE
CPX-M-AB-4-M12X2-5POL-T		
	X1-T.1: 24 $V_{SEN\ x}$ X1-T.2: Input x+1 X1-T.3: 0 V_{SEN} X1-T.4: Input x X1-T.5: 24 $V_{SEN\ x+1}$	X3-T.1: 24 $V_{SEN\ x+4}$ X3-T.2: Input x+5 X3-T.3: 0 V_{SEN} X3-T.4: Input x+4 X3-T.5: 24 $V_{SEN\ x+5}$
	X2-T.1: 24 $V_{SEN\ x+2}$ X2-T.2: Input x+3 X2-T.3: 0 V_{SEN} X2-T.4: Input x+2 X2-T.5: 24 $V_{SEN\ x+3}$	X4-T.1: 24 $V_{SEN\ x+6}$ X4-T.2: Input x+7 X4-T.3: 0 V_{SEN} X4-T.4: Input x+6 X4-T.5: 24 $V_{SEN\ x+7}$
CPX-AB-8-KL-4POL		
	X1.0: 24 V_{SEN} X1.1: 0 V_{SEN} X1.2: Input x X1.3: FE	X5.0: 24 V_{SEN} X5.1: 0 V_{SEN} X5.2: Input x+4 X5.3: FE
	X2.0: 24 $V_{SEN\ x}$ X2.1: 24 $V_{SEN\ x+1}$ X2.2: Input x+1 X2.3: FE	X6.0: 24 $V_{SEN\ x+4}$ X6.1: 24 $V_{SEN\ x+5}$ X6.2: Input x+5 X6.3: FE
	X3.0: 24 V_{SEN} X3.1: 0 V_{SEN} X3.2: Input x+2 X3.3: FE	X7.0: 24 V_{SEN} X7.1: 0 V_{SEN} X7.2: Input x+6 X7.3: FE
	X4.0: 24 $V_{SEN\ x+2}$ X4.1: 24 $V_{SEN\ x+3}$ X4.2: Input x+3 X4.3: FE	X8.0: 24 $V_{SEN\ x+6}$ X8.1: 24 $V_{SEN\ x+7}$ X8.2: Input x+7 X8.3: FE

Terminal CPX

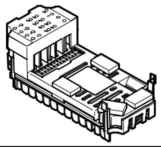
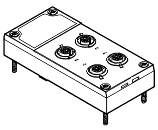
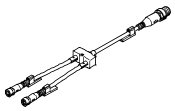
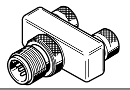
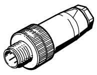
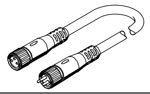
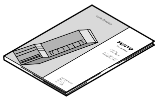
Technical data – PROFIsafe input module

Interlinking block/PROFIsafe input module combinations

Interlinking blocks	Part No.	PROFIsafe input module
		CPX-F8DE-P
CPX-GE-EV-S	**195746**	–
CPX-GE-EV-S-7/8-4POL	**541248**	–
CPX-GE-EV-S-7/8-5POL	**541244**	–
CPX-M-GE-EV-S-7/8-CIP-4P	**568956**	■
CPX-M-GE-EV-S-7/8-5POL	**550208**	■
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-GE-EV-V-7/8-4POL	**541252**	–

Terminal CPX

Accessories – PROFIsafe input module

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**
		8-way DIL switch		**2639571**	**CPX-AB-ID-P**
	Metal	4x socket M12, 5-pin	Unclocked sensor supply	**549367**	**CPX-M-AB-4-M12X2-5POL**
			Clocked sensor supply	**2639560**	**CPX-M-AB-4-M12X2-5POL-T**
Distributor					
	Modular system for sensor/actuator distributor			–	**NEDY-...** ➔ Internet: nedy
	Plug M12, 4-pin	2x socket M12, 5-pin		**8005310**	**NEDY-L2R1-V1-M12G5-N-M12G4**
Plug connector					
	Plug connector	M12, PG7		**18666**	**SEA-GS-7**
		M12, PG7, 4-pin for cable ∅ 2.5mm		**192008**	**SEA-4GS-7-2,5**
		M12, PG9		**18778**	**SEA-GS-9**
		M12 for 2 cables		**18779**	**SEA-GS-11-DUO**
		M12 for 2 cables, 5-pin		**192010**	**SEA-5GS-11-DUO**
		M12, 5-pin		**175487**	**SEA-M12-5GS-PG7**
Connecting cable					
	Modular system for all types of connecting cable			–	**NEBU-...** ➔ Internet: nebu
User documentation					
	User documentation for PROFIsafe input module		German	**8035496**	**P.BE-CPX-F8DE-P-DE**
			English	**8035497**	**P.BE-CPX-F8DE-P-EN**
			Spanish	**8035498**	**P.BE-CPX-F8DE-P-ES**
			French	**8035499**	**P.BE-CPX-F8DE-P-FR**
			Italian	**8035500**	**P.BE-CPX-F8DE-P-IT**
			Chinese	**8035501**	**P.BE-CPX-F8DE-P-ZH**

Terminal CPX

Technical data – Input module, digital, 16 inputs

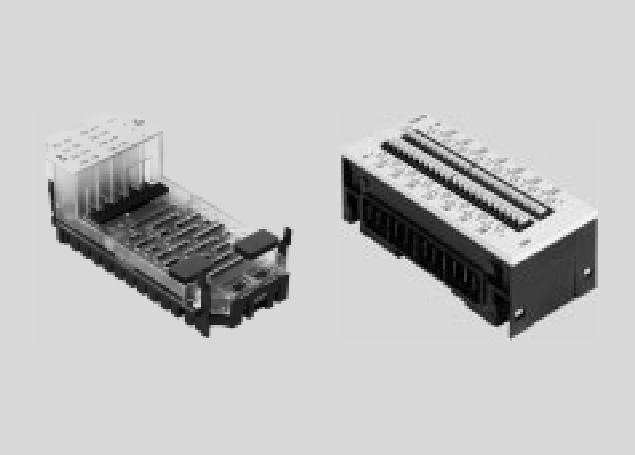
Function

Digital input modules enable the connection of two-wire and three-wire sensors (proximity sensors, 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

- 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 protection



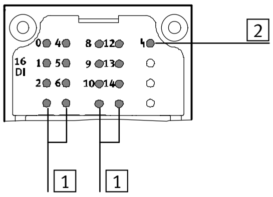
General technical data					
Type			CPX-16DE	CPX-M-16DE-D	CPX-L-16DE
Number of inputs			16	16	16
Max. residual current of inputs per module		[A]	1.8	1.8	1.8
Intrinsic current consumption at operating voltage		[mA]	Typically 15	Typically 34	Typically 15
Fuse protection			Internal electronic fuse per module	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
Electrical 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 displays	Group diagnostics		1	1	1
	Channel diagnostics		–	16	–
	Channel status		16	16	16
Diagnostics			Short circuit/overload per channel		
Parameterisation			• Module monitoring • Behaviour after short circuit • Input debounce time • Signal extension time		
Protection class to EN 60529			Depending on connection block	Depending on connection block	IP20
Temperature range	Operation	[°C]	–5 … +50	–5 … +50	–5 … +50
	Storage/transport	[°C]	–20 … +70	–20 … +70	–20 … +70
Materials			Reinforced PA, PC	Reinforced PA, PC	Reinforced PA
Note on materials			–	–	RoHS-compliant
Grid dimension		[mm]	50	50	50
Dimensions (incl. 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]	38	38	Approx. 170

Terminal CPX

Technical data – Input module, digital, 16 inputs

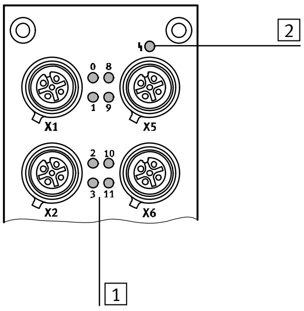
Connection and display components

CPX-16DE



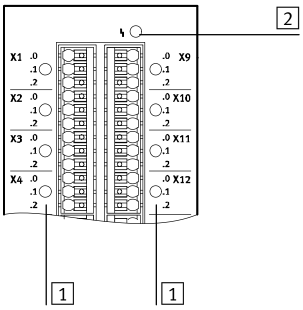
1 Status LEDs (green)
For allocation to inputs
➔ pin allocation for module
2 Error LED (red, module error)

CPX-M-16DE-D



1 Common status LEDs (green)/error LEDs (red) for each input signal
2 Error LED (red, module error)

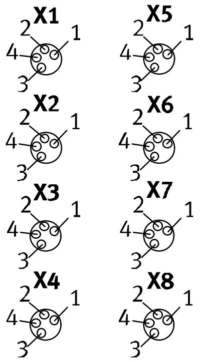
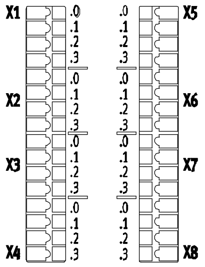
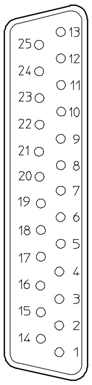
CPX-L-16DE

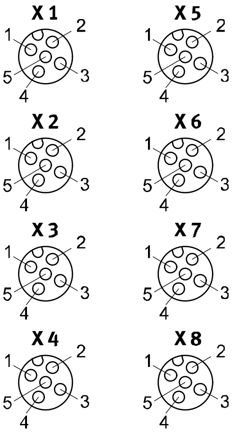


1 Status LEDs (green)
for each input signal
2 Error LED (red, module error)

Connection block/digital input module combinations

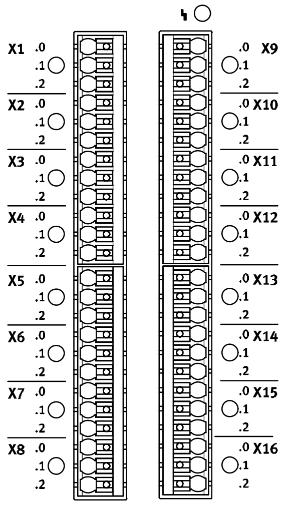
Connection blocks	Part No.	Digital input modules		
		CPX-16DE	CPX-M-16DE-D	CPX-L-16DE
CPX-AB-8-M8X2-4POL	**541256**	■	–	–
CPX-AB-8-M12X2-5POL	**3606900**	–	■	–
CPX-AB-8-KL-4POL	**195708**	■	–	–
CPX-AB-1-SUB-BU-25POL	**525676**	■	–	–
CPX-M-AB-8-M12X2-5POL	**549335**	–	■	–

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

Pin allocation		
Connection block inputs	CPX-M-16DE-D	
CPX-M-AB-8-M12X2-5POL and CPX-AB-8-M12X2-5POL		
 X 1 X 2 X 3 X 4 X 5 X 6 X 7 X 8 1 2 3 4 5	X1.1: 24 V_{Sx} X1.2: Input x+1 X1.3: 0 V_{Sx} X1.4: Input x X1.5: FE	X5.1: 24 V_{Sx+8} X5.2: Input x+9 X5.3: 0 V_{Sx+8} X5.4: Input x+8 X5.5: FE
	X2.1: 24 V_{Sx+2} X2.2: Input x+3 X2.3: 0 V_{Sx+2} X2.4: Input x+2 X2.5: FE	X6.1: 24 V_{Sx+10} X6.2: Input x+11 X6.3: 0 V_{Sx+10} X6.4: Input x+10 X6.5: FE
	X3.1: 24 V_{Sx+4} X3.2: Input x+5 X3.3: 0 V_{Sx+4} X3.4: Input x+4 X3.5: FE	X7.1: 24 V_{Sx+12} X7.2: Input x+13 X7.3: 0 V_{Sx+12} X7.4: Input x+12 X7.5: FE
	X4.1: 24 V_{Sx+6} X4.2: Input x+7 X4.3: 0 V_{Sx+6} X4.4: Input x+6 X4.5: FE	X8.1: 24 V_{Sx+14} X8.2: Input x+15 X8.3: 0 V_{Sx+14} X8.4: Input x+14 X8.5: FE

Terminal CPX

Technical data – Input module, digital, 16 inputs

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

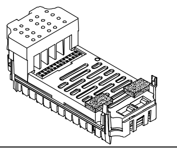
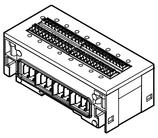
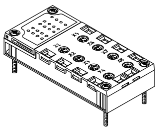
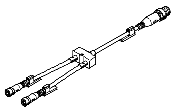
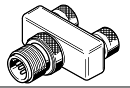
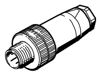
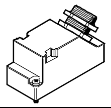
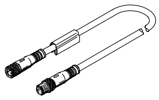
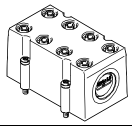
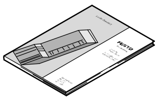
New

CPX-AB-8-M12X2-5POL

FESTO

Terminal CPX

Accessories – 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 plastic, including interlinking block and connection block with spring-loaded terminals			**572606**	**CPX-L-16DE-16-KL-3POL**
Connection block					
	Plastic	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 sensor/actuator distributor			**–**	**NEDY-…** ➔ Internet: nedy
	Plug M8, 4-pin	2x socket M8, 3-pin		**8005312**	**NEDY-L2R1-V1-M8G3-N-M8G4**
Plug					
	Plug, M8, 3-pin		Solderable	**18696**	**SEA-GS-M8**
			Screw-in	**192009**	**SEA-3GS-M8-S**
	Plug, Sub-D, 25-pin			**527522**	**SD-SUB-D-ST25**
Connecting cable					
	Connecting cable M8-M8		0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**
			1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**
			2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**
			5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**
	Modular system for connecting cables			**–**	**NEBU-…** ➔ Internet: nebu
Cover					
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug			**538219**	**AK-8KL**
	Fittings kit			**538220**	**VG-K-M9**
Manual					
	Manual		German	**526439**	**P.BE-CPX-EA-DE**
			English	**526440**	**P.BE-CPX-EA-EN**
			Spanish	**526441**	**P.BE-CPX-EA-ES**
			French	**526442**	**P.BE-CPX-EA-FR**
			Italian	**526443**	**P.BE-CPX-EA-IT**

Terminal CPX

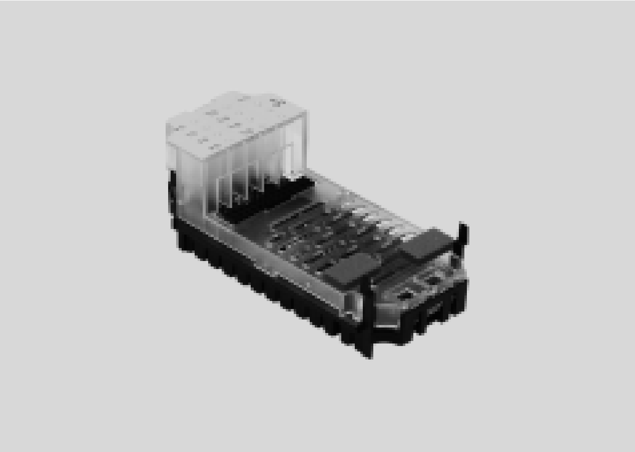
Technical data – Output module, digital

Function

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

Applications

- 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 protection in each channel

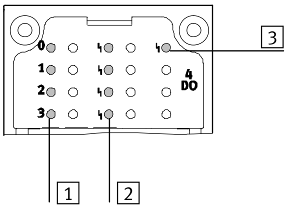


General technical data

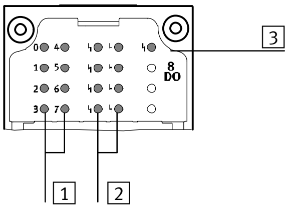
Type			CPX-4DA	CPX-8DA	CPX-8DA-H
No. of outputs			4	8	8
Max. power supply	Per module	[A]	4		8.4
	Per channel	[A]	1 (24 W lamp load, 4 channels can be connected in parallel)	0.5 (12 W lamp load, 8 channels can be connected in parallel)	2.1 (50 W lamp load), per channel pair
Fuse protection (short circuit)			Internal electronic fuse for each channel		
Module current consumption (voltage supply for electronics)		[mA]	Typically 16		Typically 34
Operating voltage	Nominal value	[V DC]	24		
	Permissible range	[V DC]	18 … 30		
Electrical isolation	Channel – channel		No		
	Channel – internal bus		Yes, using an intermediate supply		
Output characteristic curve			To IEC 1131-2		
Switching logic			Positive logic (PNP)		
LED displays	Group diagnostics		1	1	1
	Channel diagnostics		4	8	8
	Channel status		4	8	8
Diagnostics			• Short circuit/overload, channel x • Undervoltage of outputs		
Parameterisation			• Module monitoring • Behaviour after short circuit • Fail-safe channel x • Forcing channel x • Idle mode channel x		
Protection class to EN 60529			Depending on connection block		
Temperature range	Operation	[°C]	–5 … +50		
	Storage/transport	[°C]	–20 … +70		
Materials			Reinforced PA, PC		
Grid dimension		[mm]	50		
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50		
Weight		[g]	38		

Connection and display components

CPX-4DA



CPX-8DA

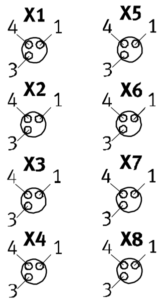


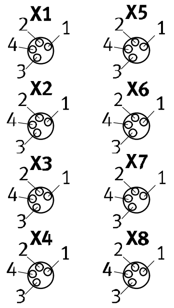
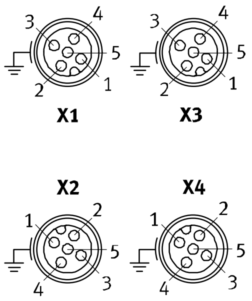
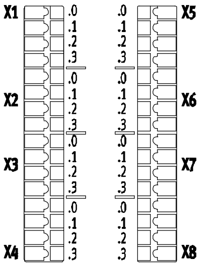
1 Status LEDs (yellow)
Allocation to outputs
➔ Pin allocation for module
2 Channel-specific error LEDs (red)
3 Error LED (red, module error)

Connection block/digital output module combinations

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-AB-4-HAR-4POL	**525636**	■	■	–
CPX-M-AB-4-M12x2-5POL	**549367**	■	■	■

Pin allocation

Connection block outputs	CPX-4DA		CPX-8DA	
CPX-AB-8-M8-3POL				
	X1.1: n.c. X1.3: 0 V_{OUT} X1.4: Output x	X5.1: n.c. X5.3: 0 V_{OUT} X5.4: Output x+2	X1.1: n.c. X1.3: 0 V_{OUT} X1.4: Output x	X5.1: n.c. X5.3: 0 V_{OUT} X5.4: Output x+4
	X2.1: n.c. X2.3: 0 V_{OUT} X2.4: Output x+1	X6.1: n.c. X6.3: 0 V_{OUT} X6.4: Output x+3	X2.1: n.c. X2.3: 0 V_{OUT} X2.4: Output x+1	X6.1: n.c. X6.3: 0 V_{OUT} X6.4: Output x+5
	X3.1: n.c. X3.3: 0 V_{OUT} X3.4: Output x+1	X7.1: n.c. X7.3: 0 V_{OUT} X7.4: Output x+3	X3.1: n.c. X3.3: 0 V_{OUT} X3.4: Output x+2	X7.1: n.c. X7.3: 0 V_{OUT} X7.4: Output x+6
	X4.1: n.c. X4.3: 0 V_{OUT} X4.4: n.c.	X8.1: n.c. X8.3: 0 V_{OUT} X8.4: n.c.	X4.1: n.c. X4.3: 0 V_{OUT} X4.4: Output x+3	X8.1: n.c. X8.3: 0 V_{OUT} X8.4: Output x+7

Pin allocation				
Connection block outputs	CPX-4DA		CPX-8DA and CPX-8DA-H	
CPX-AB-8-M8X2-4POL				
 X1 X5 X2 X6 X3 X7 X4 X8 1 2 3 4	X1.1: 0 V_{OUT} X1.2: Output x+1 X1.3: 0 V_{OUT} X1.4: Output x	X5.1: 0 V_{OUT} X5.2: n.c. X5.3: 0 V_{OUT} X5.4: n.c.	X1.1: 0 V_{OUT} X1.2: Output x+1 X1.3: 0 V_{OUT} X1.4: Output x	X5.1: 0 V_{OUT} X5.2: n.c. X5.3: 0 V_{OUT} X5.4: n.c.
	X2.1: 0 V_{OUT} X2.2: n.c. X2.3: 0 V_{OUT} X2.4: Output x+1	X6.1: 0 V_{OUT} X6.2: n.c. X6.3: 0 V_{OUT} X6.4: n.c.	X2.1: 0 V_{OUT} X2.2: Output x+3 X2.3: 0 V_{OUT} X2.4: Output x+2	X6.1: 0 V_{OUT} X6.2: n.c. X6.3: 0 V_{OUT} X6.4: n.c.
	X3.1: 0 V_{OUT} X3.2: Output x+3 X3.3: 0 V_{OUT} X3.4: Output x+2	X7.1: 0 V_{OUT} X7.2: n.c. X7.3: 0 V_{OUT} X7.4: n.c.	X3.1: 0 V_{OUT} X3.2: Output x+5 X3.3: 0 V_{OUT} X3.4: Output x+4	X7.1: 0 V_{OUT} X7.2: n.c. X7.3: 0 V_{OUT} X7.4: n.c.
	X4.1: 0 V_{OUT} X4.2: n.c. X4.3: 0 V_{OUT} X4.4: Output x+3	X8.1: 0 $V_{OUT\,x+1}$ X8.2: n.c. X8.3: 0 $V_{OUT\,x+3}$ X8.4: n.c.	X4.1: 0 V_{OUT} X4.2: Output x+7 X4.3: 0 V_{OUT} X4.4: Output x+6	X8.1: 0 V_{OUT} X8.2: n.c. X8.3: 0 V_{OUT} X8.4: n.c.
CPX-AB-4-M12X2-5POL[1] and CPX-AB-4-M12X2-5POL-R[2]				
	X1.1: n.c. X1.2: Output x+1 X1.3: 0 V_{OUT} X1.4: Output x X1.5: FE	X3.1: n.c. X3.2: Output x+3 X3.3: 0 V_{OUT} X3.4: Output x+2 X3.5: FE	X1.1: n.c. X1.2: Output x+1 X1.3: 0 V_{OUT} X1.4: Output x X1.5: FE	X3.1: n.c. X3.2: Output x+5 X3.3: 0 V_{OUT} X3.4: Output x+4 X3.5: FE
	X2.1: n.c. X2.2: n.c. X2.3: 0 V_{OUT} X2.4: Output x+1 X2.5: FE	X4.1: n.c. X4.2: n.c. X4.3: 0 V_{OUT} X4.4: Output x+3 X4.5: FE	X2.1: n.c. X2.2: Output x+3 X2.3: 0 V_{OUT} X2.4: Output x+2 X2.5: FE	X4.1: n.c. X4.2: Output x+7 X4.3: 0 V_{OUT} X4.4: Output x+6 X4.5: FE
CPX-AB-8-KL-4POL				
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: n.c. X1.1: 0 V_{OUT} X1.2: Output x X1.3: FE	X5.0: n.c. X5.1: 0 V_{OUT} X5.2: Output x+2 X5.3: FE	X1.0: n.c. X1.1: 0 V_{OUT} X1.2: Output x X1.3: FE	X5.0: n.c. X5.1: 0 V_{OUT} X5.2: Output x+4 X5.3: FE
	X2.0: n.c. X2.1: 0 V_{OUT} X2.2: Output x+1 X2.3: FE	X6.0: n.c. X6.1: 0 V_{OUT} X6.2: Output x+3 X6.3: FE	X2.0: n.c. X2.1: 0 V_{OUT} X2.2: Output x+1 X2.3: FE	X6.0: n.c. X6.1: 0 V_{OUT} X6.2: Output x+5 X6.3: FE
	X3.0: n.c. X3.1: 0 V_{OUT} X3.2: Output x+1 X3.3: FE	X7.0: n.c. X7.1: 0 V_{OUT} X7.2: Output x+3 X7.3: FE	X3.0: n.c. X3.1: 0 V_{OUT} X3.2: Output x+2 X3.3: FE	X7.0: n.c. X7.1: 0 V_{OUT} X7.2: Output x+6 X7.3: FE
	X4.0: n.c. X4.1: 0 V_{OUT} X4.2: n.c. X4.3: FE	X8.0: n.c. X8.1: 0 V_{OUT} X8.2: n.c. X8.3: FE	X4.0: n.c. X4.1: 0 V_{OUT} X4.2: Output x+3 X4.3: FE	X8.0: n.c. X8.1: 0 V_{OUT} X8.2: Output x+7 X8.3: FE

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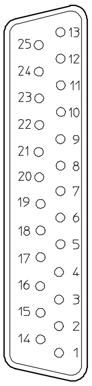
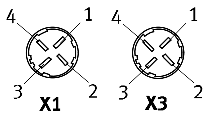
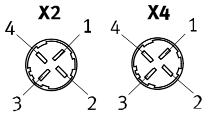
1) Not suitable for CPX-8DA-H.
2) Speedcon quick lock, screening additionally on metal thread

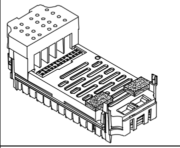
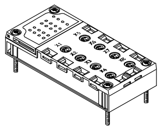
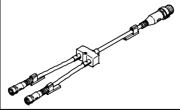
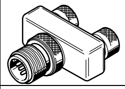
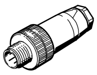
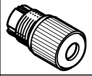
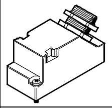
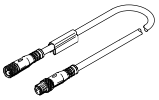
Pin allocation

Connection block outputs	CPX-4DA		CPX-8DA and CPX-8DA-H	
CPX-AB-1-SUB-BU-25POL				
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1: Output x	14: Output x+2	1: Output x	14: Output x+4
	2: Output x+1	15: Output x+3	2: Output x+1	15: Output x+5
	3: Output x+1	16: Output x+3	3: Output x+2	16: Output x+6
	4: n.c.	17: n.c.	4: Output x+3	17: Output x+7
	5: n.c.	18: n.c.	5: n.c.	18: n.c.
	6: 0 V_{OUT}	19: n.c.	6: 0 V_{OUT}	19: n.c.
	7: n.c.	20: n.c.	7: n.c.	20: n.c.
	8: 0 V_{OUT}	21: n.c.	8: 0 V_{OUT}	21: n.c.
	9: n.c.	22: 0 V_{OUT}	9: n.c.	22: 0 V_{OUT}
	10: n.c.	23: 0 V_{OUT}	10: n.c.	23: 0 V_{OUT}
	11: 0 V_{OUT}	24: 0 V_{OUT}	11: 0 V_{OUT}	24: 0 V_{OUT}
	12: 0 V_{OUT}	25: FE	12: 0 V_{OUT}	25: FE
	13: FE	Housing: FE	13: FE	Housing: FE
CPX-AB-4-HAR-4POL[1]				
	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_{OUT}	X3.3: 0 V_{OUT}	X1.3: 0 V_{OUT}	X3.3: 0 V_{OUT}
	X1.4: Output x	X3.4: Output x+2	X1.4: Output x	X3.4: Output x+4
	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_{OUT}	X4.3: 0 V_{OUT}	X2.3: 0 V_{OUT}	X4.3: 0 V_{OUT}
	X2.4: Output x+1	X4.4: Output x+3	X2.4: Output x+2	X4.4: Output x+6

[1] Not suitable for CPX-8DA-H.

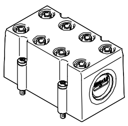
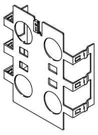
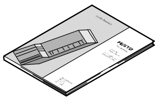
Terminal CPX

Accessories – 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					
	Plastic	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 clip terminal, 32-pin		**195708**	**CPX-AB-8-KL-4POL**
		1x Sub-D socket, 25-pin		**525676**	**CPX-AB-1-SUB-BU-25POL**
		4x socket, quick connection, 4-pin		**525636**	**CPX-AB-4-HAR-4POL**
	Metal	4x socket, M12, 5-pin		**549367**	**CPX-M-AB-4-M12X2-5POL**
Distributor					
	Modular system for sensor/actuator distributor			–	**NEDY-…** ➔ Internet: nedy
	Plug M8, 4-pin	2x socket M8, 3-pin		**8005312**	**NEDY-L2R1-V1-M8G3-N-M8G4**
	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					
	Plug	M8, 3-pin	Solderable	**18696**	**SEA-GS-M8**
			Screw-in	**192009**	**SEA-3GS-M8-S**
		M12, PG7		**18666**	**SEA-GS-7**
		M12, PG7, 4-pin for cable ∅ 2.5 mm		**192008**	**SEA-4GS-7-2,5**
		M12, PG9		**18778**	**SEA-GS-9**
		M12 for 2 cables		**18779**	**SEA-GS-11-DUO**
		M12 for 2 cables, 5-pin		**192010**	**SEA-5GS-11-DUO**
		M12, 5-pin		**175487**	**SEA-M12-5GS-PG7**
	HARAX plug, 4-pin			**525928**	**SEA-GS-HAR-4POL**
	Sub-D plug, 25-pin			**527522**	**SD-SUB-D-ST25**
Connecting cable					
	Connecting cable M8-M8		0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**
			1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**
			2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**
			5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**
	Modular system for connecting cables			–	**NEBU-…** ➔ Internet: nebu

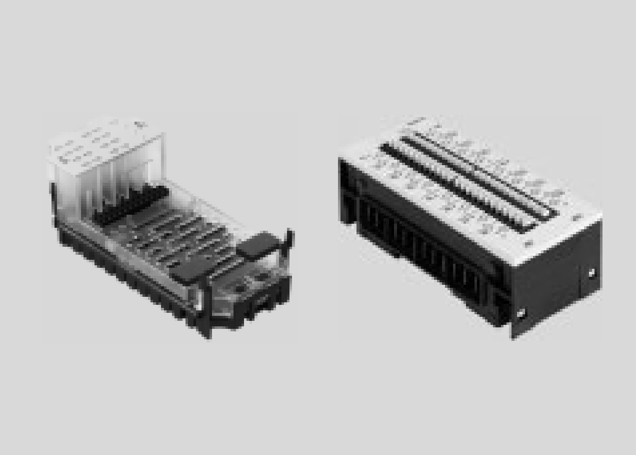
➔ **Internet: www.festo.com/catalogue/...**

Ordering data

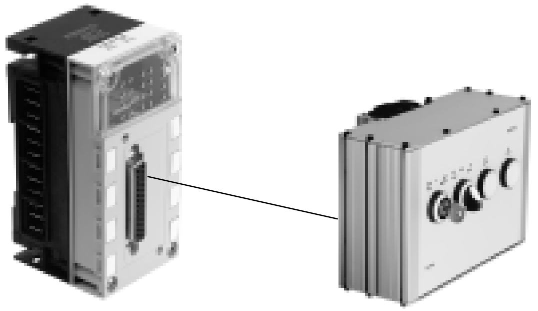
Designation			Part No.	Type
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Screening plate				
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
User manual				
	User manual	German	**526439**	**P.BE-CPX-EA-DE**
		English	**526440**	**P.BE-CPX-EA-EN**
		Spanish	**526441**	**P.BE-CPX-EA-ES**
		French	**526442**	**P.BE-CPX-EA-FR**
		Italian	**526443**	**P.BE-CPX-EA-IT**

Application

- 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 protection for the sensor power supply and integrated electronic fuse protection in each output channel

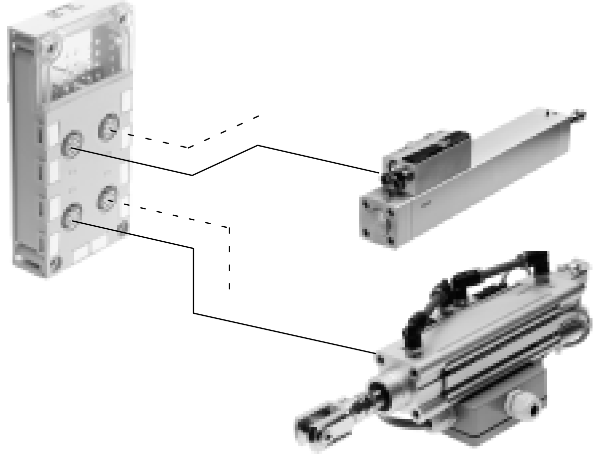


Function



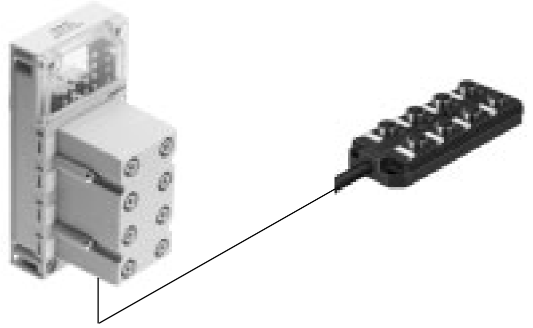
The multi I/O module controls devices with a high number of inputs and outputs per connection point.
Since the module supports Sub-D connection blocks, consoles with pushbuttons and lamps can be connected to the terminal CPX using a minimal amount of installation space.

Up to 8 inputs and 8 outputs can be connected to one connection point with high protection to IP65.



Since the module supports the M12 connection block (8-pin), up to 4 cylinder/valve combinations with integrated sensors can be connected. Each cylinder/valve combination is supported by 2 inputs and 2 outputs per connection. It is therefore possible to control max. 2 solenoid coils and record signals from 2 sensors with a pre-assembled connecting cable.

Two inputs on 2 connections are bridged to provide support for the diagnostic module of the cylinder/valve combination. This means that 3 inputs and 2 outputs are available at 2 connections.



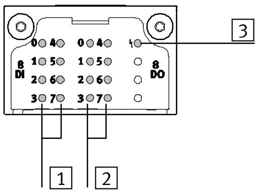
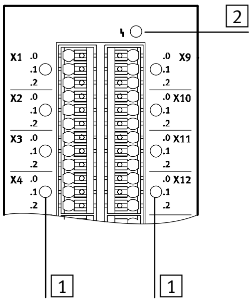
As an alternative to the Sub-D and M12 connection block (8-pin) for installation with high protection to IP65, the terminal connection block produces an identical result for installation with IP20 protection – or with IP65/IP67 protection with additional cover.

Subordinate I/O modules with multi-pin plug connection (Sub-D plug or multi-pin connecting cable for self-assembly) support the cost-effective and space-saving integration of critical installation areas such as energy chains or upstream functions.

General technical data

Type			CPX-8DE-8DA	CPX-L-8DE-8DA
Number	Inputs		8	8
	Outputs		8	8
Max. power supply 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 00 … 003 can be connected in parallel to 04 … 07)	0.25 (6 W lamp load)
Fuse protection (short circuit)			Internal electronic fuse per channel	
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 22	Typically 15
Operating voltage	Nominal value	[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, using an intermediate supply	No
Characteristic	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 displays	Group diagnostics		1	1
	Channel diagnostics		–	–
	Channel status		16	16
Diagnostics			• Short circuit/overload per channel • Undervoltage at outputs	
Parameterisation			• Input debounce time • Failsafe per channel • Forces per channel • Idle mode per channel • Signal extension time • Module monitoring • Behaviour after short circuit	
Protection class to EN 60529			Depending on connection block	IP20
Temperature range	Operation	[°C]	−5 … +50	−5 … +50
	Storage/transport	[°C]	−20 … +70	−20 … +70
Materials			Reinforced PA, PC	Reinforced PA
Note on materials			–	RoHS-compliant
Grid dimension		[mm]	50	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50	50 x 107 x 41
Product weight		[g]	38	Approx. 170

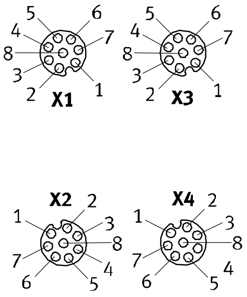
Connection and display components

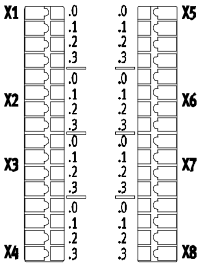
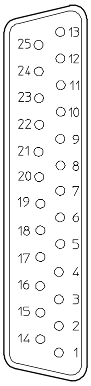
CPX-8DE-8DA		CPX-L-8DE-8DA	
	1 Status LEDs (green) For allocation to inputs ➔ pin allocation for module 2 Status LEDs (yellow) For allocation to outputs ➔ pin allocation for module 3 Error LED (red) (module error)	 X1 X2 X3 X4 X9 X10 X11 X12 .0 .1 .2 2 1 1	1 Status LEDs (green) for each input signal 2 Error LED (red, module error)

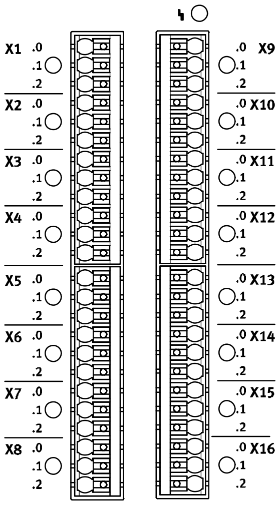
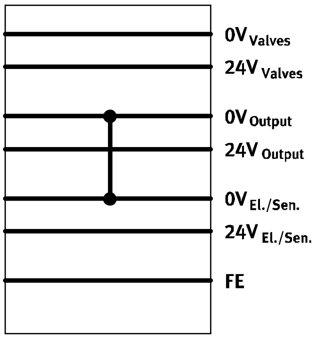
Connection block/digital I/O module combinations

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**	■	–

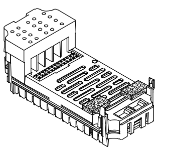
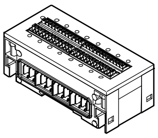
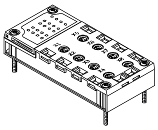
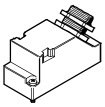
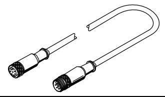
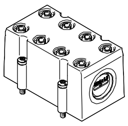
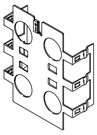
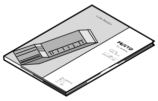
Pin allocation

Connection block inputs/outputs	CPX-8DE-8DA	
CPX-AB-4-M12-8POL		
 X1 X3 X2 X4 1 2 3 4 5 6 7 8	X1.1: 24 V_{SEN} X1.2: Input x X1.3: Input x+1 X1.4: 0 V_{SEN} X1.5: Output x X1.6: Output x+1 X1.7: Input x+4 X1.8: 0 V_{OUT}	X3.1: 24 V_{SEN} X3.2: Input x+4 X3.3: Input x+5 X3.4: 0 V_{SEN} X3.5: Output x+4 X3.6: Output x+5 X3.7: n.c. X3.8: 0 V_{OUT}
	X2.1: 24 V_{SEN} X2.2: Input x+2 X2.3: Input x+3 X2.4: 0 V_{SEN} X2.5: Output x+2 X2.6: Output x+3 X2.7: Input x+6 X2.8: 0 V_{OUT}	X4.1: 24 V_{SEN} X4.2: Input x+6 X4.3: Input x+7 X4.4: 0 V_{SEN} X4.5: Output x+6 X4.6: Output x+7 X4.7: n.c. X4.8: 0 V_{OUT}

Pin allocation		
Connection block inputs/outputs	CPX-8DE-8DA	
CPX-AB-8-KL-4POL		
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: 24 V_{SEN} X1.1: 0 V_{SEN} X1.2: Input x X1.3: FE	X5.0: Output x+4 X5.1: 0 V_{OUT} X5.2: Output x X5.3: FE
	X2.0: Input x+4 X2.1: Input x+5 X2.2: Input x+1 X2.3: FE	X6.0: Output x+5 X6.1: 0 V_{OUT} X6.2: Output x+1 X6.3: FE
	X3.0: 24 V_{SEN} X3.1: 0 V_{SEN} X3.2: Input x+2 X3.3: FE	X7.0: Output x+6 X7.1: 0 V_{OUT} X7.2: Output x+2 X7.3: FE
	X4.0: Input x+6 X4.1: Input x+7 X4.2: Input x+3 X4.3: FE	X8.0: Output x+7 X8.1: 0 V_{OUT} X8.2: Output x+3 X8.3: FE
CPX-AB-1-SUB-BU-25POL		
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1: Input x	14: Output x
	2: Input x+1	15: Output x+1
	3: Input x+2	16: Output x+2
	4: Input x+3	17: Output x+3
	5: Input x+4	18: Output x+4
	6: Input x+5	19: Output x+5
	7: Input x+6	20: Output x+6
	8: Input x+7	21: Output x+7
	9: 24 V_{SEN}	22: 0 V_{OUT}
	10: 24 V_{SEN}	23: 0 V_{OUT}
	11: 0 V_{SEN}	24: 0 V_{OUT}
	12: 0 V_{SEN}	25: FE
	13: FE	Housing: FE

Pin allocation		
Connection block inputs	CPX-L-8DE-8DA	
 X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15 X16 .0 .1 .2	X1.0: 24 V_{SEN} X1.1: Input x X1.2: 0 V_{SEN}+out X2.0: 24 V_{SEN} X2.1: Input x+1 X2.2: 0 V_{SEN}+out X3.0: 24 V_{SEN} X3.1: Input x+2 X3.2: 0 V_{SEN}+out X4.0: 24 V_{SEN} X4.1: Input x+3 X4.2: 0 V_{SEN}+out X5.0: 24 V_{SEN} X5.1: Input x+4 X5.2: 0 V_{SEN}+out X6.0: 24 V_{SEN} X6.1: Input x+5 X6.2: 0 V_{SEN}+out X7.0: 24 V_{SEN} X7.1: Input x+6 X7.2: 0 V_{SEN}+out X8.0: 24 V_{SEN} X8.1: Input x+7 X8.2: 0 V_{SEN}+out	X9.0: 24 V_{SEN} X9.1: Output x X9.2: 0 V_{SEN}+out X10.0: 24 V_{SEN} X10.1: Output x+1 X10.2: 0 V_{SEN}+out X11.0: 24 V_{SEN} X11.1: Output x+2 X11.2: 0 V_{SEN}+out X12.0: 24 V_{SEN} X12.1: Output x+3 X12.2: 0 V_{SEN}+out X13.0: 24 V_{SEN} X13.1: Output x+4 X13.2: 0 V_{SEN}+out X14.0: 24 V_{SEN} X14.1: Output x+5 X14.2: 0 V_{SEN}+out X15.0: 24 V_{SEN} X15.1: Output x+6 X15.2: 0 V_{SEN}+out X16.0: 24 V_{SEN} X16.1: Output x+7 X16.2: 0 V_{SEN}+out
Interlinking block	CPX-L-8DE-8DA	
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE	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.	If all poles 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 power supply for outputs must be used to the right of the input/output module.

Ordering data

Designation			Part No.	Type
Input/output module, digital				
	8 digital inputs, 8 digital outputs		**526257**	**CPX-8DE-8DA**
	8 digital inputs, 8 digital outputs, for CPX in plastic, including interlinking block and connection block with spring-loaded terminals		**572607**	**CPX-L-8DE-8DA-16-KL-3POL**
Connection block				
	Plastic	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				
	Plug, Sub-D, 25-pin		**527522**	**SD-SUB-D-ST25**
Connecting cable				
	Connecting cable M12		**525617**	**KM12-8GD8GS-2-PU**
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Screening plate				
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
Manual				
	Manual	German	**526439**	**P.BE-CPX-EA-DE**
		English	**526440**	**P.BE-CPX-EA-EN**
		Spanish	**526441**	**P.BE-CPX-EA-ES**
		French	**526442**	**P.BE-CPX-EA-FR**
		Italian	**526443**	**P.BE-CPX-EA-IT**

Terminal CPX

Technical data – 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

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

Description

Applications

- Recording travel and speed of a conveyor
- Position and speed synchronisation of conveyors and pick & place applications
- Counting goods e.g. in packaging installations
- Systems for filling by weight and volume
- Monitoring motor speeds
- Measuring equipment for determining the position of axis systems (linear, rotational)
- Control of fast-switching valves
- Control of the opening time of a valve
- Activation of semiconductor relays
- Temperature monitoring and rotational speed control for drives
- Change of direction in fast drives
- Control of motors with pulse-width modulation (PWM)

Supported devices

- 5 V incremental encoder, single-ended or differential, with two 90° phase offset tracks
- 24 V incremental encoder, single-ended, with two 90° phase offset tracks
- 24 V pulse generator with or without direction level
- 24 V direct current motors
- Absolute encoder with SSI interface (13 bits to 25 bits)

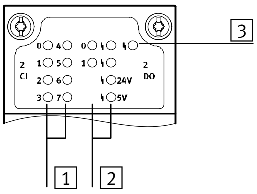
Terminal CPX

Technical data – Counter module, digital

General technical data			
Type			**CPX-2ZE2DA**
Number	Inputs		2
	Outputs		2
Max. power supply 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]	Typically 35
Operating voltage	Nominal value	[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, using an intermediate 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		• Negative logic (NPN) • Positive logic (PNP) • Push-pull driver
LED displays	Group diagnostics		1
	Channel diagnostics		2
	Channel status		10
	Module diagnostics		2
Diagnostics			Operating mode-dependent diagnostics
Parameterisation			• Switch-on/off delay • Frequency output • Speed measurement • Pulse output • Pulse train • Rotational speed measurement • Frequency measurement • Duty cycle measurement • Engine operating mode • Determination of position • Pulse width modulation • One-off counting • Continuous counting • Periodic counting
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 … +50
	Storage/transport	[°C]	–20 … +70
Certification			UL - Recognized (OL)
Housing material information			Plastic
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50
Product weight		[g]	130

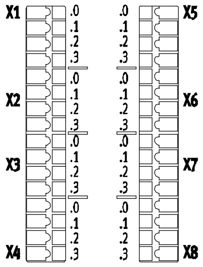
Connection and display components

CPX-2ZE2DA



1. Status LEDs (green)
   For allocation to inputs
   → Pin allocation for module
2. Status LEDs (yellow, red)
   For allocation to outputs
   → Pin allocation for module
3. Error LED (red)
   (module error)

Pin allocation

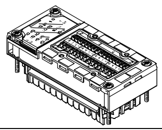
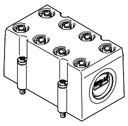
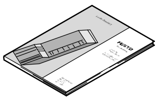
Inputs/outputs	CPX-2ZE2DA	
	Channel 0	Channel 1
	X1.0: Input	X5.0: Input
	X1.1: Input	X5.1: Input
	X1.2: Input	X5.2: Input
	X1.3: Input	X5.3: Input
	X2.0: Input	X6.0: Input
	X2.1: Input	X6.1: Input
	X2.2: 5 V DC	X6.2: 5 V DC
	X2.3: 0 V	X6.3: 0 V
	X3.0: 24 V DC	X7.0: 24 V DC
	X3.1: 0 V	X7.1: 0 V
	X3.2: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

Note

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

Terminal CPX

Accessories – Counter module, digital

Ordering data				
Description			Part No.	Type
Counter module, digital				
	2 digital inputs, 2 digital outputs		**576046**	**CPX-2ZE2DA**
Cover				
	Cover for CPX-2ZE2DA (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Manual				
	Manual counter module CPX-2ZE2DA	German	**8035733**	**P.BE-CPX-2ZE2DA-DE**
		English	**8035734**	**P.BE-CPX-2ZE2DA-EN**
		Spanish	**8035735**	**P.BE-CPX-2ZE2DA-ES**
		French	**8035736**	**P.BE-CPX-2ZE2DA-FR**
		Italian	**8035737**	**P.BE-CPX-2ZE2DA-IT**
		Chinese	**8035738**	**P.BE-CPX-2ZE2DA-ZH**

Terminal CPX

Technical data – Analogue module for inputs

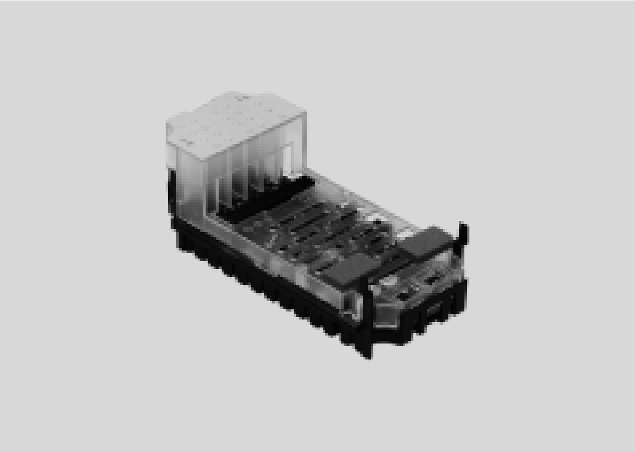
Function

Analogue modules control devices with a standardised analogue interface such as sensors for pressure, temperature, flow rate, filling level, etc.

The analogue module supports various connection concepts with different numbers of sockets or terminals as appropriate to the connection block selected.

Application

- 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 interlinking block
- Analogue module protection and diagnostics through integrated electronic fuse protection



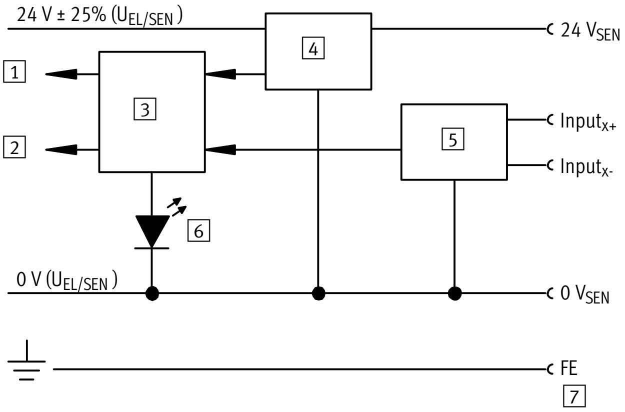
General technical data

Type		CPX-2AE-U-I		CPX-4AE-U-I		CPX-4AE-I
		Voltage input	Current input	Voltage input	Current input	Current input
No. of analogue inputs		2		4		2 or 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, 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 by means of DIL switch or software)		0 … 10 V	0 … 20 mA 4 … 20 mA	1 … 5 V 0 … 10 V −5 … +5 V −10 … +10 V	0 … 20 mA 4 … 20 mA −20 … +20 mA	0 … 20 mA 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 bit + prefix		15 bit + prefix		12 bit + prefix
		Scalable to 15 bit		Scalable to 15 bit		Scalable to 15 bit
Cable length	[m]	Max. 30 (shielded)				

General technical data

Type			CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-I
Electrical 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		
			Forces per channel		
			Limit value monitoring per channel		
			Measured value smoothing		
			Signal range per channel		
			Wire break monitoring per channel		
			Behaviour after short circuit		
			–	Behaviour after overload at input	–
			–	Sensor supply active	–
Protection class 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	–
Grid dimension		[mm]	50		
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50		
Product weight		[g]	38	46	38

Internal structure, basic representation



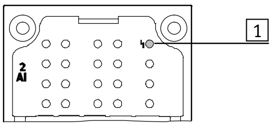
1	Diagnostics
2	Input_x (PLC/IPC via fieldbus)
3	Logic
4	Monitoring/disconnection of the sensor supply
5	D/A conversion
6	Error LED (red, module error)
7	Connections on the connection block

Terminal CPX

Technical data – Analogue module for inputs

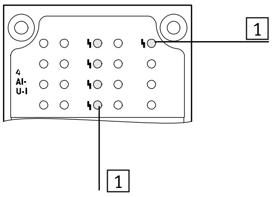
Connection and display components

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



1 Error LED (red, module error)

CPX-4AE-U-I

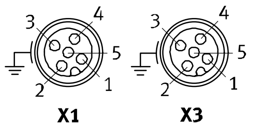
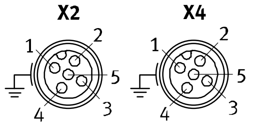
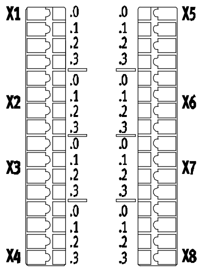


1 Error LED (red, module error)
2 Channel-related error LEDs (red)

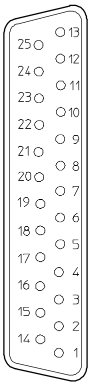
Connection block/analogue module combinations

Connection blocks	Part No.	Analogue module		
		CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-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**	■	■	■

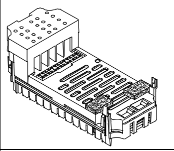
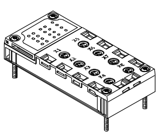
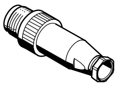
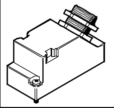
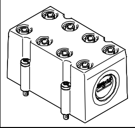
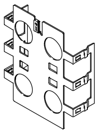
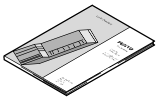
Pin allocation

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[1] and CPX-M-AB-4-M12X2-5POL						
	X1.1: 24 V_{SEN} X1.2: Input U0+ X1.3: 0 V_{SEN} X1.4: Input U0– X1.5: FE[2]	X3.1: 24 V_{SEN} X3.2: Input U1+ X3.3: 0 V_{SEN} X3.4: Input U1– X3.5: FE[2]	X1.1: 24 V_{SEN} X1.2: Input 0+ X1.3: 0 V_{SEN} X1.4: Input 0– X1.5: FE[2]	X3.1: 24 V_{SEN} X3.2: Input 2+ X3.3: 0 V_{SEN} X3.4: Input 2– X3.5: FE[2]	X1.1: 24 V_{SEN} X1.2: Input I0+ X1.3: 0 V_{SEN} X1.4: Input I0– X1.5: FE[2]	X3.1: 24 V_{SEN} X3.2: Input I2+ X3.3: 0 V_{SEN} X3.4: Input I2– X3.5: FE[2]
	X2.1: 24 V_{SEN} X2.2: Input I0+ X2.3: 0 V_{SEN} X2.4: Input I0– X2.5: FE[2]	X4.1: 24 V_{SEN} X4.2: Input I1+ X4.3: 0 V_{SEN} X4.4: Input I1– X4.5: FE[2]	X2.1: 24 V_{SEN} X2.2: Input 1+ X2.3: 0 V_{SEN} X2.4: Input 1– X2.5: FE[2]	X4.1: 24 V_{SEN} X4.2: Input 3+ X4.3: 0 V_{SEN} X4.4: Input 3– X4.5: FE[2]	X2.1: 24 V_{SEN} X2.2: Input I1+ X2.3: 0 V_{SEN} X2.4: Input I1– X2.5: FE[2]	X4.1: 24 V_{SEN} X4.2: Input I3+ X4.3: 0 V_{SEN} X4.4: Input I3– X4.5: FE[2]
CPX-AB-8-KL-4POL						
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: 24 V_{SEN} X1.1: 0 V_{SEN} X1.2: Input U0– X1.3: FE	X5.0: 24 V_{SEN} X5.1: 0 V_{SEN} X5.2: Input U1– X5.3: FE	X1.0: 24 V_{SEN} X1.1: 0 V_{SEN} X1.2: Input 0– X1.3: FE	X5.0: 24 V_{SEN} X5.1: 0 V_{SEN} X5.2: Input 2– X5.3: FE	X1.0: 24 V_{SEN} X1.1: 0 V_{SEN} X1.2: Input I0– X1.3: FE	X5.0: 24 V_{SEN} X5.1: 0 V_{SEN} X5.2: Input I2– X5.3: FE
	X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE	X6.0: n.c. X6.1: n.c. X6.2: Input U1+ X6.3: FE	X2.0: n.c. X2.1: n.c. X2.2: Input 0+ X2.3: FE	X6.0: n.c. X6.1: n.c. X6.2: Input 2+ X6.3: FE	X2.0: n.c. X2.1: n.c. X2.2: Input I0+ X2.3: FE	X6.0: n.c. X6.1: n.c. X6.2: Input I2+ X6.3: FE
	X3.0: 24 V_{SEN} X3.1: 0 V_{SEN} X3.2: Input I0– X3.3: FE	X7.0: 24 V_{SEN} X7.1: 0 V_{SEN} X7.2: Input I1– X7.3: FE	X3.0: 24 V_{SEN} X3.1: 0 V_{SEN} X3.2: Input 1– X3.3: FE	X7.0: 24 V_{SEN} X7.1: 0 V_{SEN} X7.2: Input 3– X7.3: FE	X3.0: 24 V_{SEN} X3.1: 0 V_{SEN} X3.2: Input I1– X3.3: FE	X7.0: 24 V_{SEN} X7.1: 0 V_{SEN} X7.2: Input I3– X7.3: FE
	X4.0: n.c. X4.1: n.c. X4.2: Input I0+ X4.3: FE	X8.0: n.c. X8.1: n.c. X8.2: Input I1+ X8.3: FE	X4.0: n.c. X4.1: n.c. X4.2: Input 1+ X4.3: FE	X8.0: n.c. X8.1: n.c. X8.2: Input 3+ X8.3: FE	X4.0: n.c. X4.1: n.c. X4.2: Input I1+ X4.3: FE	X8.0: n.c. X8.1: n.c. X8.2: Input I3+ X8.3: FE

[1] Speedcon quick lock, shield additionally on metal thread
[2] FE/shield additionally on metal thread

Pin allocation						
Connection block inputs	CPX-2AE-U-I		CPX-4AE-U-I		CPX-4AE-I	
CPX-AB-1-SUB-BU-25POL						
	1: Input U0–	14: Input U1–	1: Input 0–	14: Input 2–	1: Input I0–	14: Input I2–
	2: Input U0+	15: Input U1+	2: Input 0+	15: Input 2+	2: Input I0+	15: Input I2+
	3: Input I0–	16: Input I1–	3: Input 1–	16: Input 3–	3: Input I1–	16: Input I3–
	4: Input I1+	17: Input I1+	4: Input 1+	17: Input 3+	4: Input I1+	17: Input I3+
	5: n.c.	18: 24 V_{SEN}	5: n.c.	18: 24 V_{SEN}	5: n.c.	18: 24 V_{SEN}
	6: n.c.	19: n.c.	6: n.c.	19: n.c.	6: n.c.	19: n.c.
	7: n.c.	20: 24 V_{SEN}	7: n.c.	20: 24 V_{SEN}	7: n.c.	20: 24 V_{SEN}
	8: n.c.	21: n.c.	8: n.c.	21: n.c.	8: n.c.	21: n.c.
	9: 24 V_{SEN}	22: 0 V_{SEN}	9: 24 V_{SEN}	22: 0 V_{SEN}	9: 24 V_{SEN}	22: 0 V_{SEN}
	10: 24 V_{SEN}	23: 0 V_{SEN}	10: 24 V_{SEN}	23: 0 V_{SEN}	10: 24 V_{SEN}	23: 0 V_{SEN}
	11: 0 V_{SEN}	24: 0 V_{SEN}	11: 0 V_{SEN}	24: 0 V_{SEN}	11: 0 V_{SEN}	24: 0 V_{SEN}
	12: 0 V_{SEN}	25: FE	12: 0 V_{SEN}	25: FE	12: 0 V_{SEN}	25: FE
	13: Shield1)	Housing: FE	13: Shield1)	Housing: FE	13: Shield1)	Housing: FE

1) Connect shield to functional earth FE

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**
	2 or 4 analogue current inputs			**541484**	**CPX-4AE-I**
Connection block					
	Plastic	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					
	Plug, M12, 5 pin			**175487**	**SEA-M12-5GS-PG7**
	Plug, Sub-D, 25-pin			**527522**	**SD-SUB-D-ST25**
Cover					
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug			**538219**	**AK-8KL**
	Fittings kit			**538220**	**VG-K-M9**
Screening plate					
	Screening plate for M12 connections			**526184**	**CPX-AB-S-4-M12**
Manual					
	Manual		German	**526415**	**P.BE-CPX-AX-DE**
			English	**526416**	**P.BE-CPX-AX-EN**
			Spanish	**526417**	**P.BE-CPX-AX-ES**
			French	**526418**	**P.BE-CPX-AX-FR**
			Italian	**526419**	**P.BE-CPX-AX-IT**

Terminal CPX

Technical data – Analogue input module with pressure sensors

Function

The pressure input modules enable a maximum of four pressures to 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 an image table. It is also possible to combine two channels into one differential pressure channel.

Applications

- Measuring range 0 … 10 bar or −1 … +1 bar
- Choice of units of measurement
- Processing of max. four 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
No. 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			• kPa • mbar • psi	
Pressure measuring range	Starting value	[bar]	−1	0
	Final value	[bar]	1	10
Internal cycle time		[ms]	5	
Data format			• 15 bits + prefix • Binary representation in mbar, kPa, psi	
LED displays			Group diagnostics	
Diagnostics			• Limit value violation per channel • Parameterisation error • Sensor limit per channel	
Parameterisation			• Diagnostic delay per channel • Hysteresis per module • Unit of measurement • Measured value smoothing per channel • Limit value monitoring per channel • Sensor limit per channel • Measurement of relative/differential pressure	
Protection class to EN 60529			IP65, IP67	
Operating medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Operation with lubricated medium 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	
Note on materials			RoHS-compliant	
Materials			Reinforced PA, PC	
Grid dimension		[mm]	50	
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55	
Weight		[g]	112	

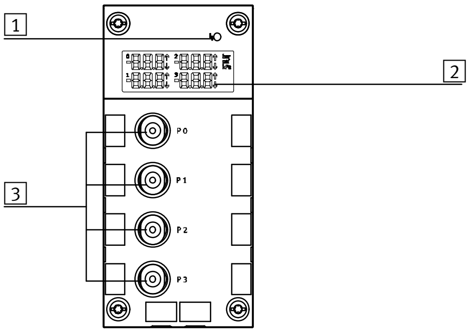
Note

Extreme pneumatic conditions, for example high cycle frequency with large pressure amplitudes, can damage the sensors.

Terminal CPX

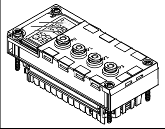
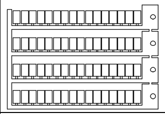
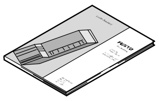
Accessories – Analogue input module with pressure sensors

Connection and display components



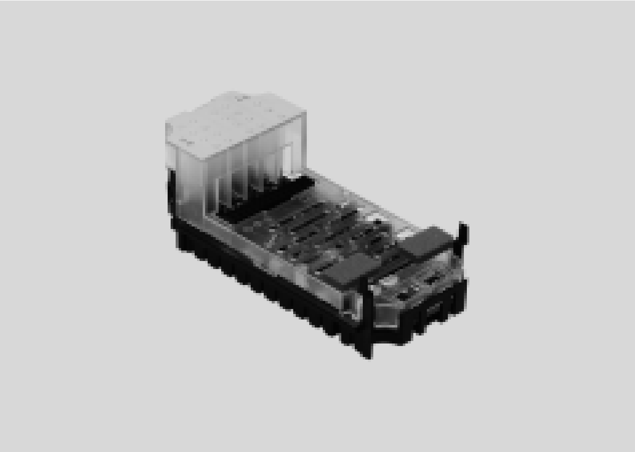
1. Error LED (red, module error)
2. LCD display with permanent display of the four measured pressures, unit of measurement and if applicable limit value violation
3. QS connections

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, 64 pieces, in frames		**18576**	**IBS-6x10**
User manual				
	User manual	German	**526415**	**P.BE-CPX-AX-DE**
		English	**526416**	**P.BE-CPX-AX-EN**
		Spanish	**526417**	**P.BE-CPX-AX-ES**
		French	**526418**	**P.BE-CPX-AX-FR**
		Italian	**526419**	**P.BE-CPX-AX-IT**

Terminal CPX

Technical data – Analogue module 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.

Applications

- Temperature module for temperature sensors PT100, PT200, PT500, PT1000, Ni100, Ni120, Ni500, Ni1000
- Supports connection blocks with M12, Harax and terminal connection
- Temperature module features can be parameterised
- 2-wire, 3-wire and 4-wire 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 protection

General technical data			
Type			**CPX-4AE-T**
			Temperature input
No. 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 of sensors		[V DC]	24 ±25%
Sensor type (parameterisable for each channel by means of DIL switch)			PT100, PT200, PT500, PT1000 Ni100, Ni120, Ni500, Ni1000
Temperature range	Pt standard	[°C]	−200 … +850
	Pt climatic	[°C]	−120 … +130
	Ni	[°C]	−60 … +180
Sensor connection technology			2-wire, 3-wire and 4-wire technology
Resolution			15 bit + prefix
Operating error limit relative to input range		[%]	±0.06
Basic error limit (25 °C)	Standard	[K]	±0.6
	Pt climatic	[K]	±0.2
Temperature errors relative to input range		[%]	±0.001
Linearity errors (no software scaling)		[%]	±0.02
Repetition accuracy (at 25 °C)		[%]	±0.05
Max. line resistance per wire		[Ω]	10
Max. permissible input voltage		[V]	±30
Cycle time (module)		[ms]	≤ 250

Terminal CPX

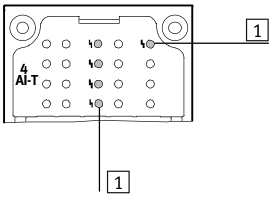
Technical data – Analogue module for temperature inputs

General technical data

Data format			15 bit + prefix, complement of two, binary notation in tenths of a degree
Cable length		[m]	Max. 200 (screened)
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes
LED displays	Group diagnostics		1
	Channel diagnostics		4
Diagnostics			• Short circuit/overload, channel • Parameterisation error • Value falling below nominal range/full-scale value • Value exceeding nominal range/full-scale value • Wire break
Parameterisation			• Unit of measurement and interference frequency suppression • Diagnostic message in the event of a wire break or short circuit • Limit monitoring per channel • Sensor connection technology • Sensor type/temperature coefficient, temperature range • Limit value per channel • Measured value smoothing
Protection class to EN 60529			Depending on connection block
Temperature range	Operation	[°C]	−5 … +50
	Storage/transport	[°C]	−20 … +70
Materials			Reinforced PA, PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	38

Connection and display components

CPX-4AE-T



1 Error LED (red, module error)

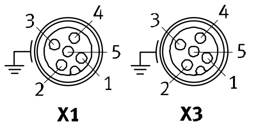
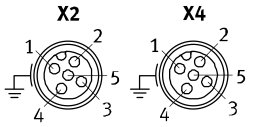
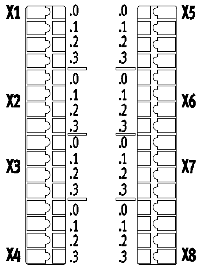
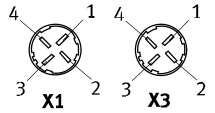
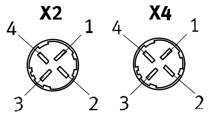
2 Channel-specific error LEDs (red)

Connection block/analogue module combinations

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-AB-4-HAR-4POL	**525636**	■
CPX-M-AB-4-M12X2-5POL	**549367**	■

Terminal CPX

Technical data – Analogue module for temperature inputs

Pin allocation		
Connection block inputs	CPX-4AE-T	
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R[1] and CPX-M-AB-4-M12X2-5POL		
	X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0– X1.5: FE[2]	X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2– X3.5: FE[2]
	X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1– X2.5: FE[2]	X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3– X4.5: FE[2]
CPX-AB-8-KL-4POL		
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: Input I0+ X1.1: Input I0– X1.2: Input U0– X1.3: FE	X5.0: Input I2+ X5.1: Input I2– X5.2: Input U2– X5.3: FE
	X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE	X6.0: n.c. X6.1: n.c. X6.2: InputUI2+ X6.3: FE
	X3.0: Input I1+ X3.1: Input I1– X3.2: Input U1– X3.3: FE	X7.0: Input I3+ X7.1: Input I3– X7.2: Input U3– X7.3: FE
	X4.0: n.c. X4.1: n.c. X4.2: Input U1+ X4.3: FE	X8.0: n.c. X8.1: n.c. X8.2: Input U3+ X8.3: FE
CPX-AB-4-HAR-4POL		
	X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0–	X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2–
	X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1–	X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3–

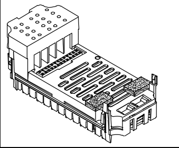
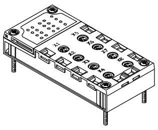
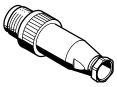
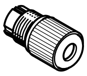
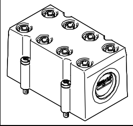
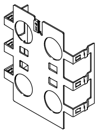
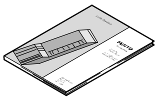
[1] Speedcon quick lock, screening additionally on metal thread

[2] FE/screening additionally on metal thread

Terminal CPX

Accessories – Analogue module for temperature inputs

Ordering data

Designation			Part No.	Type
Input module, analogue				
	2 or 4 analogue temperature inputs		**541486**	**CPX-4AE-T**
Connection block				
	Plastic	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 clip terminal, 32-pin	**195708**	**CPX-AB-8-KL-4POL**
		4x socket, quick connection, 4-pin	**525636**	**CPX-AB-4-HAR-4POL**
	Metal	4x socket, M12, 5-pin	**549367**	**CPX-M-AB-4-M12X2-5POL**
Plug				
	M12 plug, 5-pin		**175487**	**SEA-M12-5GS-PG7**
	HARAX plug, 4-pin		**525928**	**SEA-GS-HAR-4POL**
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Screening plate				
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
User manual				
	User manual	German	**526415**	**P.BE-CPX-AX-DE**
		English	**526416**	**P.BE-CPX-AX-EN**
		Spanish	**526417**	**P.BE-CPX-AX-ES**
		French	**526418**	**P.BE-CPX-AX-FR**
		Italian	**526419**	**P.BE-CPX-AX-IT**

Terminal CPX

Technical data – Analogue module for thermocoupler

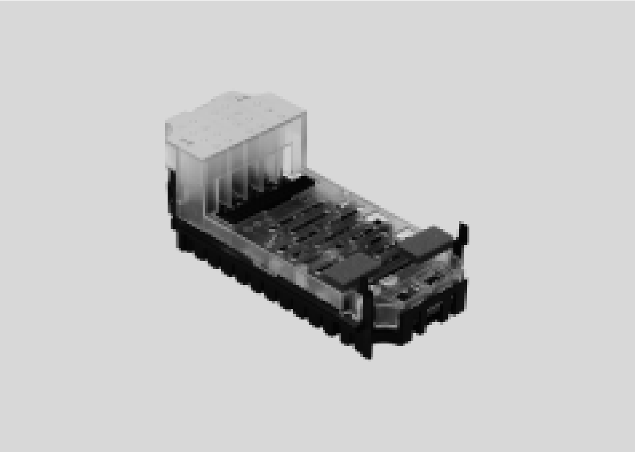
Function

The CPX-4AE-TC analogue input module with four channels for temperature measurement enables up to four thermocoupler 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).

Applications

- Supports connection blocks with M12 and terminal connection
- Temperature module features can be parameterised
- 2-wire connection
- 2-wire 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 protection



General technical data		
Type		**CPX-4AE-TC**
		Temperature input
No. of analogue inputs		4
Fuse protection (short circuit)		Internal electronic fuse for each channel
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 … 30
Sensor type (parameterisable for each channel by means of software)		• Type B +400 … +1,820 °C, 8 µV/°C • Type E –270 … +900 °C, 60 µV/°C • Type J –200 … +1,200 °C, 51 µV/°C • Type K –200 … +1,370 °C, 40 µV/°C • Type N –200 … +1,300 °C, 38 µV/°C • Type R 0 … +1,760 °C, 12 µV/°C • Type S 0 … +1,760 °C, 11 µV/°C • Type T –200 … +400 °C, 40 µV/°C
Sensor connection technology		2-wire technology
Operating error limit relative 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 wire	[Ω]	10
Max. residual current per module	[mA]	30
Max. permissible input voltage	[V]	±30
Internal cycle time (module)	[ms]	250

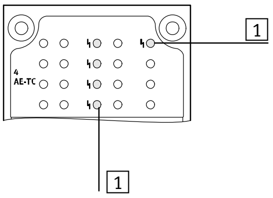
Terminal CPX

Technical data – Analogue module for thermocoupler

General technical data			
Data format			• 15 bit + prefix, complement of two • Binary notation in tenths of a degree
Cable length		[m]	Max. 50 (screened)
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes
LED displays	Group diagnostics		1
	Channel diagnostics		4
Diagnostics			• Parameterisation error • Wire break per channel • Limit value violation per channel
Parameterisation			• Wire break monitoring per channel • Unit of measurement • Cold junction compensation • Sensor type per channel • Limit value monitoring per channel • Measured value smoothing
Protection class to EN 60529			Depending on connection block
Temperature range	Operation	[°C]	−5 … +50
	Storage/transport	[°C]	−20 … +70
Materials			Reinforced PA, PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	38

Connection and display components

CPX-4AE-TC

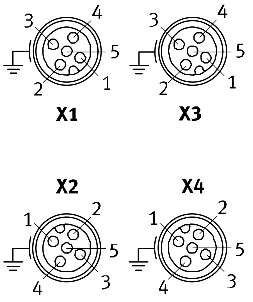
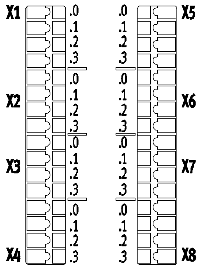


1 Error LED (red, module error)

2 Channel-specific error LEDs (red)

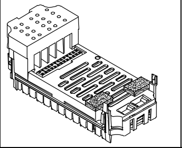
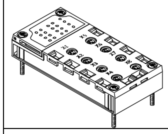
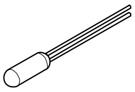
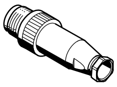
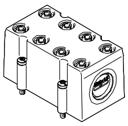
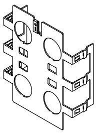
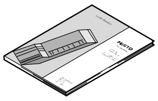
Connection block/analogue module combinations		
Connection blocks	Part No.	Temperature module
		CPX-4AE-TC
CPX-AB-4-M12X2-5POL	**195704**	■
CPX-AB-4-M12X2-5POL-R	**541254**	■
CPX-AB-8-KL-4POL	**195708**	■
CPX-M-AB-4-M12x2-5POL	**549367**	■

Pin allocation

Connection block inputs	CPX-4AE-TC	
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R1) and CPX-M-AB-4-M12X2-5POL		
 3 4 5 2 1 X1 3 4 5 2 1 X3 X2 X4 1 2 5 4 3 1 2 5 4 3	X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0– X1.5: FE2)	X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2– X3.5: FE2)
	X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1– X2.5: FE2)	X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3– X4.5: FE2)
CPX-AB-8-KL-4POL		
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: Input I0+ X1.1: Input I0– X1.2: Input U0– X1.3: FE	X5.0: Input I2+ X5.1: Input I2– X5.2: Input U2– X5.3: FE
	X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE	X6.0: n.c. X6.1: n.c. X6.2: InputUI2+ X6.3: FE
	X3.0: Input I1+ X3.1: Input I1– X3.2: Input U1– X3.3: FE	X7.0: Input I3+ X7.1: Input I3– X7.2: Input U3– X7.3: FE
	X4.0: n.c. X4.1: n.c. X4.2: Input U1+ X4.3: FE	X8.0: n.c. X8.1: n.c. X8.2: Input U3+ X8.3: FE

1) Speedcon quick lock, screening additionally on metal thread
2) FE/screening additionally on metal thread

Ordering data

Designation			Part No.	Type
Input module, analogue				
	4 analogue temperature inputs, with 2-wire connection for a PT1000 sensor for cold junction compensation		**553594**	**CPX-4AE-TC**
Connection block				
	Plastic	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 clip 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 plug, 5-pin		**175487**	**SEA-M12-5GS-PG7**
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Screening plate				
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
User manual				
	User manual	German	**526415**	**P.BE-CPX-AX-DE**
		English	**526416**	**P.BE-CPX-AX-EN**
		Spanish	**526417**	**P.BE-CPX-AX-ES**
		French	**526418**	**P.BE-CPX-AX-FR**
		Italian	**526419**	**P.BE-CPX-AX-IT**

Terminal CPX

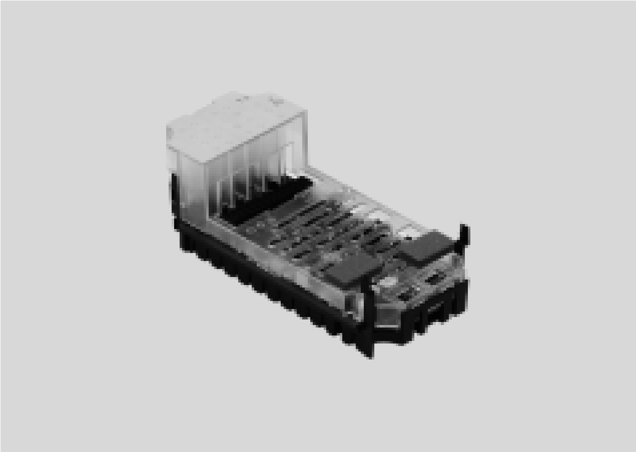
Technical data – Analogue module for outputs

Function

Analogue modules control devices with a standard analogue interface such as proportional valves, etc.
The analogue module supports various connection concepts with different numbers of sockets or terminals as appropriate to the connection block selected.

Applications

- Analogue module for 0 … 10 V, 0 … 20 mA or 4 … 20 mA
- Supports connection blocks with M12, Sub-D and terminal 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 interlinking block
- Analogue module protection and diagnostics through integrated electronic fuse protection



General technical data				
Type			**CPX-2AA-U-I**	
			Voltage output	Current output
No. 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 of actuators		[V DC]	24 ±25%	
Signal range (parameterisable for each channel by means of DIL switch or software)			0 … 10 V DC	0 … 20 mA 4 … 20 mA
Resolution		[bit]	12	
No. of units			4,096	
Absolute accuracy		[%]	±0.6	
Linearity errors (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 analogue output	[mA]	Approx. 20	–
	Open circuit voltage	[V DC]	–	18
	Destruction limit against externally applied voltage	[V DC]	15	
	Actuator connection		2 wires	
Cycle time (module)		[ms]	≤ 4	

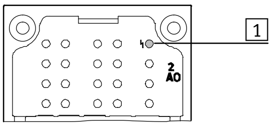
Terminal CPX

Technical data – Analogue module for outputs

General technical data				
Type			**CPX-2AA-U-I**	
			Voltage output	Current output
Response time	For ohmic load	[ms]	0.1	0.1
	For capacitive load	[ms]	0.7	–
	For inductive load	[ms]	–	0.5
Data format			15 bit + prefix, linear scaling 12 bit right-justified 12 bit left-justified, S7 compatible 12 bit left-justified, S5 compatible	
Cable length		[m]	Max. 30 (screened)	
LED displays	Group diagnostics		1	
	Channel diagnostics		Yes, by means of flashing frequency of group diagnostics	
Diagnostics			• Short circuit/overload, actuator supply • Parameterisation error • Value falling below nominal range/full-scale value • Value exceeding nominal range/full-scale value • Wire break	
Parameterisation			• Short circuit monitoring, actuator supply • Short circuit monitoring, analogue output • Behaviour after short circuit, actuator supply • Data format • Lower limit value/full-scale value • Upper limit value/full-scale value • Monitoring of value falling below nominal range/full-scale value • Monitoring of value exceeding nominal range/full-scale value • Wire break monitoring • Signal range	
Protection class to EN 60529			Depending on connection block	
Temperature range	Operation	[°C]	–5 … +50	
	Storage/transport	[°C]	–20 … +70	
Materials			Reinforced PA, PC	
Grid dimension		[mm]	50	
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50	
Weight		[g]	38	

Connection and display components

CPX-2AA-U-I

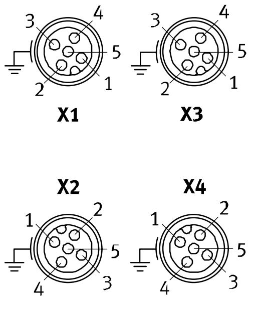
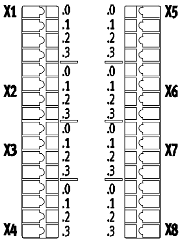
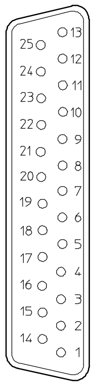


1 Error LED (red, module error)

Connection block/analogue module combinations		
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**	■

Terminal CPX

Technical data – Analogue module for outputs

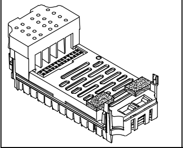
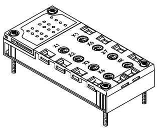
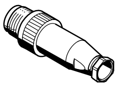
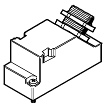
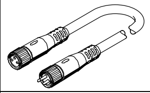
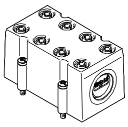
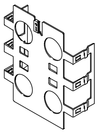
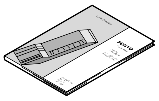
Pin allocation		
Connection block outputs	CPX-2AA-U-I	
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R[1] and CPX-M-AB-4-M12X2-5POL		
 3 4 5 2 1 X1 3 4 5 2 1 X3 X2 1 2 5 4 3 X4 1 2 5 4 3	X1.1: 24 V_{OUT}	X3.1: 24 V_{OUT}
	X1.2: Output U0+	X3.2: Output U1+
	X1.3: 0 V_{OUT}	X3.3: 0 V_{OUT}
	X1.4: Output GND	X3.4: Output GND
	X1.5: FE[2]	X3.5: FE[2]
	X2.1: 24 V_{OUT}	X4.1: 24 V_{OUT}
	X2.2: Output I0+	X4.2: Output I1+
	X2.3: 0 V_{OUT}	X4.3: 0 V_{OUT}
	X2.4: Output GND	X4.4: Output GND
	X2.5: FE[2]	X4.5: FE[2]
CPX-AB-8-KL-4POL		
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: 24 V_{OUT}	X5.0: 24 V_{OUT}
	X1.1: 0 V_{OUT}	X5.1: 0 V_{OUT}
	X1.2: Output GND	X5.2: Output GND
	X1.3: FE	X5.3: FE
	X2.0: n.c.	X6.0: n.c.
	X2.1: n.c.	X6.1: n.c.
	X2.2: Output U0+	X6.2: Output U1+
	X2.3: FE	X6.3: FE
	X3.0: 24 V_{OUT}	X7.0: 24 V_{OUT}
	X3.1: 0 V_{OUT}	X7.1: 0 V_{OUT}
	X3.2: Output GDN	X7.2: Output GND
	X3.3: FE	X7.3: FE
	X4.0: n.c.	X8.0: n.c.
	X4.1: n.c.	X8.1: n.c.
	X4.2: Output I0+	X8.2: Output I1+
	X4.3: FE	X8.3: FE
CPX-AB-1-SUB-BU-25POL		
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1: Output GND	14: Output GND
	2: Output U0+	15: Output U1+
	3: Output GND	16: Output GND
	4: Output I0+	17: Output I1+
	5: n.c.	18: 24 V_{OUT}
	6: n.c.	19: n.c.
	7: n.c.	20: 24 V_{OUT}
	8: n.c.	21: n.c.
	9: 24 V_{OUT}	22: 0 V_{OUT}
	10: 24 V_{OUT}	23: 0 V_{OUT}
	11: 0 V_{OUT}	24: 0 V_{OUT}
	12: 0 V_{OUT}	25: FE
	13: Screening[3]	Housing: FE

---

1) Speedcon quick lock, screening additionally on metal thread
2) FE/screening additionally on metal thread
3) Connect screening to functional earth FE

Terminal CPX

Accessories – Analogue module for outputs

Ordering data				
Designation			Part No.	Type
Output module, analogue				
	2 analogue current or voltage outputs		**526170**	**CPX-2AA-U-I**
Connection block				
	Plastic	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 clip terminal, 32-pin	**195708**	**CPX-AB-8-KL-4POL**
		1x Sub-D socket, 25-pin	**525676**	**CPX-AB-1-SUB-BU-25POL**
	Metal	4x socket, M12, 5-pin	**549367**	**CPX-M-AB-4-M12X2-5POL**
Plug				
	M12 plug, 5-pin		**175487**	**SEA-M12-5GS-PG7**
	Sub-D plug, 25-pin		**527522**	**SD-SUB-D-ST25**
Connecting cable				
	Modular system for connecting cables		–	**NEBU-...** ➔ Internet: nebu
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
Screening plate				
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
User manual				
	User manual	German	**526415**	**P.BE-CPX-AX-DE**
		English	**526416**	**P.BE-CPX-AX-EN**
		Spanish	**526417**	**P.BE-CPX-AX-ES**
		French	**526418**	**P.BE-CPX-AX-FR**
		Italian	**526419**	**P.BE-CPX-AX-IT**

Terminal CPX

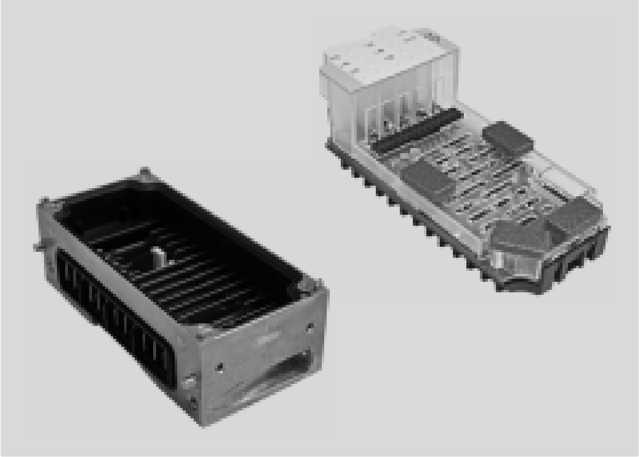
Technical data – PROFIsafe shut-off module

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 fieldbus node (PROFINET) of the CPX terminal.

Scope of application

- 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 node
- 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_{Valves})

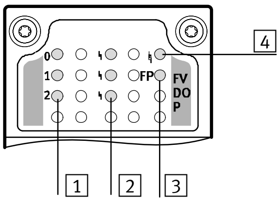


General technical data			
Type			**CPX-FVDA-P2**
Number of outputs			2
Note on outputs			1 internal channel for shutting off the supply voltage for valves
			2 external outputs
Max. power supply	Per module	[A]	5
	Per channel	[A]	1.5
Fuse protection (short circuit)			Internal electronic fuse for each channel
Current consumption of module		[mA]	Typ. 65 (power supply for valves)
		[mA]	Typ. 25 (power supply for electronics)
Operating voltage	Nominal value	[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 shut-off command		[ms]	23
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply
Switching logic	Outputs		P-M switching
Safety integrity level			Safe shut off, SIL 3
Performance level			Safe shut off/category 3, performance level e
Failure rate per hour (PFH)			1.0×10^{-9}
Certificate issuing authority			01/205/50294/13
LED displays	Group diagnostics		1
	Channel diagnostics		3
	Channel status		3
	Failsafe protocol active		1
Diagnostics			• Short circuit/overload per channel • Undervoltage of valves • Cross circuit • Wire break per channel
Parameterisation			• Wire break monitoring per channel • Diagnostic behaviour
Protection class to EN 60529			Depending on connection block
Materials			PA reinforced, PC
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 55

Operating and environmental conditions		
Ambient temperature	[°C]	−5 … +50
Storage temperature	[°C]	−20 … +70
CE mark (see declaration of conformity)		To EU Machinery Directive
Certification		c UL us - Recognized (OL)

Connection and display components

CPX-FVDA-P2



1 Status LEDs (yellow):
0: Supply voltage for valves
1: X1
2: X2

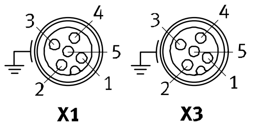
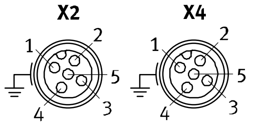
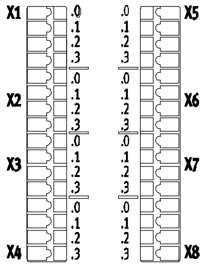
2 Channel-specific error LEDs (red)
3 Failsafe protocol active (green)
4 Error LED (red, module error)

Combinations of bus nodes/control blocks and PROFIsafe shut-off module		
Bus node/control block	Part No.	PROFIsafe shut-off module
		CPX-FVDA-P2
CPX-FB13	**195740**	■
CPX-FB33	**548755**	■
CPX-M-FB34	**548751**	■
CPX-M-FB35	**548749**	■

Note

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

Combinations of connection blocks and PROFIsafe shut-off 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**	■

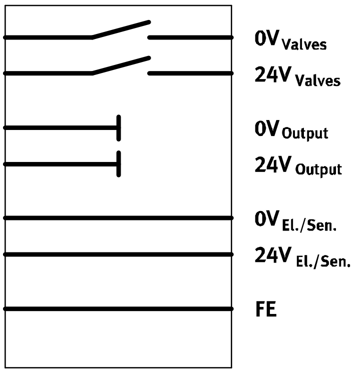
Pin allocation		
Connection block outputs	CPX-FVDA-P2	
CPX-M-AB-4-M12X2-5POL		
	X1.1: 0 V_{OUT} 1 (cannot be shut off) X1.2: 24 V_{OUT} 1 (cannot be shut off) X1.3: 0 V_{OUT} 1 (can be shut off via fieldbus) X1.4: 24 V_{OUT} 1 (can be shut off via fieldbus) X1.5: FE (earth)	X3.1: n.c. X3.2: n.c. X3.3: n.c. X3.4: n.c. X3.5: FE (earth)
	X2.1: 0 V_{OUT} 2 (cannot be shut off) X2.2: 24 V_{OUT} 2 (cannot be shut off) X2.3: 0 V_{OUT} 2 (can be shut off via fieldbus) X2.4: 24 V_{OUT} 2 (can be shut off via fieldbus) X2.5: FE (earth)	X4.1: n.c. X4.2: n.c. X4.3: n.c. X4.4: n.c. X4.5: FE (earth)
CPX-AB-8-KL-4POL		
 X1 X2 X3 X4 X5 X6 X7 X8 .0 .1 .2 .3	X1.0: 0 V_{OUT} 1 (cannot be shut off) X1.1: 0 V_{OUT} 1 (can be shut off via fieldbus) X1.2: 24 V_{OUT} 1 (can be shut off via fieldbus) X1.3: FE (earth)	X5.0: n.c. X5.1: n.c. X5.2: n.c. X5.3: n.c.
	X2.0: n.c. X2.1: n.c. X2.2: 24 V_{OUT} 1 (cannot be shut off) X2.3: FE (earth)	X6.0: n.c. X6.1: n.c. X6.2: n.c. X6.3: n.c.
	X3.0: 0 V_{OUT} 2 (cannot be shut off) X3.1: 0 V_{OUT} 2 (can be shut off via fieldbus) X3.2: 24 V_{OUT} 2 (can be shut off via fieldbus) X3.3: FE (earth)	X7.0: n.c. X7.1: n.c. X7.2: n.c. X7.3: n.c.
	X4.0: n.c. X4.1: n.c. X4.2: 24 V_{OUT} 2 (cannot be shut off) X4.3: FE (earth)	X8.0: n.c. X8.1: n.c. X8.2: n.c. X8.3: n.c.

Terminal CPX

Technical data – PROFIsafe shut-off module

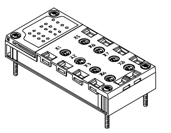
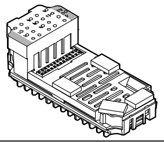
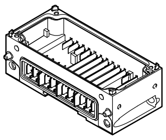
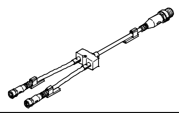
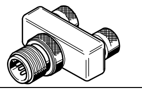
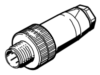
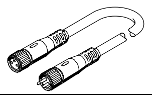
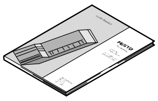
Combinations of interlinking blocks and PROFIsafe shut-off module		
Interlinking blocks	Part No.	PROFIsafe shut-off module
		CPX-FVDA-P2
CPX-GE-EV-S	**195746**	–
CPX-GE-EV-S-7/8-4POL	**541248**	–
CPX-GE-EV-S-7/8-5POL	**541244**	–
CPX-M-GE-EV-S-7/8-CIP-4P	**568956**	–
CPX-M-GE-EV-S-7/8-5POL	**550208**	–
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-GE-EV-V-7/8-4POL	**541252**	–

General technical data		
Type		**CPX-M-GE-EV-FVO**
Nominal operating voltage	[V DC]	24
Acceptable current load (per contact/contact rail)	[A]	16
Protection class to EN 60529		Depending on connection block
Ambient temperature	[°C]	–5 ... +50
Material declaration		RoHS-compliant
Note on materials		Die-cast aluminium
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 allocation			
Circuitry		Pin	Allocation
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE		–	–
		–	–
		–	–
		–	–

Terminal CPX

Accessories – PROFIsafe shut-off module

Ordering data	Description		Part No.	Type
PROFIsafe shut-off module				
	Metal connection block	4x socket, M12, 5-pin	**549367**	**CPX-M-AB-4-M12X2-5POL**
	Plastic connection block	Spring-loaded terminal, 32-pin	**195708**	**CPX-AB-8-KL-4POL**
	Electronics module (can only be used with CPX-M-GE-EV-FVO)	PROFINET, PROFIBUS	**1971599**	**CPX-FVDA-P2**
	Metal interlinking block (only for CPX-FVDA-P2)		**567806**	**CPX-M-GE-EV-FVO**
Distributor				
	Modular system for sensor/actuator distributor		–	**NEDY-...** ➔ Internet: nedy
	Plug M12, 4-pin	2x socket M12, 5-pin	**8005310**	**NEDY-L2R1-V1-M12G5-N-M12G4**
Plug				
	Plug	M12, PG7	**18666**	**SEA-GS-7**
		M12, PG7, 4-pin for cable ∅ 2.5 mm	**192008**	**SEA-4GS-7-2,5**
		M12, PG9	**18778**	**SEA-GS-9**
		M12 for 2 cables	**18779**	**SEA-GS-11-DUO**
		M12 for 2 cables, 5-pin	**192010**	**SEA-5GS-11-DUO**
		M12, 5-pin	**175487**	**SEA-M12-5GS-PG7**
Connecting cable				
	Modular system for connecting cables		–	**NEBU-...** ➔ Internet: nebu
Manual				
	Manual for PROFIsafe shut-off module	German	**8022606**	**P.BE-CPX-FVDA-P2-DE**
		English	**8022607**	**P.BE-CPX-FVDA-P2-EN**
		Spanish	**8022608**	**P.BE-CPX-FVDA-P2-ES**
		French	**8022609**	**P.BE-CPX-FVDA-P2-FR**
		Italian	**8022610**	**P.BE-CPX-FVDA-P2-IT**
		Chinese	**8022611**	**P.BE-CPX-FVDA-P2-ZH**

Terminal CPX

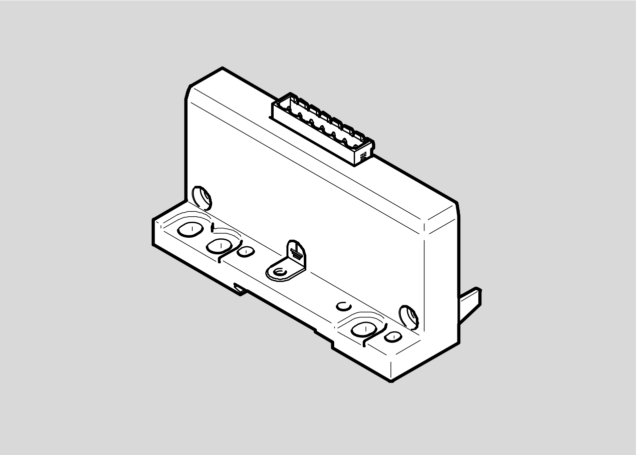
Technical data – End plate with system power supply

Function

End plates form the outer edge of the CPX terminal.
The earth connection and mounting holes for wall or H-rail mounting are located on the left end plate.
The end plate with system power supply has contact rails from which the other CPX components on the interlinking modules are supplied with power.

Application

- 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

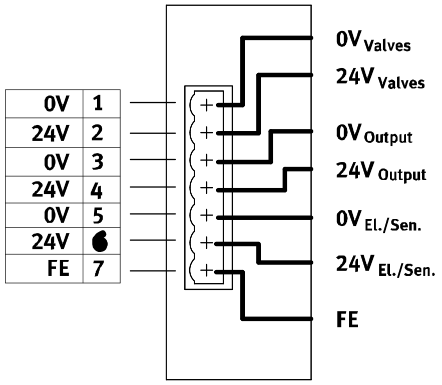
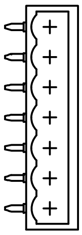


General technical data		
Electrical connection		Plug, 7-pin
Type of mounting		Tie rod
Power supply		System power supply
Maximum power supply	[A]	12
Product weight	[g]	145

Materials	
Housing	Die-cast aluminium, painted
Note on materials	RoHS-compliant

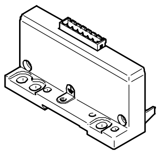
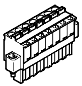
Operating and environmental conditions	
Approval certificate	cULus Recognized (OL)

Pin allocation

Circuitry		Pin	Allocation
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 power supply for electronics and sensors
		7	FE

Terminal CPX

Accessories – End plate with system power supply

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

Terminal CPX

Technical data – End plate with extension

Function

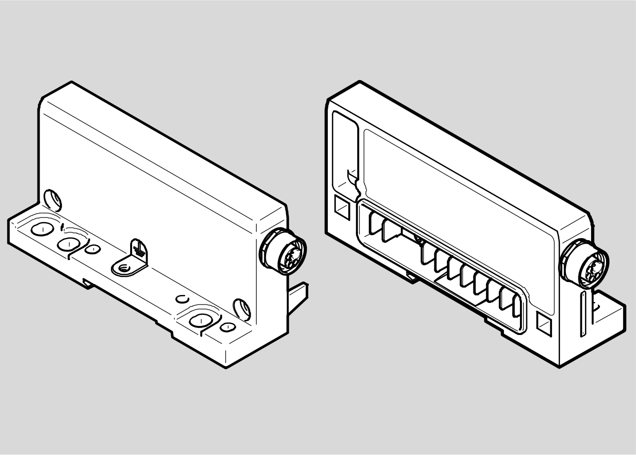
End plates form the outer edge of the CPX terminal.

The earth connection and mounting holes for wall or H-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

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

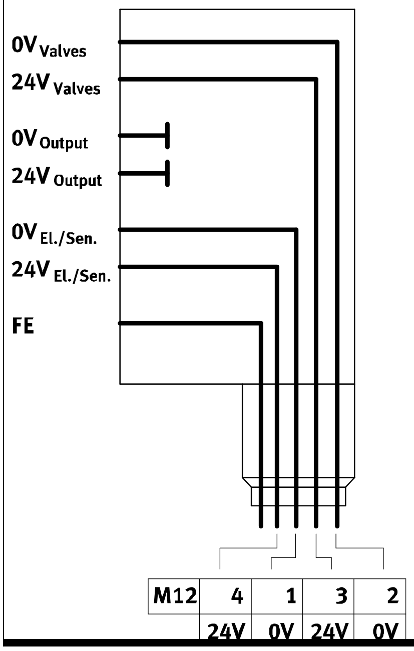
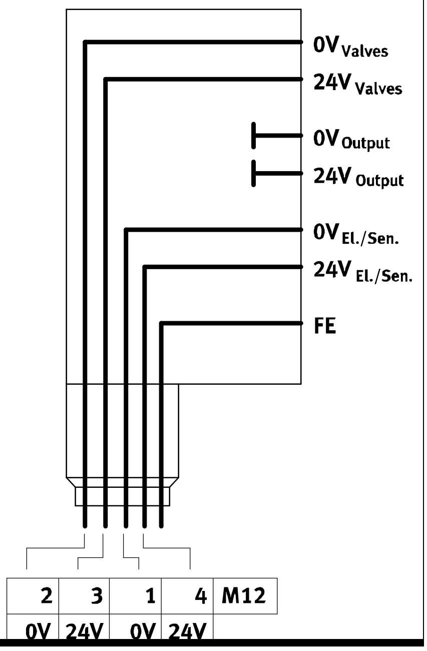


General technical data			
Type		CPX-EP…	CPX-M-EP…
Type of mounting		Tie rod	Angled fitting
Maximum power supply	[A]	6	6

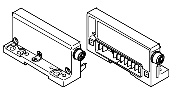
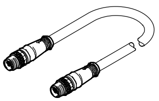
Materials		
Type	CPX-EP…	CPX-M-EP…
Housing	Die-cast aluminium, painted	Die-cast aluminium
Note on materials	RoHS-compliant	RoHS-compliant

Operating and environmental conditions	
Approval certificate	cULus Recognized (OL)

Pin allocation – End plate with extension

Circuitry	Pin	Allocation	Pin	Circuitry
Right-hand end plate (first row)		Round plug, 8-pin		Left-hand end plate (second row)
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE M12 4 1 3 2 24V 0V 24V 0V		M12		 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE 2 3 1 4 M12 0V 24V 0V 24V
	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 plastic design	First row, right-hand end plate	190	**576313**	**CPX-EPR-EV-X**
		Second row, left-hand end plate	175	**576314**	**CPX-EPL-EV-X**
	For CPX terminal in metal design	First row, right-hand end plate	190	**576316**	**CPX-M-EPR-EV-X**
		Second row, left-hand end plate	175	**576317**	**CPX-M-EPL-EV-X**
Connecting cable					
	8-pin	2 m	–	**576015**	**NEBC-F12G8-KH-2-N-S-F12G8**
		3 m	–	**576636**	**NEBC-F12G8-KH-3-N-S-F12G8**

Terminal CPX

Technical data – 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 current.

Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

- 24 V DC supply voltage for 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
Protection class to EN 60529		Depending on connection block
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant
Grid dimension	[mm]	50
Dimensions W x L x H	[mm]	50 x 107 x 35

Technical data – Plastic 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
Current supply	Sensors and electronics	[A]	Max. 16	Max. 8	Max. 10	Max. 8	Max. 8
	Valves and outputs	[A]	Max. 16	Max. 8	Max. 10	Max. 8	Max. 8
Materials			PA, reinforced				
Product weight		[g]	125				

Technical data – Metal interlinking blocks

Type			CPX-M-GE-EV-S			
			-7/8-CIP-4P	-7/8-5POL	-7/8-5POL-VL	-PP-5POL
Electrical connection			7/8", 4-pin	7/8", 5-pin	7/8", 5-pin	AIDA push-pull, 5-pin
Current supply	Sensors and electronics	[A]	Max. 10	Max. 8	Max. 8	Max. 16
	Valves and outputs	[A]	Max. 10	Max. 8	Max. 8	Max. 16
Materials			Die-cast aluminium			
Product weight		[g]	187	187	187	279

Note

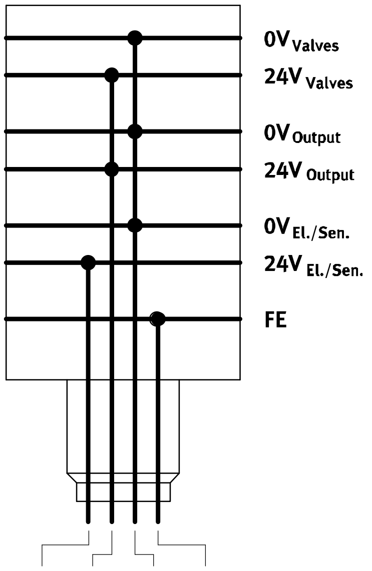
Note the following points about the interlinking block CPX-M-GE-EV-S-7/8-CIP-4P:

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

Pin allocation – Plastic interlinking blocks

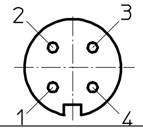
Circuitry

Round connector, 4-pin



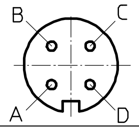
M18	1	2	3	4
7/8"	A	B	D	C
	24V	24V	0V	FE

M18



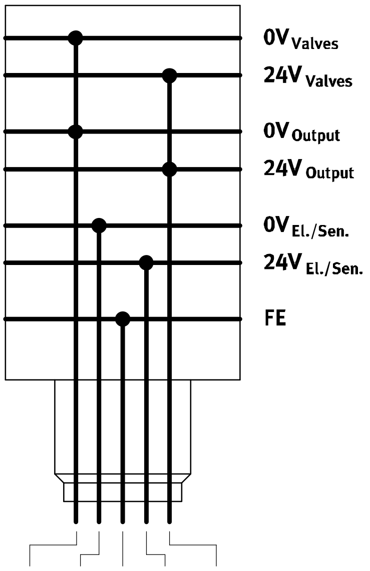
Pin	Allocation
1	24 V DC supply voltage for electronics and sensors
2	24 V DC load voltage supply for valves and outputs
3	0 V
4	FE

7/8”



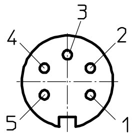
Pin	Allocation
A	24 V DC supply voltage for electronics and sensors
B	24 V DC load voltage supply for valves and outputs
C	FE
D	0V

Round connector, 5-pin

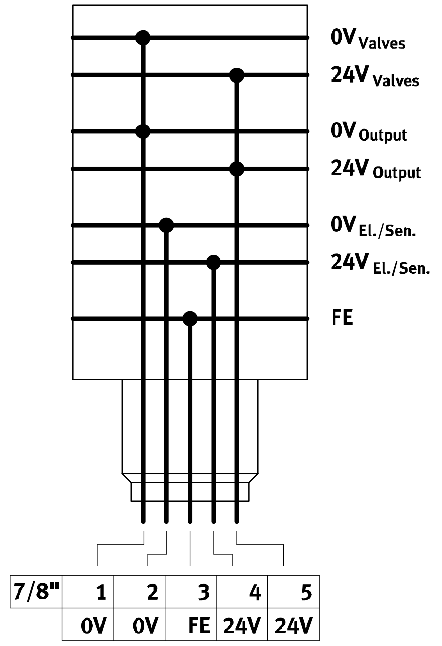
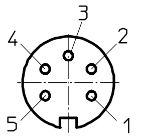
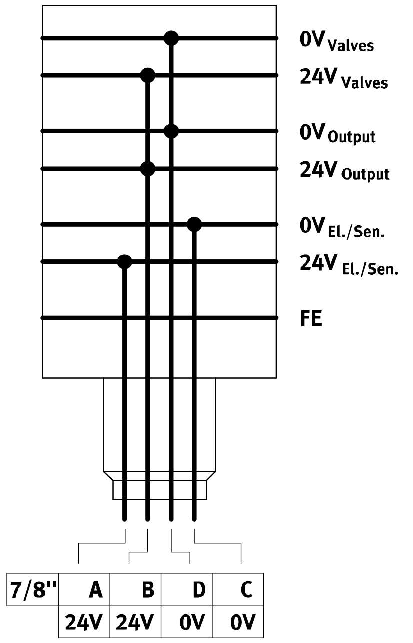
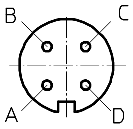


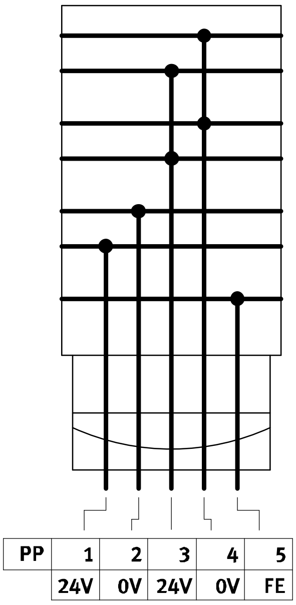
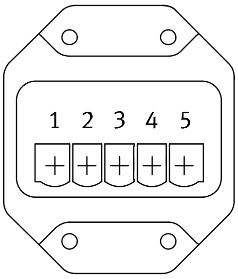
7/8"	1	2	3	4	5
	0V	0V	FE	24V	24V

7/8”



Pin	Allocation
1	0 V valves and outputs
2	0 V electronics and sensors
3	FE
4	24 V DC supply voltage for electronics and sensors
5	24 V DC load voltage supply for valves and outputs

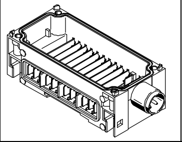
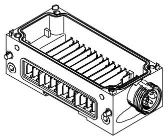
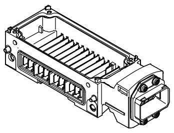
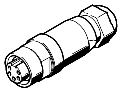
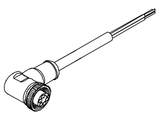
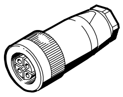
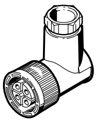
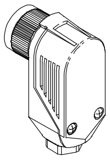
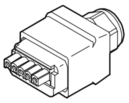
Pin allocation – Metal interlinking blocks			
Circuitry		Pin	Allocation
Round connector, 5-pin			
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE 7/8" 1 2 3 4 5 0V 0V FE 24V 24V	7/8"		
		1	0 V valves and outputs
		2	0 V electronics and sensors
		3	FE
		4	24 V DC supply voltage for electronics and sensors
		5	24 V DC load voltage supply for valves and outputs
Round connector, 4-pin			
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE 7/8" A B D C 24V 24V 0V 0V	7/8"		
		A	24 V DC supply voltage for electronics and sensors
		B	24 V DC load voltage supply for valves and outputs
		C	0 V DC supply voltage for electronics and sensors
		D	0 V DC load voltage supply for valves and outputs
			Note The functional earth (FE) must be connected via the left-hand end plate

Pin allocation – Metal interlinking blocks			
Circuitry		Pin	Allocation
Push-pull plug, 5-pin			
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE PP 1 2 3 4 5 24V 0V 24V 0V FE	Plug pattern to PROFINET specification 	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

Terminal CPX

Accessories – Interlinking block with system supply

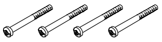
Ordering data

Designation				Part No.	Type
Interlinking block with system supply					
	Connection M18, plastic interlinking block	4-pin	–	**195746**	**CPX-GE-EV-S**
			For ATEX environment	**8022170**	**CPX-GE-EV-S-VL**
	Connection 7/8”, plastic 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**
	Connection 7/8”, 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**
	Connection push-pull plug (AIDA), metal interlinking block	5-pin	–	**563057**	**CPX-M-GE-EV-S-PP-5POL**
7/8“ connection sockets					
	Power supply socket	5-pin		**543107**	**NECU-G78G5-C2**
		4-pin		**543108**	**NECU-G78G4-C2**
	Angled socket, 5-pin – Open cable end, 5-wire	2 m		**573855**	**NEBU-G78W5-K-2-N-LE5**
M18 connection sockets					
	Straight socket, screw terminal	4-pin	PG9	**18493**	**NTSD-GD-9**
		4-pin	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**
Connection socket AIDA push-pull					
	Socket, spring-loaded terminal	5-pin		**563059**	**NECU-M-PPG5-C1**

Terminal CPX

Accessories – Interlinking block with system supply

Ordering data

Designation			Part No.	Type
Mounting accessories				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	**550218**	**CPX-DPT-30X32-S-4X**
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	**550219**	**CPX-M-M3x22-4x**
		Bus node/metal connection block	**550216**	**CPX-M-M3x22-S-4x**

Terminal CPX

Technical data – Interlinking block

Function

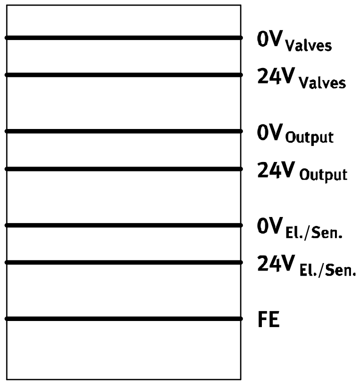
Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with current.

Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

- All voltages are fed through to the next module by means of an interlinking system.
- The connected electronics module for inputs/outputs or bus node taps off the required voltage.

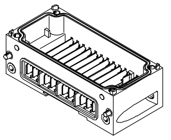
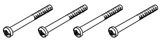
General technical data			
Type		**CPX-GE-EV**	**CPX-M-GE-EV**
Electrical connection		–	–
Nominal operating voltage	[V DC]	24	24
Acceptable current load (per contact/contact rail)	[A]	16	8
Protection class to EN 60529		Depending on connection block	
Ambient temperature	[°C]	–5 … +50	
Note on materials		RoHS-compliant	
Materials		Reinforced PA	Aluminium
Grid dimension	[mm]	50	
Dimensions W x L x H	[mm]	50 x 107 x 35	
Weight	[g]	108	169

Pin allocation			
Circuitry		Pin	Allocation
		–	–
		–	–
		–	–
		–	–

Terminal CPX

Accessories – Interlinking block

Ordering data

Designation			Part No.	Type
Interlinking block without supply				
	Plastic 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 a plastic interlinking block	Bus node/metal connection block	**550218**	**CPX-DPT-30X32-S-4X**
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	**550219**	**CPX-M-M3x22-4x**
		Bus node/metal connection block	**550216**	**CPX-M-M3x22-S-4x**

Terminal CPX

Technical data – Interlinking block with additional power 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 current.
Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

- 24 V DC supply voltage for outputs

General technical data		
Nominal operating voltage	[V DC]	24
Protection class to EN 60529		Depending on connection block
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant
Grid dimension	[mm]	50
Dimensions W x L x H	[mm]	50 x 107 x 35

Technical data – Plastic interlinking blocks

Type			CPX-GE-EV-Z				
				-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
Current supply	Outputs	[A]	Max. 16	Max. 8	Max. 10	Max. 8	Max. 8
Materials			PA reinforced				
Product weight		[g]	125				

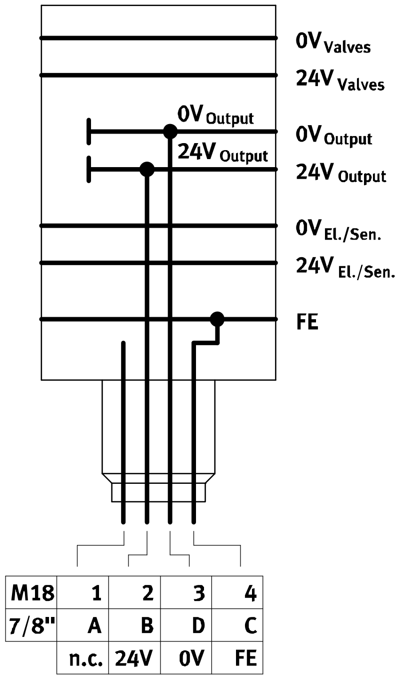
Technical data – Metal interlinking blocks

Type			CPX-M-GE-EV-Z		
			-7/8-5POL	-7/8-5POL-VL	-PP-5POL
Electrical connection			7/8", 5-pin	7/8", 5-pin	AIDA push-pull, 5-pin
Current supply	Outputs	[A]	Max. 8	Max. 8	Max. 16
Materials			Die-cast aluminium		
Product weight		[g]	187	187	279

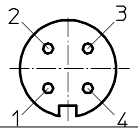
Pin allocation – Plastic interlinking blocks

Circuitry

Round connector, 4-pin

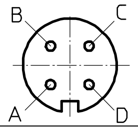


M18



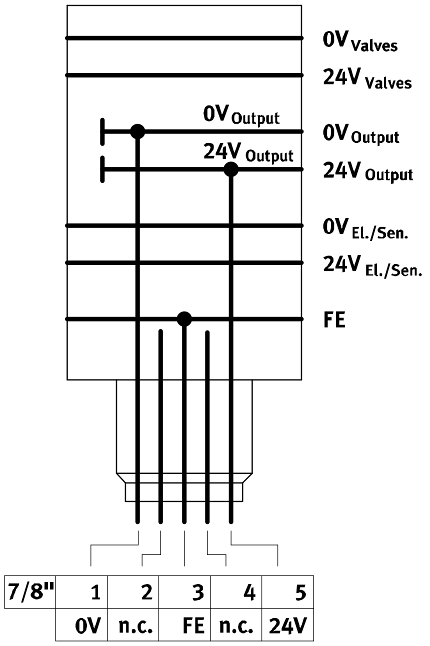
Pin	Allocation
1	n.c.
2	24 V DC load voltage supply for outputs
3	0 V
4	FE

7/8”

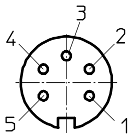


Pin	Allocation
A	n.c.
B	24 V DC load voltage supply for outputs
C	FE
D	0V

Round connector, 5-pin



7/8”

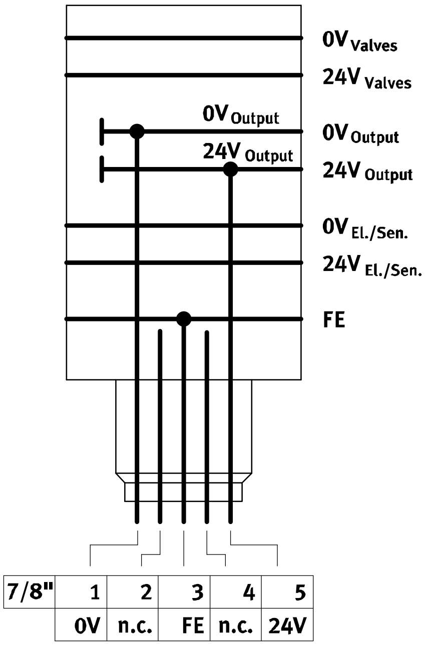
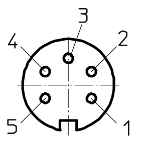
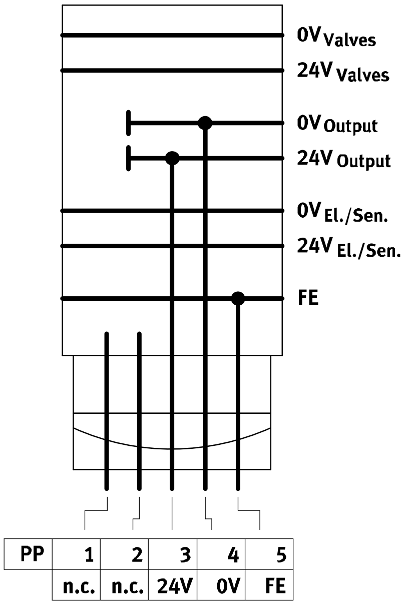
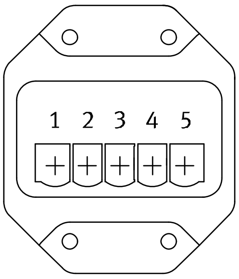


Pin	Allocation
1	0 V outputs
2	n.c.
3	FE
4	n.c.
5	24 V DC load voltage supply for outputs

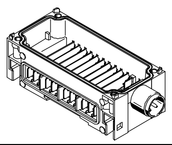
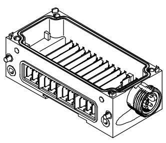
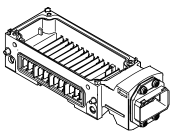
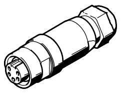
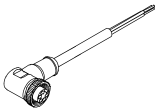
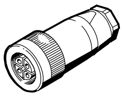
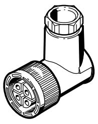
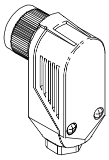
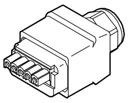
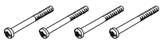
Terminal CPX

Technical data – Interlinking block with additional power supply for outputs

Pin allocation – Metal interlinking blocks

Circuitry		Pin	Allocation
Round connector, 5-pin			
 0V Valves 24V Valves 0V Output 24V Output 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE 7/8" 1 2 3 4 5 0V n.c. FE n.c. 24V	7/8"		
		1	0 V outputs
		2	n.c.
		3	FE
		4	n.c.
		5	24 V DC load voltage supply for outputs
Push-pull plug, 5-pin			
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE PP 1 2 3 4 5 n.c. n.c. 24V 0V FE	Plug pattern to PROFINET specification		
		1	n.c.
		2	n.c.
		3	24 V DC load voltage supply for outputs
		4	0 V outputs
		5	FE

Ordering data

Designation				Part No.	Type
Interlinking block with additional power supply for outputs					
	Connection M18, plastic interlinking block	4-pin	–	**195744**	**CPX-GE-EV-Z**
			For ATEX environment	**8022166**	**CPX-GE-EV-Z-VL**
	Connection 7/8”, plastic interlinking block	4-pin	–	**541250**	**CPX-GE-EV-Z-7/8-4POL**
		5-pin	–	**541246**	**CPX-GE-EV-Z-7/8-5POL**
			For ATEX environment	**8022173**	**CPX-GE-EV-Z-7/8-5POL-VL**
	Connection 7/8”, metal interlinking block	5-pin	–	**550210**	**CPX-M-GE-EV-Z-7/8-5POL**
			For ATEX environment	**8022158**	**CPX-M-GE-EV-Z-7/8-5POL-VL**
	Connection push-pull plug (AIDA), metal interlinking block	5-pin	–	**563058**	**CPX-M-GE-EV-Z-PP-5POL**
7/8” connection sockets					
	Power supply socket	5-pin		**543107**	**NECU-G78G5-C2**
		4-pin		**543108**	**NECU-G78G4-C2**
	Angled socket, 5-pin – Open cable end, 5-wire	2 m		**573855**	**NEBU-G78W5-K-2-N-LE5**
M18 connection sockets					
	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**
Connection socket AIDA push-pull					
	Socket, spring-loaded terminal	5-pin		**563059**	**NECU-M-PPG5-C1**
Mounting accessories					
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block		**550218**	**CPX-DPT-30X32-S-4X**
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block		**550219**	**CPX-M-M3x22-4x**
		Bus node/metal connection block		**550216**	**CPX-M-M3x22-S-4x**

Terminal CPX

Technical data – Interlinking block with additional power supply for valves

Function

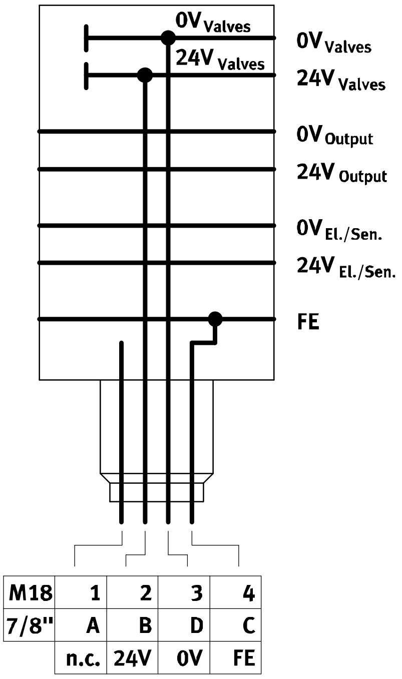
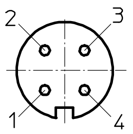
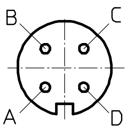
Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with current.

Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

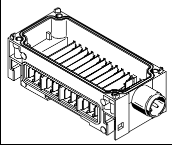
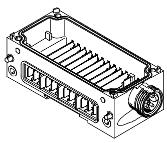
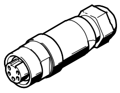
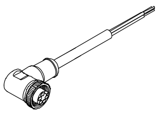
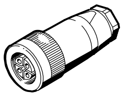
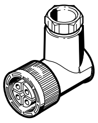
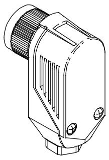
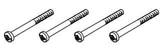
- 24 V DC supply voltage for valves

General technical data				
Type		CPX-GE-EV-V	CPX-GE-EV-V-VL	CPX-GE-EV-V-7/8-4POL
Electrical connection		M18		7/8”, 4-pin
Nominal operating voltage	[V DC]	24		
Acceptable current load (per contact/contact rail)	[A]	16	8	10
Protection class to EN 60529		Depending on connection block		
Ambient temperature	[°C]	–5 … +50		
Note on materials		RoHS-compliant		
Materials		Reinforced PA		
Grid dimension	[mm]	50		
Dimensions W x L x H	[mm]	50 x 107 x 35		
Weight	[g]	125		

Pin allocation – Plastic interlinking blocks			
Circuitry		Pin	Allocation
Round connector, 4-pin			
 0V Valves 24V Valves 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE M18 1 2 3 4 7/8" A B D C n.c. 24V 0V FE	M18		
		1	n.c.
		2	24 V DC load voltage supply for valves
		3	0 V
		4	FE
	7/8”		
		A	n.c.
		B	24 V DC load voltage supply for valves
		C	FE
		D	0V

Terminal CPX

Accessories – Interlinking block with additional power supply for valves

Ordering data					
Designation				Part No.	Type
Interlinking block with additional power supply for valves					
	Connection M18, plastic interlinking block	4-pin	–	**533577**	**CPX-GE-EV-V**
			For ATEX environment	**8022171**	**CPX-GE-EV-V-VL**
	Connection 7/8”, plastic interlinking block	4-pin	–	**541252**	**CPX-GE-EV-V-7/8-4POL**
7/8” connection sockets					
	Power supply socket	5-pin		**543107**	**NECU-G78G5-C2**
		4-pin		**543108**	**NECU-G78G4-C2**
	Angled socket, 5-pin – Open cable end, 5-wire	2 m		**573855**	**NEBU-G78W5-K-2-N-LE5**
M18 connection sockets					
	Straight socket, screw terminal	4-pin	PG9	**18493**	**NTSD-GD-9**
		4-pin	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**
Mounting accessories					
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block		**550218**	**CPX-DPT-30X32-S-4X**

Terminal CPX

Technical data – Pneumatic interface VMPA-FB

Function

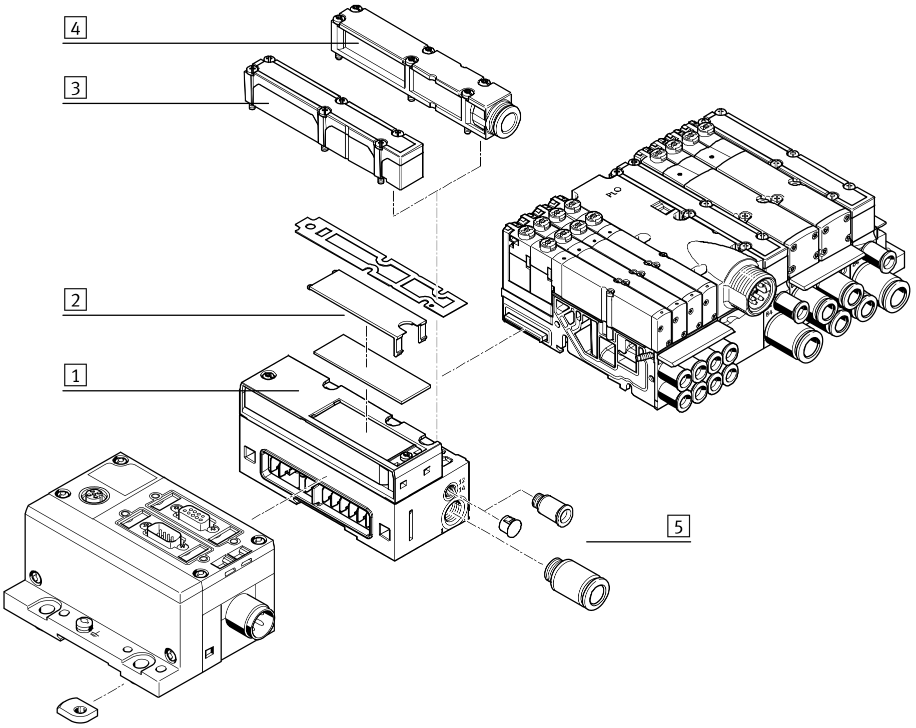
The pneumatic interface VMPA-FB establishes the electromechanical connection between the CPX terminal and the valve terminal MPA-S.
The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA-S via the integrated CPX bus. The bus signal for activation of 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.

Applications

- Interface to the valve terminal MPA-S
- Max. 128 solenoid coils
- Features 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

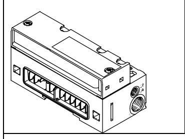
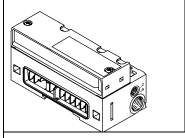
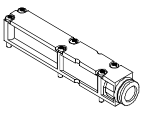
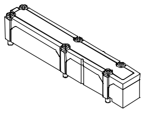
General technical data				
Type			VMPA-FB-EPL-G	VMPA-FB-EPL-E
No. of solenoid coils			128	
Pilot air supply			Internal	External
Pilot air connection 12/14			–	M7
Pneumatic connection 1			G¼	G¼
Operating pressure		[bar]	3 … 8	−0.9 … 10
Pilot pressure		[bar]	3 … 8	3 … 8
Nominal operating voltage		[V DC]	24	
Protection class to EN 60529			IP65	
Ambient temperature		[°C]	−5 … +50	
Materials	Cover		PA	
	Housing		Die-cast aluminium	
Weight		[g]	Approx. 320	

Overview – Pneumatic interface VMPA-FB



- 1 Pneumatic interface VMPA-FB
- 2 Inscription label
- 3 Flat plate silencer
- 4 Exhaust plate for ducted exhaust air
- 5 Fittings

Ordering data

	Designation	Part No.	Type
Pneumatic interface for CPX plastic 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**

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.

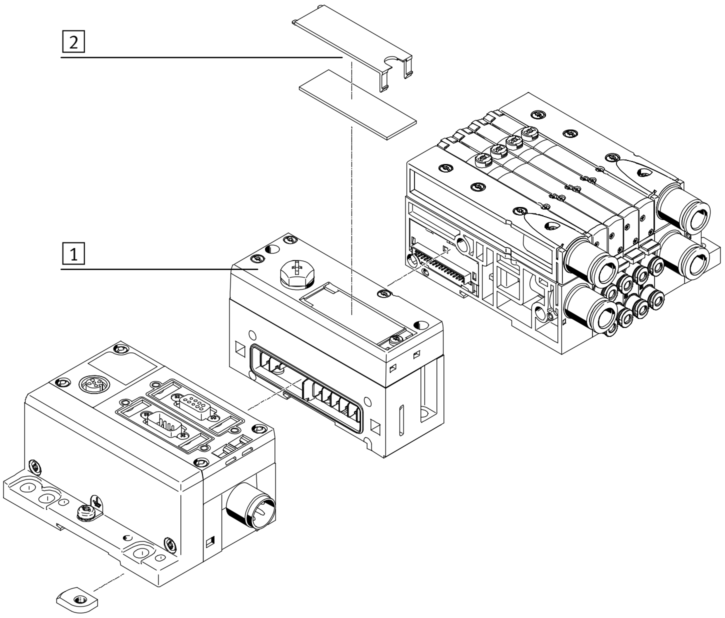
The interlinking within the valve terminal is identical with the interlinking with multi-pin plug connections.

Application

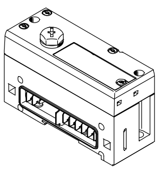
- Actuation of the valve terminal MPA-L
- Max. 32 solenoid coils
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block and feeds them through to the electric modules of the valve terminal MPA-L

General technical data		
Type		**VMPAL-EPL-CPX**
Number of solenoid coils		32
Operating pressure	[bar]	−0.9 … 10
Pilot pressure	[bar]	3 … 8
Nominal operating voltage	[V DC]	24
Protection class to EN 60529		IP67
Ambient temperature	[°C]	−5 … +50
Note on materials		RoHS-compliant

Overview – Pneumatic interface VMPAL



1	Pneumatic interface VMPAL
2	Inscription label

Ordering data			
Designation		Part No.	Type
	Pneumatic interface for CPX plastic interlinking module	**570783**	**VMPAL-EPL-CPX**

Type discontinued
Available up until 2019

Terminal CPX

Technical data – Pneumatic interface VMPAF

Function

The pneumatic interface VMPAF establishes the electromechanical connection between the CPX terminal and the valve terminal MPA-F.
The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA-F via the integrated CPX bus. The bus signal for activation of the solenoid coils is converted in the electronics module for max. 8 coils.
From a technical point of view, the individual MPA-F 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.

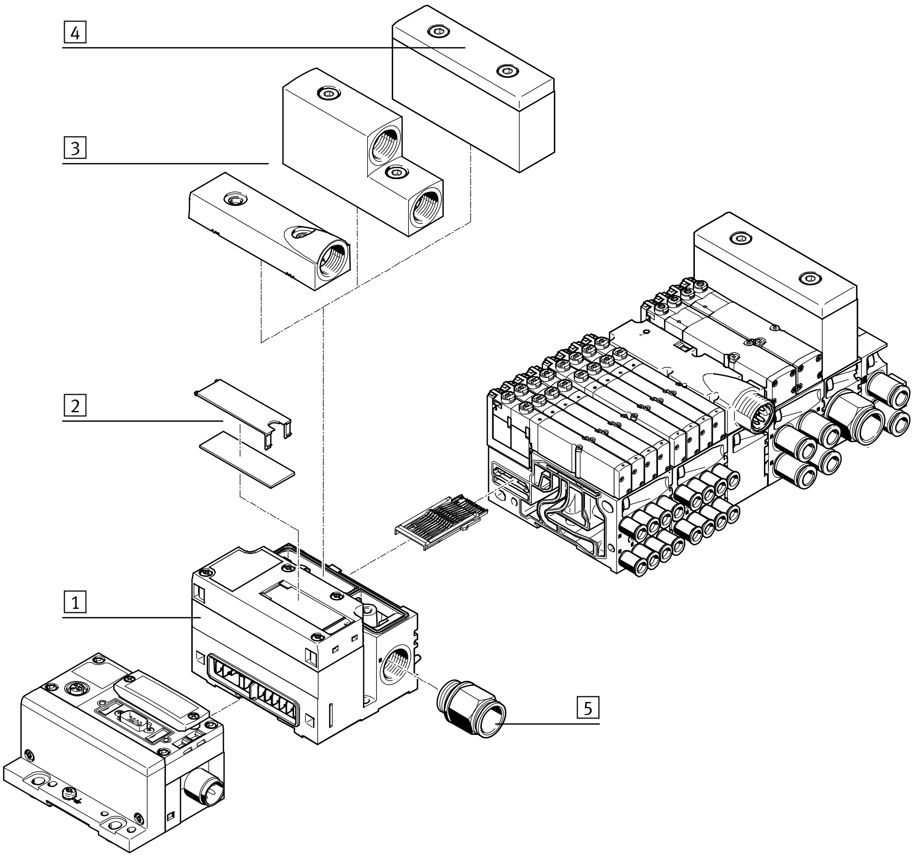
Applications

- Interface to the valve terminal MPA-F
- Max. 128 solenoid coils
- Electronics module can be parameterised, for example status of the solenoid coils in the event of fieldbus communication being interrupted (fail-safe), individual channel diagnostics, condition monitoring can be activated individually for each valve
- In the version with pressure sensor, display of the numerical pressure value, unit and adherence to setpoint value. Parameterisation via PLC or handheld unit (CPX-MMI)
- Voltage for electronics and valves supplied from the left-hand interlinking block
- Electronics modules of the valve terminal MPA-F:
  - Undervoltage of valves
  - Short circuit of valves
  - Open load of valves
  - Counter preset reached in condition monitoring

General technical data			
Type		**VMPAF-FB-EPL**	**VMPAF-FB-EPL-PS**
Version		–	With integrated pressure sensor for channel 1
No. of solenoid coils		128	
Pneumatic connection 1		G½	
Operating pressure	[bar]	−0.9 … 10	0 … 10
Accuracy FS	[%]	–	2.5
Nominal operating voltage	[V DC]	24	
Protection class to EN 60529		IP65	
Ambient temperature	[°C]	−5 … +50	
CE mark (see declaration of conformity)		To EU EMC Directive	
Note on materials		RoHS-compliant	
Weight	[g]	690	

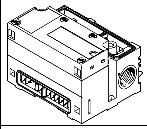
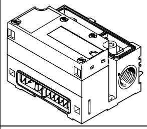
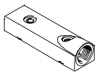
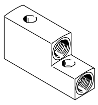
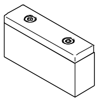
Type discontinued
Available up until 2019

Overview – Pneumatic interface VMPAF



- [1] Pneumatic interface VMPAF
- [2] Inscription label
- [3] Exhaust plate for ducted exhaust air
- [4] Flat plate silencer
- [5] Fittings

Ordering data

Designation		Part No.	Type
Pneumatic interface for CPX plastic interlinking module			
	Without exhaust plate, without flat plate silencer	**544399**	**VMPAF-FB-EPL**
	Without exhaust plate, without flat plate silencer, with integrated pressure sensor for channel 1	**547491**	**VMPAF-FB-EPL-PS**
Pneumatic interface for CPX metal interlinking module			
	Without exhaust plate, without flat plate silencer	**552279**	**VMPAF-FB-EPLM**
	Without exhaust plate, without flat plate silencer, with integrated pressure sensor for channel 1	**552280**	**VMPAF-FB-EPLM-PS**
Exhaust plate			
	For ducted exhaust air, ducts 3/5 common	**544411**	**VMPAF-AP-1**
	For ducted exhaust air, duct 3 and duct 5 separated	**544412**	**VMPAF-AP-2**
	Flat plate silencer	**544410**	**VMPAF-APU**

Terminal CPX

Technical data – Pneumatic interface VTSA/VTSA-F

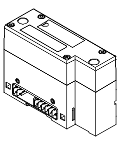
Function

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 terminal CPX.
Different circuits for valves and electrical outputs are implemented using an additional power supply. The integrated valve diagnostic functions enable the causes of errors to be found quickly, therefore increasing system availability.

Application

- 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 when fieldbus communication is interrupted (failsafe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block
- Detection of missing solenoid coils and short circuit monitoring for the valves

General technical data			
Number of solenoid coils			32
Electrical actuation			Fieldbus
Electrical connection			Via CPX
Diagnostics			Undervoltage at valves
Parameterisation			• Failsafe per channel • Forces per channel • Idle mode per channel • Module monitoring
LED displays			• 1 Group diagnostics • Channel status (on each valve)
Fuse protection (short circuit)			Internal electronic fuse per valve output
Electrical isolation channel – internal bus			Yes, when using an additional power 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	Electronic components	[mA]	Typically 15
	Valves	[mA]	Typically 50
Max. power supply per channel		[A]	0.2
Max. residual current per module		[A]	4
Protection class			• IP65 (to EN 60529) • NEMA 4
Ambient temperature		[°C]	–5 … +50
Materials	Housing		Die-cast aluminium
	Bearing and end cap		PA
Note on materials			RoHS-compliant
Product weight		[g]	590

Ordering data				
Designation			Part No.	Type
	For plastic interlinking block		**543416**	**VABA-S6-1-X1**
	For metal interlinking block	Diagnostics via fieldbus	**550663**	**VABA-S6-1-X2**
		Diagnostics via image table	**573613**	**VABA-S6-1-X2-D**

Terminal CPX

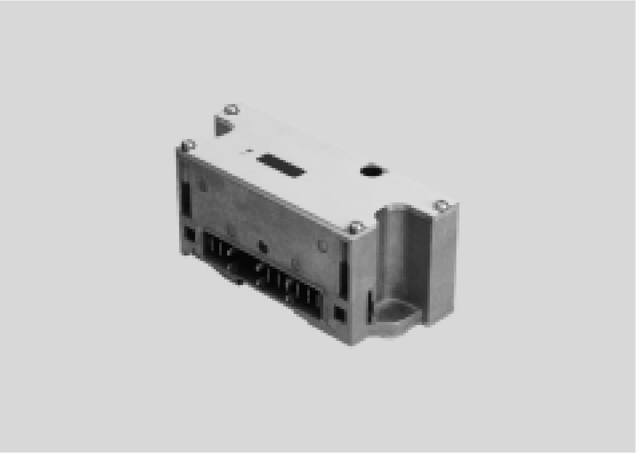
Technical data – Pneumatic interface MIDI/MAXI

Function

The pneumatic interface MIDI/MAXI connects the valve terminal MIDI/MAXI to the supported fieldbus protocols of the CPX terminal.
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 power supply. The integrated valve diagnostic functions enable the causes of errors to be found quickly, therefore increasing system availability.

Applications

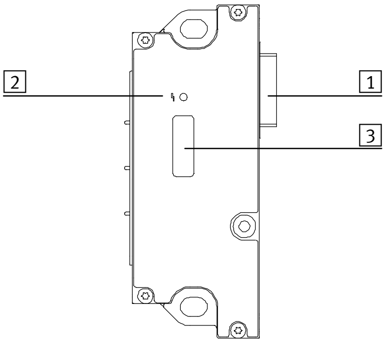
- Interface to valve terminals MIDI/MAXI
- Max. 26 solenoid coils
- Address space allocation (configuration) of valve terminals can be set using integrated DIL switches
- Pneumatic interface features can be parameterised, for example status of the solenoid coils in the event of fieldbus communication 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



General technical data				
Type			**CPX-GP-03-4,0**	**CPX-M-GP-03-4,0**
Connection for CPX interlinking blocks made of			Plastic	Metal
No. of solenoid coils			26	
Max. power supply	Per module	[A]	4	
	Per channel	[A]	0.2	
Fuse protection			Internal electronic fuse for each valve output	
Current consumption of modules for electronics		[mA]	Typically 15	
Current consumption of modules for valves		[mA]	Typically 30	
Nominal operating voltage		[V DC]	24	
Operating voltage range		[V DC]	21.6 … 26.4	
Electrical isolation	Channel – channel		No	
	Channel – internal bus		Yes, using an additional power supply for valves	
LED displays	Group diagnostics		1	
	Channel diagnostics		–	
	Channel status		– (on valves)	
Diagnostics			• Undervoltage of valves	
Parameterisation			• Module monitoring • Fail-safe behaviour, channel x	
Protection class to EN 60529			IP65	
Ambient temperature		[°C]	−5 … +50	
Materials	Cover		Steel	
			Die-cast aluminium	
Grid dimension		[mm]	50	
Dimensions W x L x H		[mm]	50 x 132 x 55	
Weight		[g]	390	

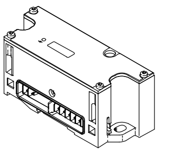
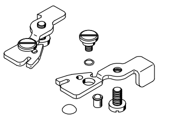
Connection and display components

CPX-GP-03-4,0



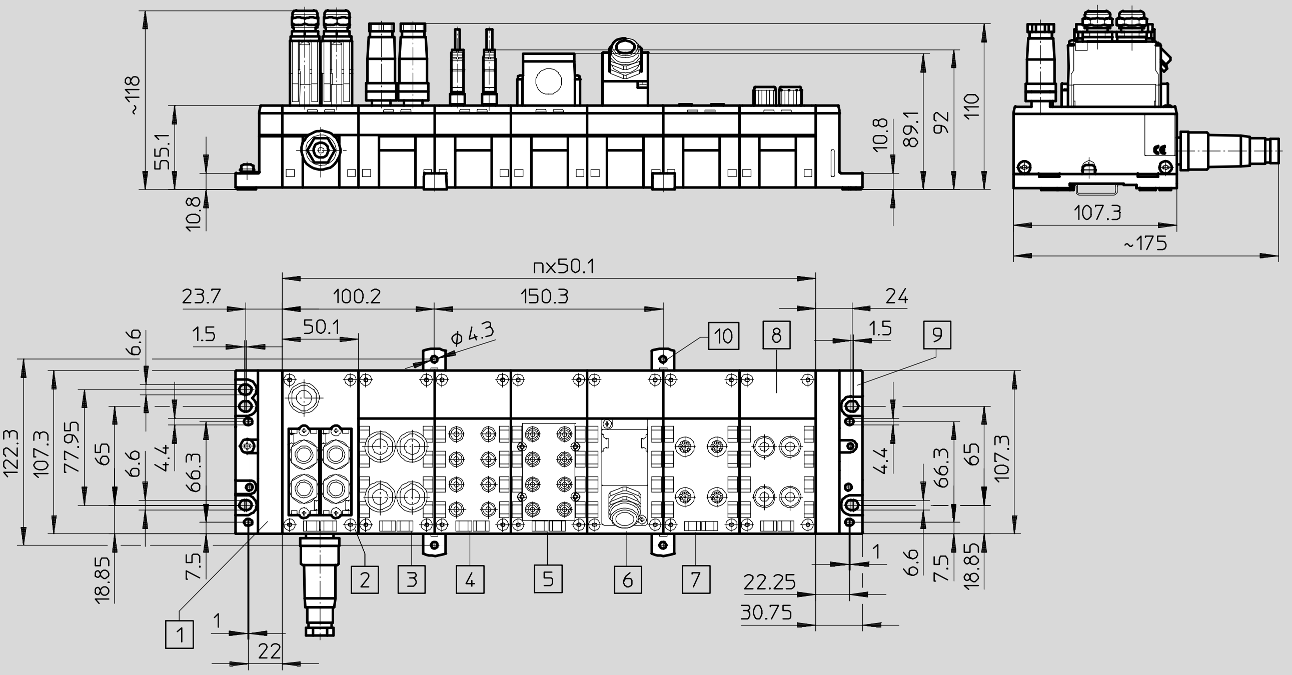
1	Connecting plug to valves
2	Error LED (red)
3	DIL switch under transparent cover

Ordering data

Designation		Part No.	Type
Pneumatic interface MIDI/MAXI			
	For plastic interlinking block	**195738**	**CPX-GP-03-4,0**
	For metal interlinking block	**556775**	**CPX-M-GP-03-4,0**
H-rail mounting			
	For mounting CPX terminal and valve terminal MIDI on H-rail	**526033**	**CPX-03-4,0**
	For mounting CPX terminal and valve terminal MAXI on H-rail	**526034**	**CPX-03-7,0**

Dimensions – Plastic interlinking module Download CAD data ➔ **www.festo.com**

With bus nodes and connection blocks

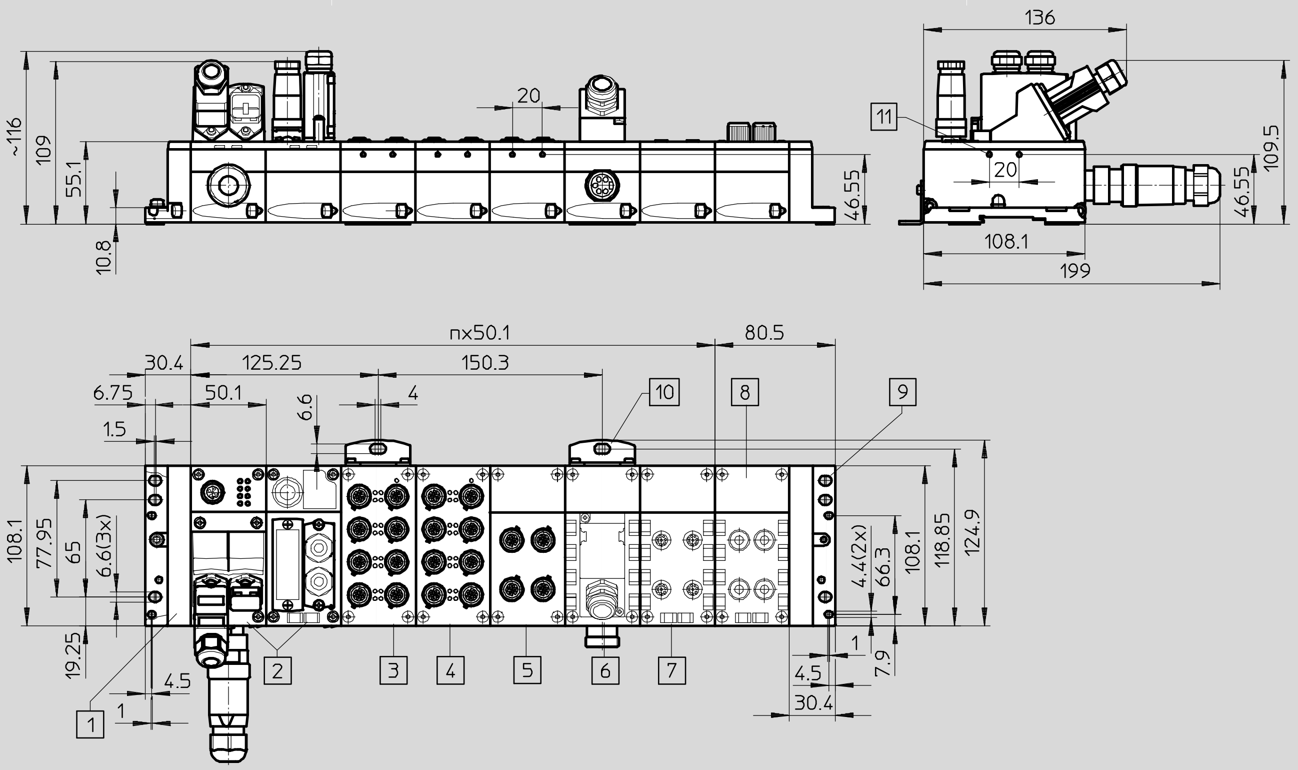


1 Left-hand end plate (earthing plate optional)
2 Bus nodes
3 Connection block CPX-AB-4-M12-8POL
4 Connection block CPX-AB-8-M8-3POL
5 Connection block CPX-AB-8-KL-4POL
6 Connection block CPX-AB-1-SUB-BU-25POL
7 Connection block CPX-AB-4-HAR-4POL
8 Connection block CPX-AB-4-M12x2-5POL
9 Right-hand end plate
10 Mounting clip for wall mounting (required every 2 … 3 connection blocks)
n Number of bus nodes and connection blocks for CPX

Dimensions – Metal interlinking block

Download CAD data → **www.festo.com**

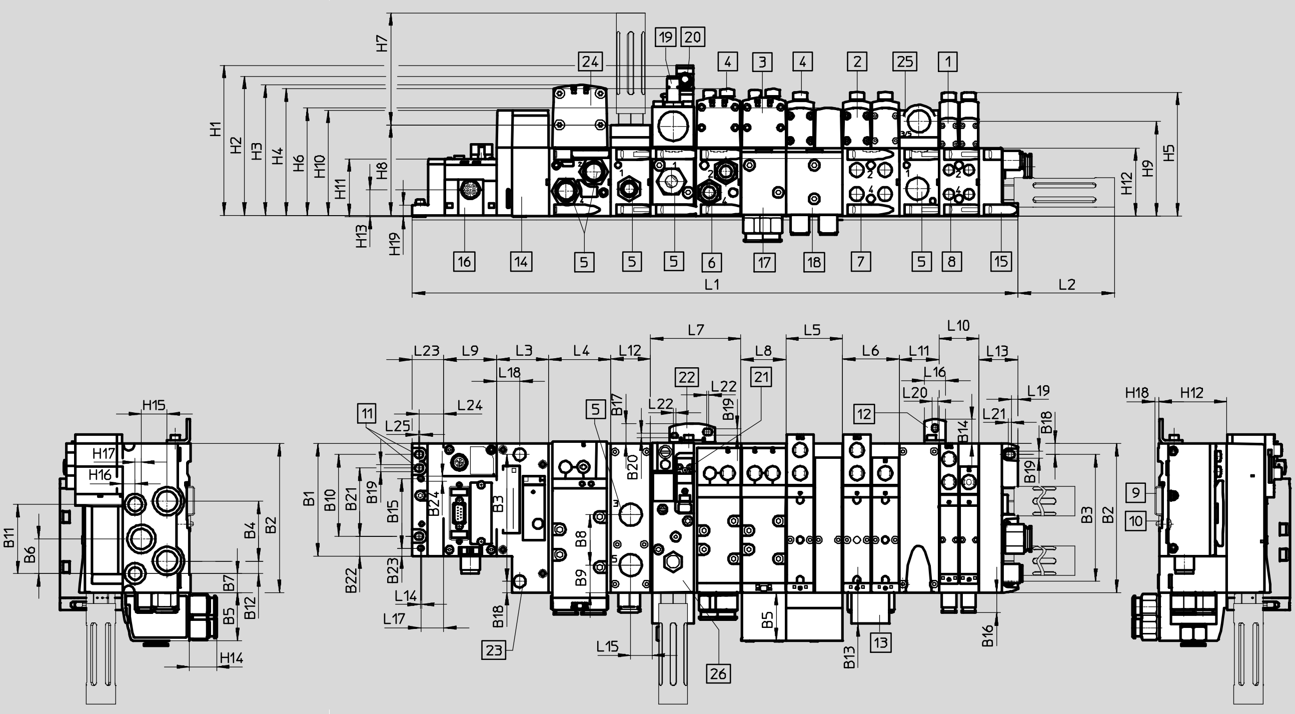
With bus nodes and connection blocks



1	Left-hand end plate
2	Bus nodes
3	Connection block CPX-M-AB-8-M12X2-5POL
4	Connection block CPX-M-AB-8-M12X2-5POL
5	Connection block CPX-M-AB-4-M12X2-5POL
6	Connection block CPX-AB-1-SUB-BU-25POL
7	Connection block CPX-AB-4-M12-8POL
8	Connection block CPX-AB-4-HAR-4POL
9	Right-hand end plate
10	Mounting bracket for wall mounting
11	Hole for self-tapping screw M2.5
n	Number of bus nodes and connection blocks for CPX

Dimensions Download CAD data → **www.festo.com**

With bus nodes and valve terminal VTSA



1	Solenoid valve, width 18 mm	10	H-rail mounting
2	Solenoid valve, width 26 mm	11	Mounting hole
3	Solenoid valve, width 42 mm	12	Additional mounting bracket
4	Cover cap/manual override	13	Inscription label holder
5	Threaded connection G½	14	Pneumatic interface CPX
6	Threaded connection G⅜	15	End plate
7	Threaded connection G¼	16	CPX module/bus node
8	Threaded connection G⅛	17	90° connection plate 43 mm, G⅜
9	H-rail	18	90° connection plate 54 mm, G¼
		19	Proximity sensor M12x1

20	Plug socket M12x1	n02	Number of manifold sub-bases 38 mm
21	Electrical connection to EN 175301-803, type C	n01	Number of manifold sub-bases 54 mm
22	Additional mounting bracket	n1	Number of manifold sub-bases 43 mm
23	Hole for additional mounting, diameter 6.4 2x	n2	Number of manifold sub-bases 59 mm
24	Solenoid valve, width 52 mm	n	Number of supply plates (only with end plate with pilot air selector)
25	Supply plate	m	Number of CPX modules
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	L16	L17	L18	L19	L20	L21	L22
[mm]	92.4	50	n2x59	n01x54	54	n1x43	43	mx20.1	n02x38	nx38	38	37.3	1	20.5	20	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	101.4	55.1	65	25.8	25.7	24.5	12	6	3.5	10.8

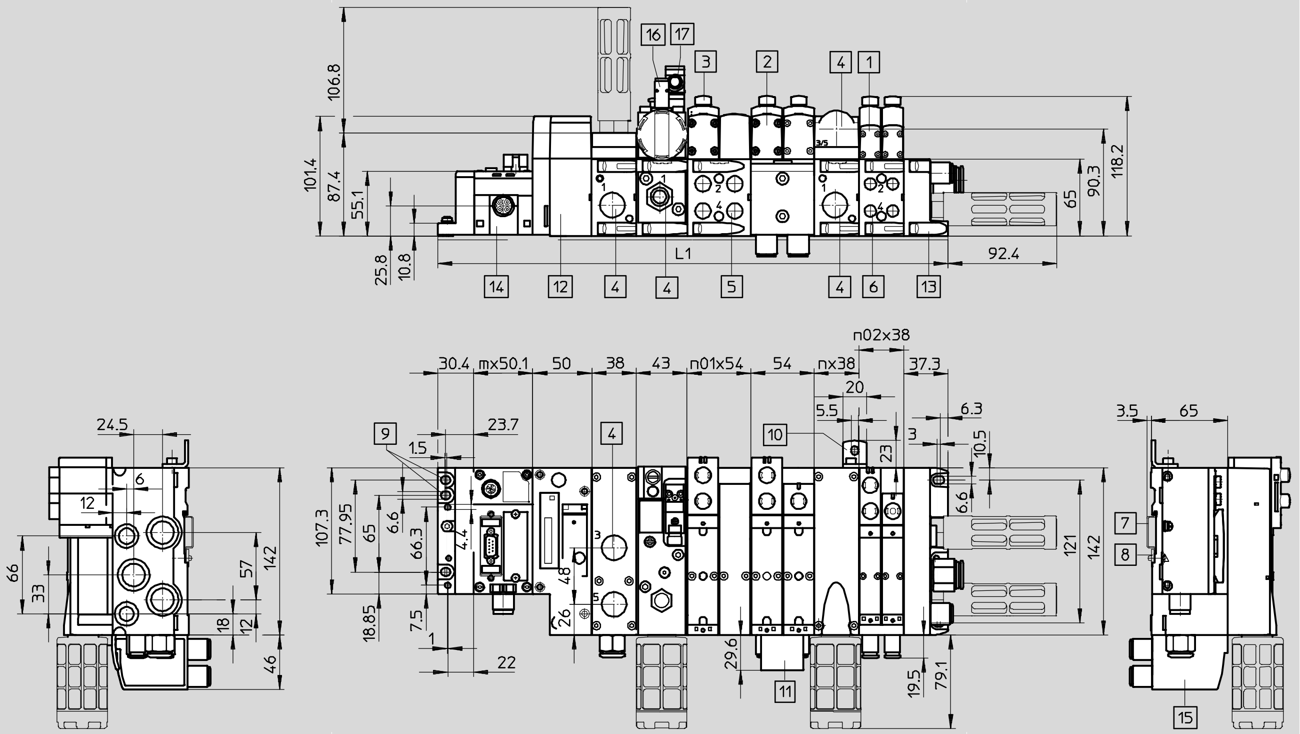
Width	L1
18 mm	30.4 + m x 50.1 + 50 + n02 x 38 + n x 38 + 37.3
26 mm	30.4 + m x 50.1 + 50 + n01 x 54 + n x 38 + 37.3
42 mm	30.4 + m x 50.1 + 50 + n1 x 43 + n x 38 + 37.3
52 mm	30.4 + m x 50.1 + 50 + n2 x 59 + n x 38 + 37.3
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	30.4 + m x 50.1 + 50 + n02 x 38 + n01 x 54 + n1 x 43 + n2x59 + n x 38 + 37.3

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Dimensions

Download CAD data ➔ **www.festo.com**

With bus nodes and valve terminal VTSA-F

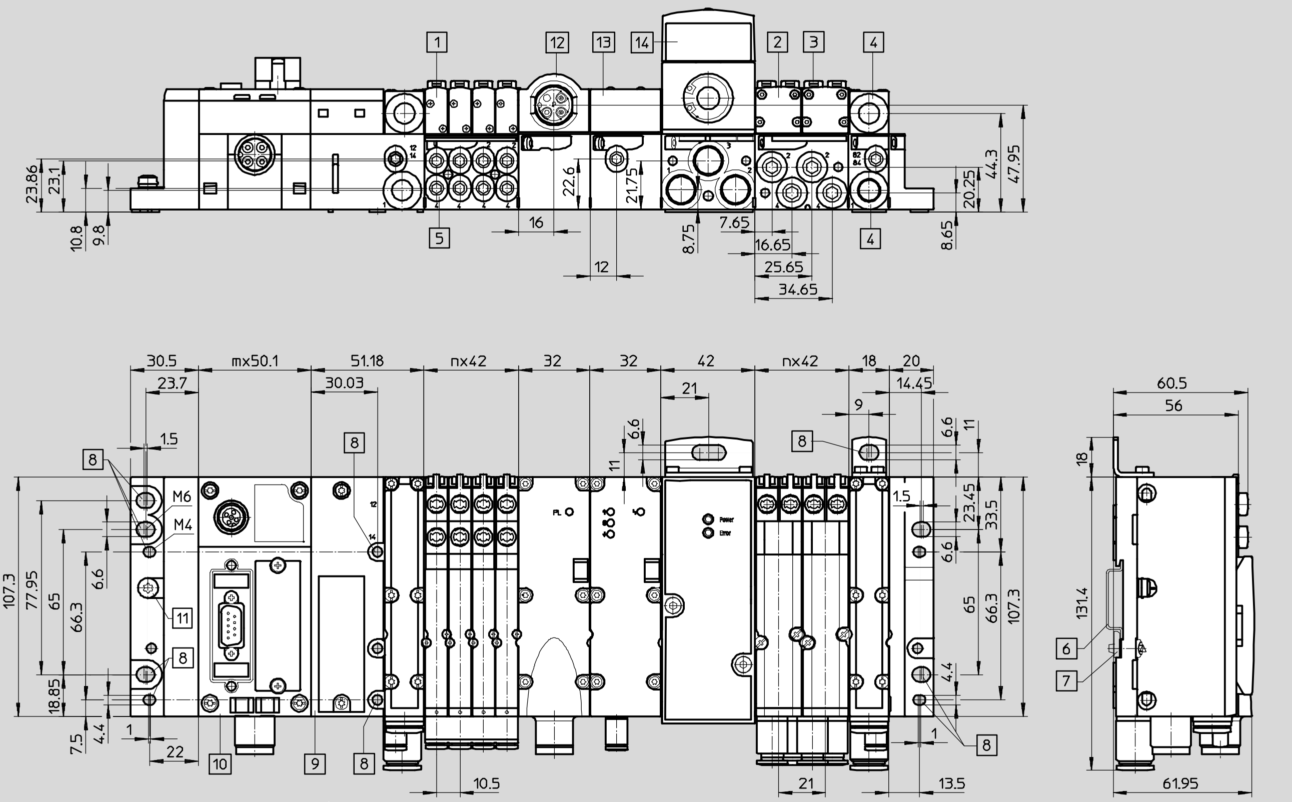


1	Solenoid valve 18 mm
2	Solenoid valve 26 mm
3	Cover cap/manual override
4	Threaded connection G½
5	Threaded connection G¼
6	Threaded connection G⅛
7	H-rail
8	H-rail mounting
9	Mounting hole
10	Additional mounting bracket
11	Inscription label holder
12	Pneumatic interface VTSA-F
13	End plate
14	CPX module/bus node
15	90° connection plate, width 18 mm, G⅛ width 26 mm, G¼
16	Proximity sensor M12x1
17	Plug socket M12x1
n02	Number of manifold sub-bases 18 mm
n01	Number of manifold sub-bases 26 mm
n	Number of supply plates
m	Number of CPX modules

Width	L1
18 mm	30.4 + m x 50.1 + 50 + n02 x 38 + n x 38 + 37.3
26 mm	30.4 + m x 50.1 + 50 + n01 x 54 + n x 38 + 37.3
Mixture of 18 mm and 26 mm	30.4 m x 50.1 + 50 + n02 x 38 + n01 x 54 + n x 38 + 37.3

Dimensions Download CAD data → **www.festo.com**

With bus nodes and valve terminal MPA-S



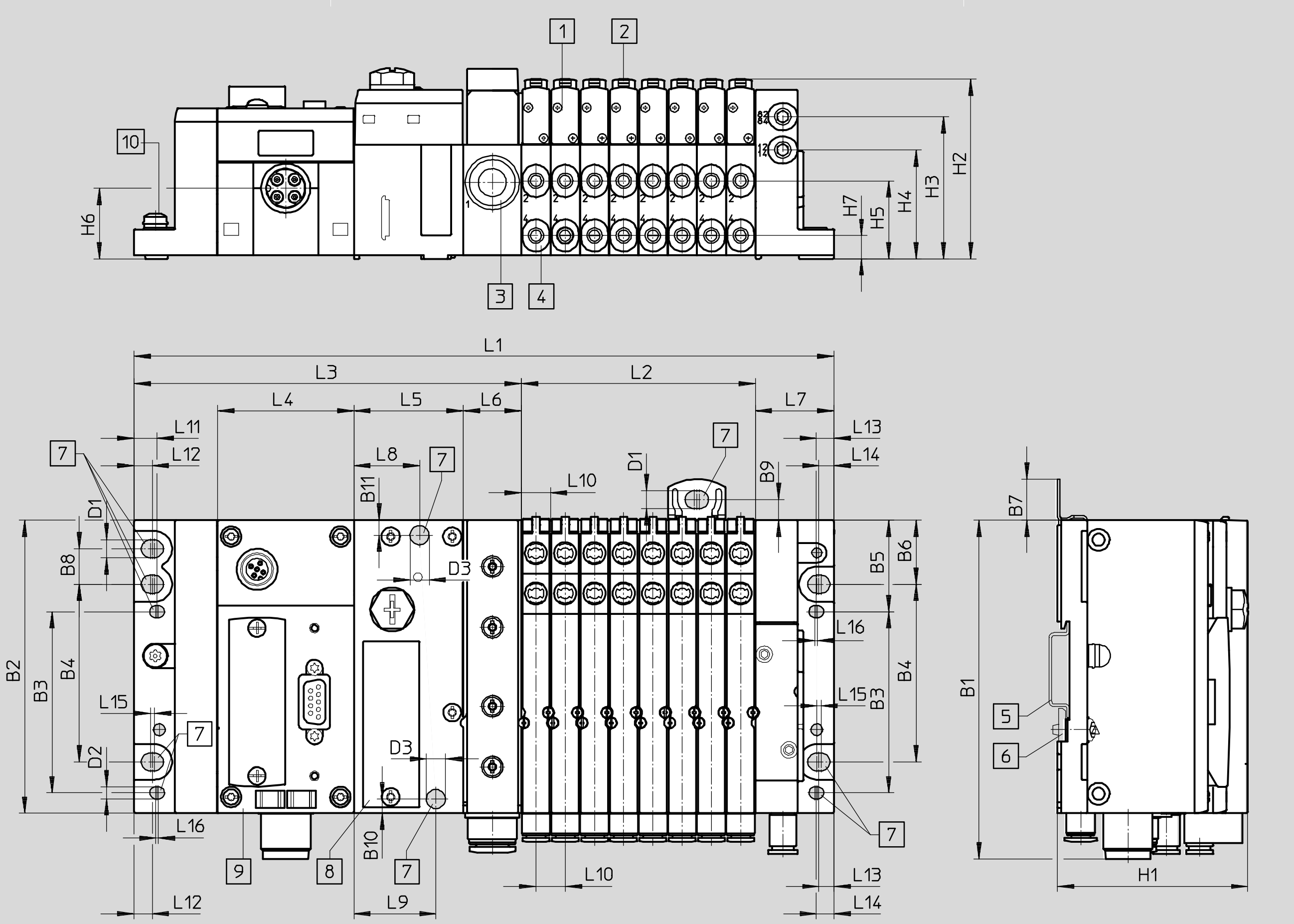
1	Solenoid valve MPA1	6	H-rail	11	Earthing screw	n	Number of sub-bases in a grid of 4 MPA1 or 2 MPA2 valves
2	Solenoid valve MPA2	7	H-rail mounting	12	Electrical supply plate		
3	Manual override	8	Mounting holes	13	Pressure sensor		
4	Supply/exhaust ports	9	Pneumatic interface VMPA-FB	14	Proportional pressure regulator	m	Number of CPX modules
5	Working lines	10	CPX module				

Terminal CPX

Technical data

Dimensions Download CAD data ➔ **www.festo.com**

With bus node and valve terminal MPA-L



1 Solenoid valve
2 Manual override
3 Power supply module
4 Working lines
5 H-rail
6 H-rail mounting
7 Mounting holes
8 Pneumatic interface VMPAL
9 CPX module
10 Earthing screw

Type	L1 1)	L2 1)	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	D1	D2	D3
MPA-L	170.9 + n x 10.70	n x 10.70	142.1	50	40.1	21.2	28.8	24	30	10.7	8.5	6.8	5.6	6.5	6.6	4.4	7

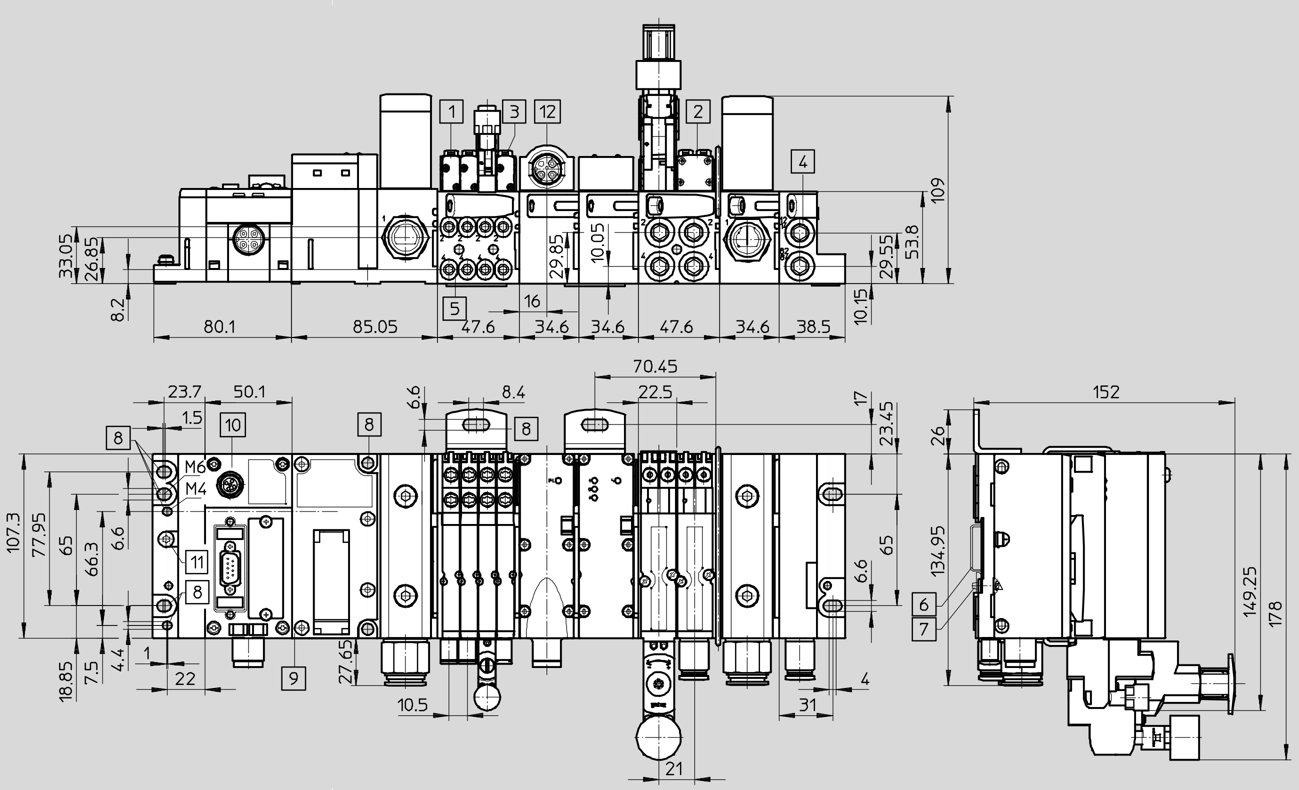
Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	H1	H2	H3	H4	H5	H6	H7
MPA-L	124	107.3	66.3	65	33.5	23.5	15	13	7.5	5.3	5.5	69.6	65.7	52	39.8	28.5	25.8	8.5

1) n = Number of sub-bases/valve positions

Type discontinued
Available up until 2019

Dimensions Download CAD data ➔ **www.festo.com**

With bus nodes and valve terminal MPA-F

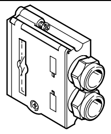
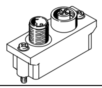
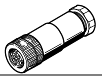
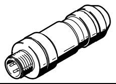
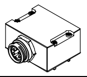
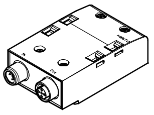
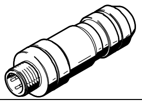
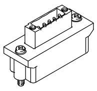
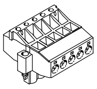
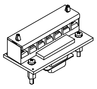
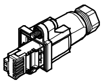
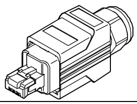
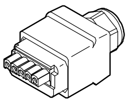
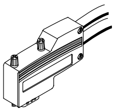
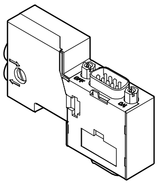


1 Solenoid valve MPA1
2 Solenoid valve MPA2
3 Manual override
4 Pilot air supply, pilot exhaust air
5 Working lines
6 H-rail
7 H-rail mounting
8 Mounting holes
9 Pneumatic interface VMPAF
10 CPX module
11 Earthing screw
12 Electrical supply plate

Terminal CPX

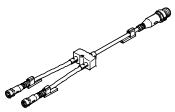
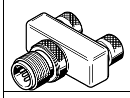
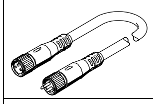
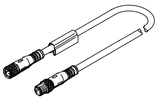
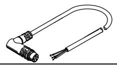
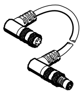
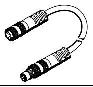
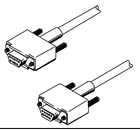
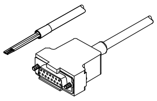
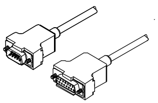
Accessories

Ordering data – Accessories

Designation			Part No.	Type
Plug connectors and accessories				
	Sub-D plug for INTERBUS	Incoming	**532218**	**FBS-SUB-9-BU-IB-B**
		Outgoing	**532217**	**FBS-SUB-9-GS-IB-B**
	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	**18324**	**FBSD-GD-9-5POL**
		Plug	**175380**	**FBS-M12-5GS-PG9**
	M12x1 bus connection, 4-pin (D-coded) for Ethernet		**543109**	**NECU-M-S-D12G4-C2-ET**
	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**
		For INTERBUS	**534505**	**CPX-AB-2-M12-RK-IB**
	For self-assembly of a connecting cable 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**
	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**
	Screw terminal bus connection for CC-Link		**197962**	**FBA-1-KL-5POL**
	RJ45/plug		**534494**	**FBS-RJ45-8-GS**
	RJ45 plug, 8-pin, push-pull		**552000**	**FBS-RJ45-PP-GS**
	SCRJ plug, 2-pin, push-pull, for CPX-M-FB35		**571017**	**FBS-SCRJ-PP-GS**
	Socket/spring-loaded terminal, 5-pin, AIDA push-pull		**563059**	**NECU-M-PPG5-C1**
	Plug for CAN-Bus interface, Sub-D, 9-pin, without terminating resistor		**533783**	**FBS-SUB-9-WS-CO-K**
	Sub-D socket with terminating resistor and programming interface	For CANopen	**574588**	**NECU-S1W9-C2-ACO**
	Sub-D straight plug connector with terminating resistor and programming interface	For PROFIBUS	**574589**	**NECU-S1W9-C2-APB**

Terminal CPX

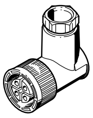
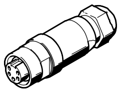
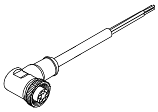
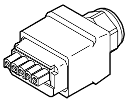
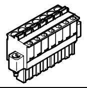
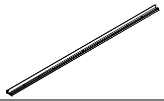
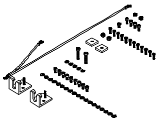
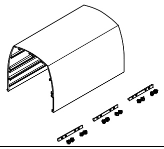
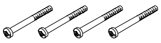
Accessories

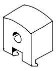
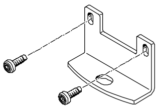
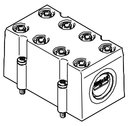
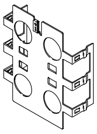
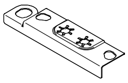
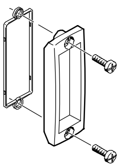
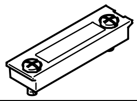
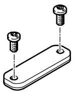
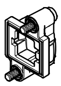
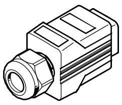
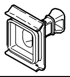
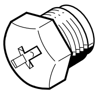
Ordering data – Accessories				
Designation			Part No.	Type
Distributor				
	Modular system for sensor/actuator distributor		–	**NEDY-...** ➔ Internet: nedy
	Plug M8, 4-pin	2x socket M8, 3-pin	**8005312**	**NEDY-L2R1-V1-M8G3-N-M8G4**
	Plug M12, 4-pin	2x socket M8, 3-pin	**8005311**	**NEDY-L2R1-V1-M8G3-N-M12G4**
		2x socket M12, 5-pin	**8005310**	**NEDY-L2R1-V1-M12G5-N-M12G4**
Connecting cables				
	Modular system for connecting cables		–	**NEBU-...** ➔ Internet: nebu
	Connecting cable M8-M8, straight plug-straight socket	0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**
		1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**
		2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**
		5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**
	Connecting cable M12-M12, 4-pin, straight plug-straight socket	2.5 m	**18684**	**KM12-M12-GSGD-2,5**
		5.0 m	**18686**	**KM12-M12-GSGD-5**
	Connecting cable M12-M12, 5-pin, straight plug-straight socket	1.5 m	**529044**	**KV-M12-M12-1,5**
		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, 5-pin, angled plug-open cable end, 3-pin	2 m	**563711**	**NEBC-M9W5-K-2-N-LE3**
		5 m	**563712**	**NEBC-M9W5-K-5-N-LE3**
	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**
	Programming cable		**151915**	**KDI-PPA-3-BU9**
	Connecting cable FED (for CPX-CEC)		**539642**	**FEC-KBG7**
	Connecting cable FED (for CPX-CEC)		**539643**	**FEC-KBG8**

Terminal CPX

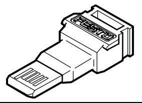
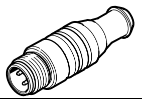
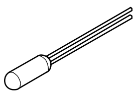
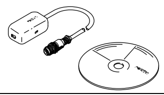
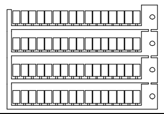
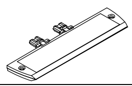
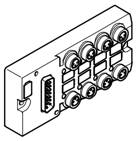
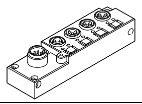
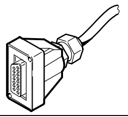
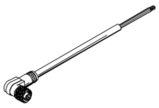
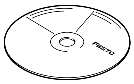
Accessories

Ordering data – Accessories

Designation			Part No.	Type
Plug connectors and accessories – Power supply				
	Plug socket for mains connection M18, straight	For 1.5 mm^2	**18493**	**NTSD-GD-9**
		For 2.5 mm^2	**18526**	**NTSD-GD-13.5**
	Plug socket for mains connection M18, angled	For 1.5 mm^2	**18527**	**NTSD-WD-9**
		For 2.5 mm^2	**533119**	**NTSD-WD-11**
	Power supply socket	7/8” connection, 5-pin	**543107**	**NECU-G78G5-C2**
		7/8” connection, 4-pin	**543108**	**NECU-G78G4-C2**
	Angled socket, 5-pin – Open cable end, 5-wire	2 m	**573855**	**NEBU-G78W5-K-2-N-LE5**
	Connection socket AIDA push-pull, spring-loaded terminal	5-pin	**563059**	**NECU-M-PPG5-C1**
	Straight plug, spring-loaded terminal, for end plate left-hand with system supply	7-pin	**576319**	**NECU-L3G7-C1**
Hood				
	Mounting rail for securing the cover	1,000 mm	**572256**	**CAFC-X1-S**
	Mounting kit for CPX cover		**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 a plastic interlinking block	Bus node/metal connection block	**550218**	**CPX-DPT-30X32-S-4X**
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	**550219**	**CPX-M-M3x22-4x**
		Bus node/metal connection block	**550216**	**CPX-M-M3x22-S-4x**
	Screws for attaching an inscription label holder to the bus node (CPX-FB33, CPX-M-FB34, CPX-M-FB35)	12 pieces	**550222**	**CPX-M-M2,5X8-12X**

Ordering data – Accessories				
Designation			Part No.	Type
Mounting				
	Attachment for wall mounting (for long valve terminals, 10 pieces)	Design for plastic manifold sub-bases	**529040**	**CPX-BG-RW-10x**
	Attachment for wall mounting, design for metal manifold sub-bases	2 mounting brackets and 4 screws	**550217**	**CPX-M-BG-RW-2X**
		1 mounting bracket and 2 screws	**2721419**	**CPX-M-BG-VT-2X**
Covers and attachments				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		**538219**	**AK-8KL**
	Fittings kit		**538220**	**VG-K-M9**
	Screening plate for M12 connections		**526184**	**CPX-AB-S-4-M12**
	Earthing component (5 pieces), for right-hand/left-hand plastic end plate (interlinking blocks made from polymer material)		**538892**	**CPX-EPFE-EV**
	Inspection cover, transparent		**533334**	**AK-SUB-9/15-B**
	Transparent cover for DIL switch and memory card		**548757**	**CPX-AK-P**
	Cover for DIL switch and memory card		**548754**	**CPX-M-AK-M**
	Blanking plate for covering the DIL switches of CPX-M-FB20/CPX-M-FB21		**572818**	**CPX-M-FB21-IB-RL**
	Cover for RJ45 connection		**534496**	**AK-Rj45**
	Cover for RJ45 push-pull connection		**548753**	**CPX-M-AK-C**
	Cover cap for bus connection		**2873540**	**CPX-M-AK-D**
	Cover cap for sealing unused connections (10 pieces)	For M8 connections	**177672**	**ISK-M8**
		For M12 connections	**165592**	**ISK-M12**

Ordering data – Accessories

Designation			Part No.	Type
Functional modules				
	Memory card for PROFINET bus node (CPX-FB33, CPX-M-FB34, CPX-M-FB35), 2 MB		**568647**	**CPX-SK-2**
	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 from 5-pin M12 to mini USB socket and controller software		**547432**	**NEFC-M12G5-0.3-U1G5**
Inscription labels				
	Inscription labels 6x10, 64 pieces, in frames		**18576**	**IBS-6x10**
	Inscription label holder for connection block		**536593**	**CPX-ST-1**
Multi-pin plug distributors				
	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 distributors				
	Sub-D socket, 15-pin, open cable end, 15-wire	5 m	**177673**	**KMPV-SUB-D-15-5**
		10 m	**177674**	**KMPV-SUB-D-15-10**
	Angled socket M12, 8-pin, open cable end, 8-wire	Length 2 m	**542256**	**NEBU-M12W8-2-N-LE8**
		Length 5 m	**542257**	**NEBU-M12W8-5-N-LE8**
		Length 10 m	**570007**	**NEBU-M12W8-10-N-LE8**
	Straight socket M12, 8-pin, open cable end, 8-wire	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**
Software				
	Programming software	German	**537927**	**P.SW-FST4-CD-DE**
		English	**537928**	**P.SW-FST4-CD-EN**