

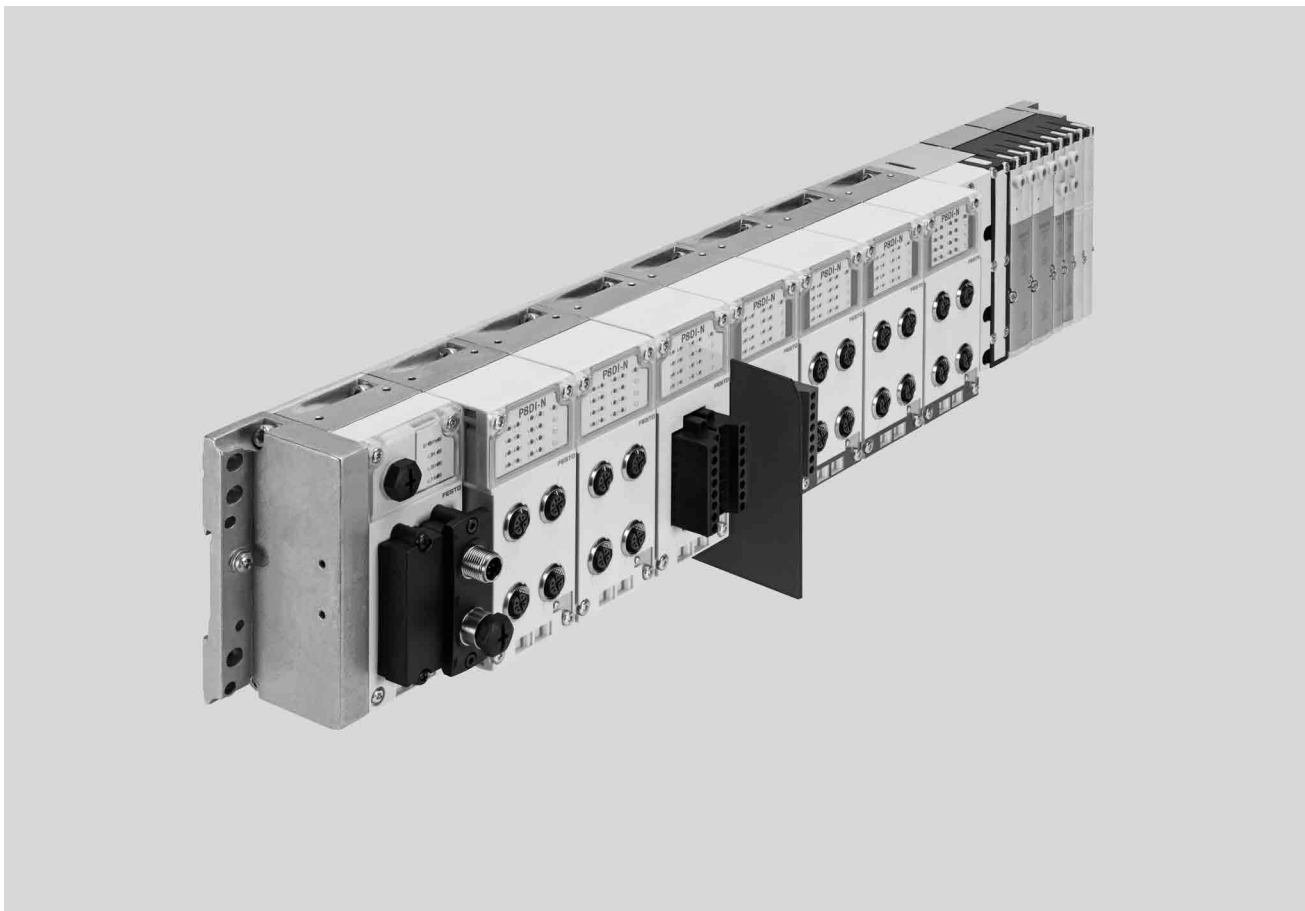
Modular electrical terminal CPX-P



Terminal CPX-P

Key features

FESTO



Key features

Installation concept	Electrics	Assembly	Operation
– Type 32 MPA/MPA-F • Economical from the smallest configuration up to the maximum number of modules • Up to 9 electrical input/output modules plus bus node and pneumatic interface/electronics 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	• High operating voltage tolerance ($\pm 25\%$) • Open to all fieldbus protocols and Ethernet • IT services and TCP/IP such as remote maintenance, remote diagnostics, web server, SMS and e-mail alert • Digital inputs and outputs, 4-way/8-way/16-way, optionally available with individual channel diagnostics • Analogue inputs and outputs, 2-way/4-way • Analogue inputs and outputs with HART protocol • Input modules for connecting NAMUR sensors • Supply ports • Temperature inputs • IP65 or IP20	• Wall or H-rail mounting, also on mobile units • Conversions/extensions are possible at any time, individual linking • Modular system offering a range of configuration options • Fully assembled and tested unit • Lower costs for selection, ordering, assembly and commissioning thanks to the central CPX-P terminal • Choice of pneumatic components for optimised control chain system design	• 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 • Suitable for direct machine mounting (IP65/IP67) or in a control cabinet with a terminal connection (IP20) • Supports module and channel-oriented diagnostics • Fieldbus/Ethernet remote diagnostics • Innovative diagnostic support with integrated web server/web monitor or Festo Maintenance Tool (CPX-FMT) with USB adapter (NEFC) for PC • Optimised commissioning thanks to parameterisable functions • Reliable servicing with connection blocks and modules that are quick to replace without changing the wiring

Terminal CPX-P

Key features

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

Bus node

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

The CPX-P terminal can therefore be operated on commonly used fieldbus systems:

- PROFIBUS DP
- PROFINET

- DeviceNet
- CANopen

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, as website integrated in the CPX-P terminal, text message/e-mail alerts, etc. open up a wide range of synergies.

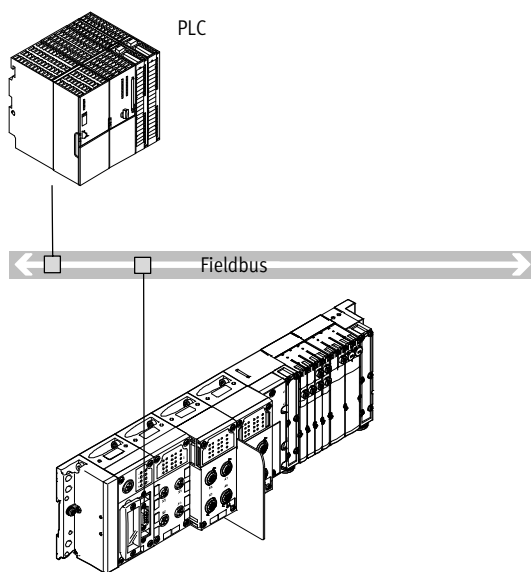
These include standardised and universal communication technology across all areas, including operating level, management level and field

level in the production environment, with protection to IP65.

The following protocols are supported:

- EtherNet/IP
- Modbus/TCP
- PROFINET
- EtherCAT

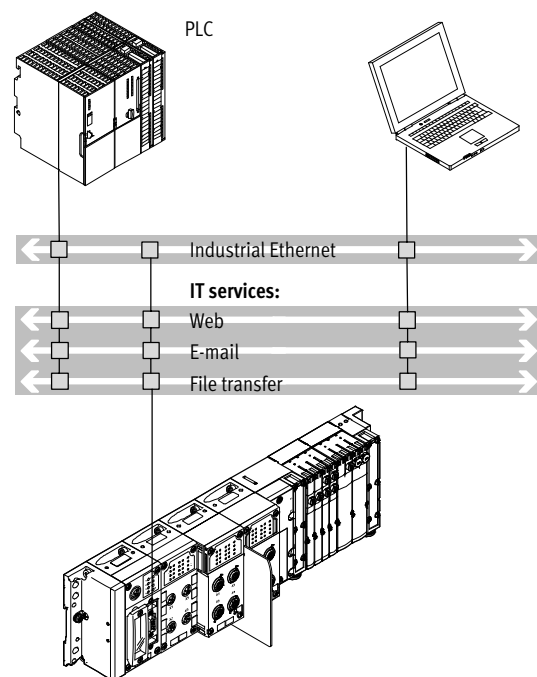
Bus node



- Communication with the higher-order controller via fieldbus
- No preprocessing

- Fieldbus protocol dependent on CPX bus node used
- More than 90 I/Os, depending on bus node used

Industrial Ethernet bus node



- Connection to a higher-order controller directly via EtherNet/IP, Modbus/TCP, EtherCAT or PROFINET

- No preprocessing
- Monitoring via Ethernet and web applications
- More than 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-P terminal can be operated with every electrical connection variant.

Terminal CPX-P

Key features

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

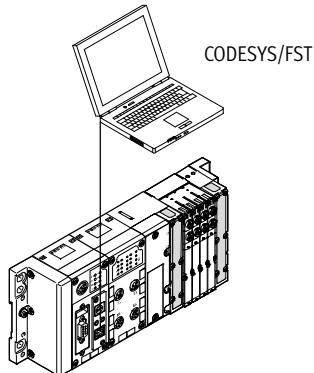
Control block

The optional front end controllers CPX-CEC enable simultaneous access via Ethernet, in parallel with

a bus node, as well as autonomous preprocessing. Access via Modbus/TCP and EasyIP is also possible.

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

With control block in stand-alone mode

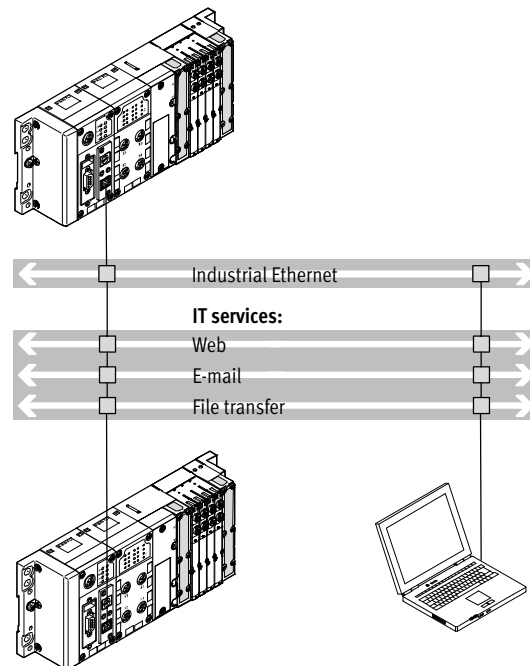


- Decentralised controller with direct machine mounting
- Downloading programs via Ethernet (or via the programming interface)
- Supports full expansion of all CPX peripherals
- More than 300 I/Os

Can be successfully used in the follow applications:

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

With control block in Festo EasyIP mode



- Fast preprocessing of the CPX-P peripherals in the control block
- Exchange of any data between the control blocks via EasyIP
- Remote diagnostics

- No higher-order controller is required
- More than 300 I/Os per CPX-P control block

Terminal CPX-P

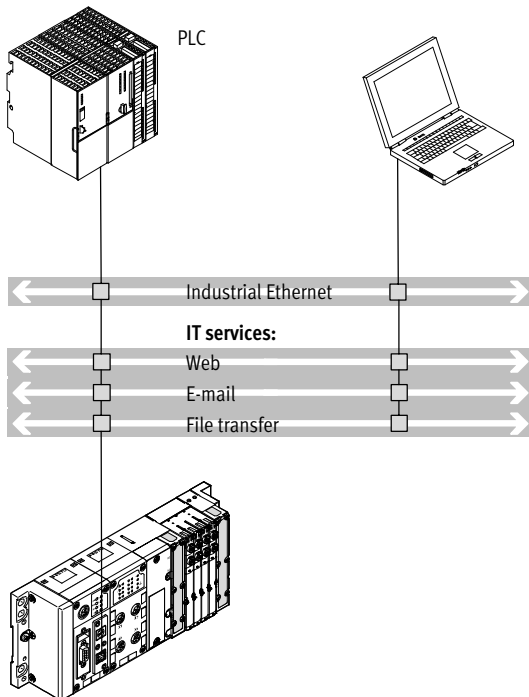
Key features

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

With control block as remote controller on Ethernet

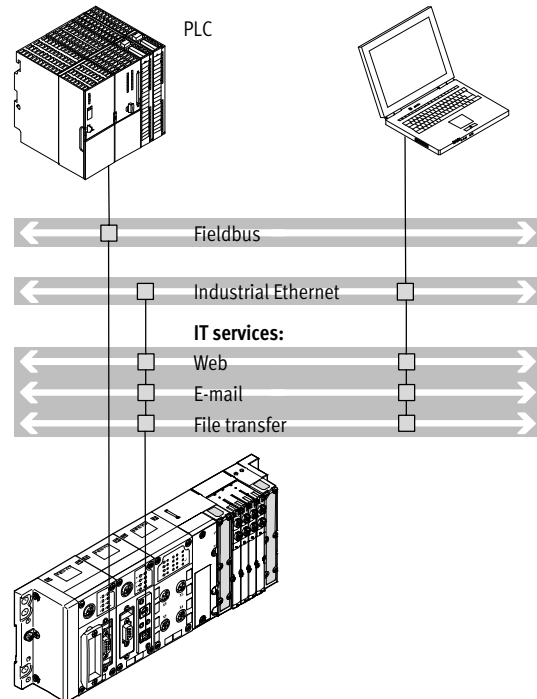
Remote controller via Ethernet as the preprocessing unit for decentralised, stand-alone sub-systems using IT technology.



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

With control block as remote controller on the fieldbus

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



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

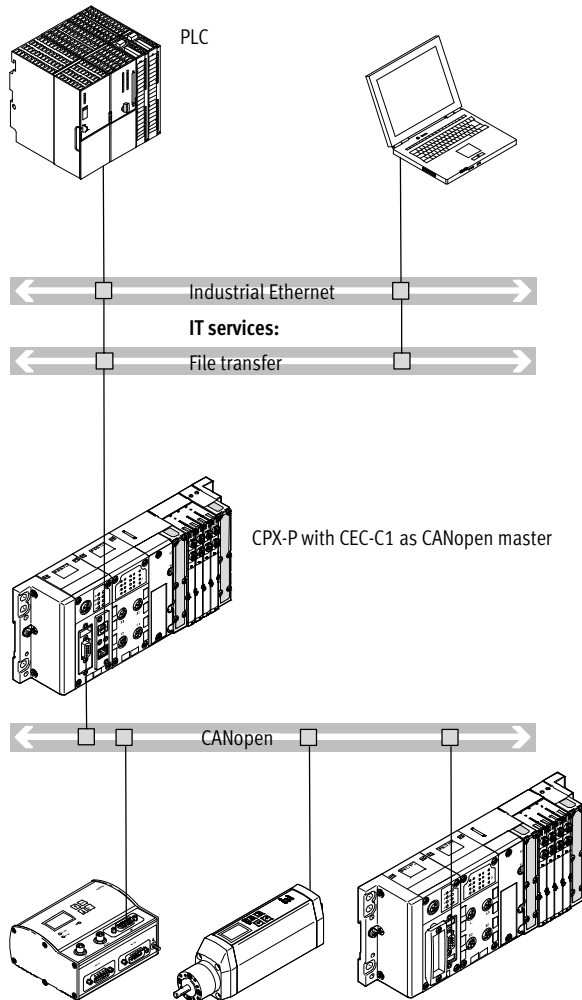
Terminal CPX-P

Key features

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

With control block as CANopen fieldbus master



Features:

- Connection to a higher-order controller via Ethernet, no further bus node is required
- Monitoring via Ethernet
- Preprocessing of the CPX-P peripherals by CPX-P 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

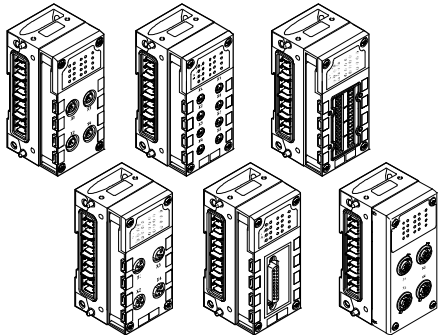
Terminal CPX-P

Key features

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Connection of inputs and outputs to the CPX-P terminal

Digital and analogue CPX-P I/O modules



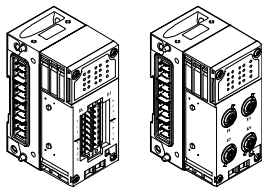
Electrical connection

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.

The input/output modules can be combined as required with the connection blocks:

- M12 5-pin
- M12 5-pin, with quick lock and metal thread
- M12 8-pin
- M8 3-pin
- M8 4-pin
- Sub-D 25-pin
- Harax® 4-pin
- CageClamp® (with cover also to IP65/67)
- Screw terminal and spring-loaded terminal

CPX modules for NAMUR sensors



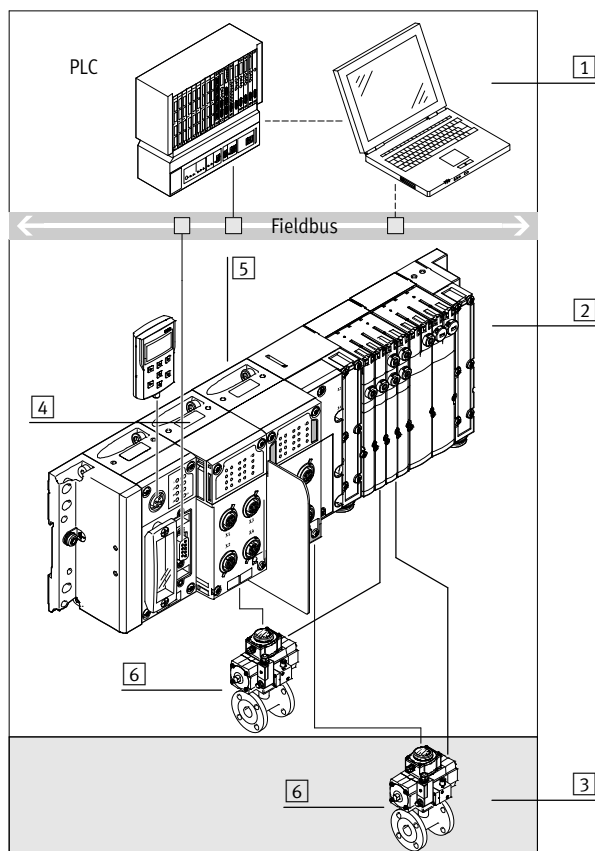
Electrical connection

The electronics modules for NAMUR sensors can only be combined with certain connection blocks.

The input modules can be combined as required with the connection blocks:

- M12 4-pin
- Screw terminal and spring-loaded terminal

CPX modules for NAMUR sensors, intrinsically safe circuits for ATEX applications



- 1 Higher-order controller
- 2 Non-ATEX zone; non-intrinsically safe circuits are permitted
- 3 ATEX zone; only intrinsically safe circuits are permitted
- 4 CPX input module for NAMUR sensors, non-intrinsically safe design
- 5 CPX input module for NAMUR sensors, intrinsically safe design
- 6 Actuator/machine component with NAMUR sensors

CPX-P modules are suitable for configuring intrinsically safe or non-intrinsically safe circuits depending on the design selected.

This enables components from both safe and potentially explosive zones to be connected to the CPX-P terminal.

The components for the intrinsically safe zone are marked in blue or entirely coloured blue to distinguish them visually.

Note

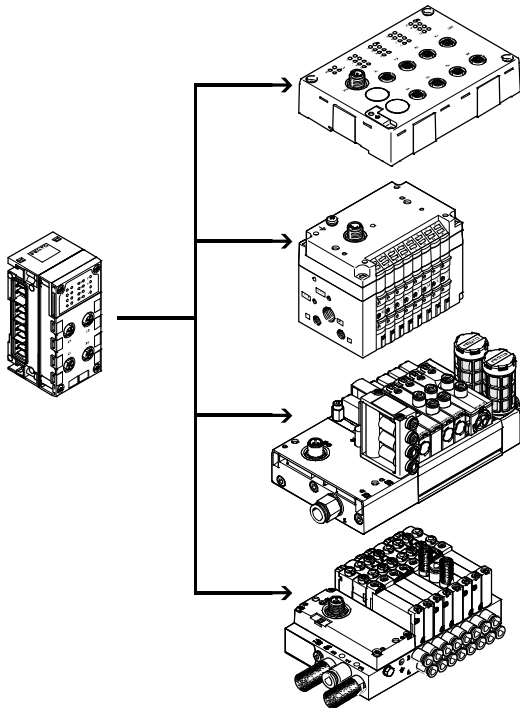
Intrinsically safe circuits are circuits which release so little energy during operation, or in the event of certain faults under specified test conditions, that no ignition can occur in a particular potentially explosive atmosphere.

Terminal CPX-P

Key features

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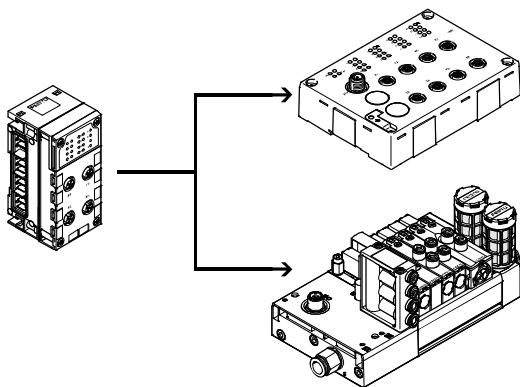
Connection of inputs and outputs to the CPX-P terminal With CPX-CTEL interface



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

Several CPX-P CTEL masters can be combined on one CPX-P terminal (depending on the controller used). Combination of central CPX-P I/O modules and decentrally mounted I/O modules with I-Port interface.

With CPX-CTEL-2 interface



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

Several CPX-CTEL-2 interfaces can be combined on one CPX terminal (depending on the controller used). Combination of central CPX-P I/O modules and decentrally mounted I/O modules with IO-Link interface.

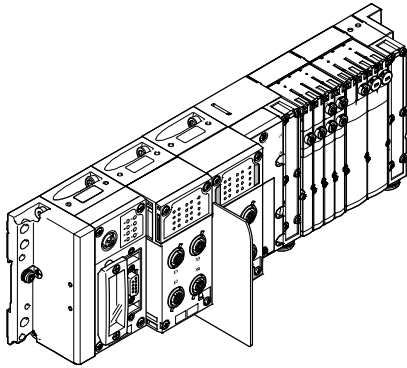
Terminal CPX-P

Key features

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Pneumatic variants of the CPX-P terminal

With valve terminal MPA-S – centralised



The electrical CPX-P 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.

Ordering

The CPX-P 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 from the MPA-S modular system.

The CPX-P terminal with valve terminal is ordered using two separate order codes. One order code defines the electrical peripherals type CPX-P, while the other specifies the pneumatic components of the valve terminal.

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

The order lists for the pneumatic components can be found at

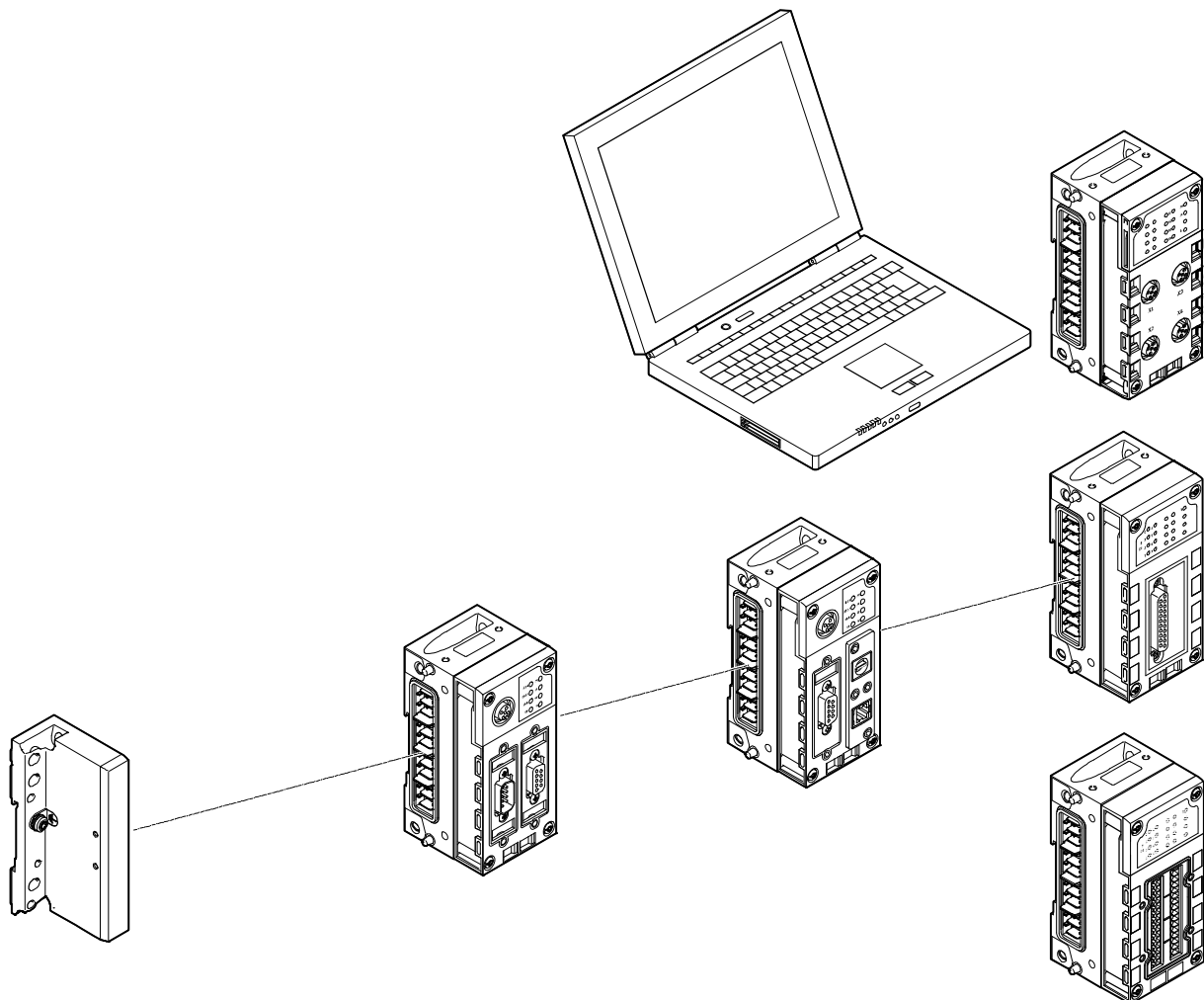
➔ Internet: mpa-s
(valve terminal MPA-S)

Terminal CPX-P

Peripherals overview

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Complete overview of modules



End plate

- Mounting holes for wall mounting
- Functional earth connection

Bus node

- Fieldbus/Industrial Ethernet connection using various types of connection technology
- Setting fieldbus parameters via DIL switch
- Display of fieldbus and peripheral equipment status via LED

Control block

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

Web monitor

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

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

Input/output modules

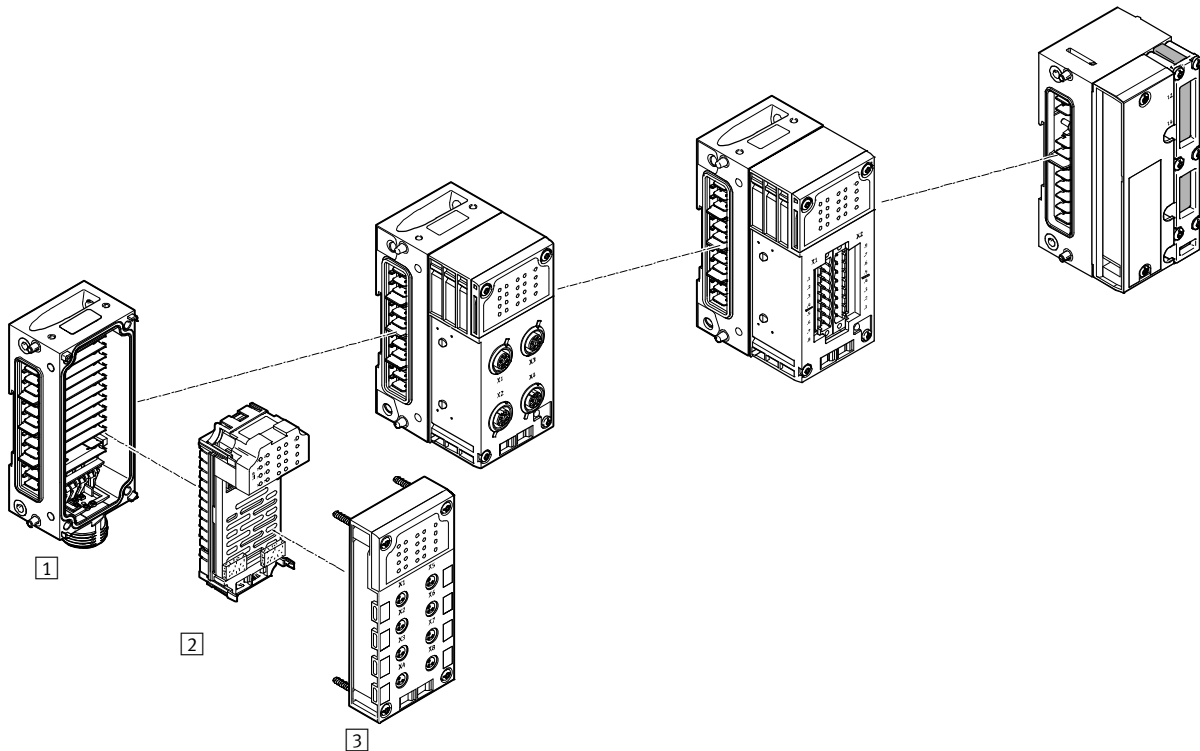
- Combination of
- Interlinking block
 - Electronics module
 - Connection block

Terminal CPX-P

Peripherals overview

FESTO

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 supply for outputs
- Connection accessories for 7/8"
- 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)
- 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 connection technology
- Degree of protection IP65 or IP20
- Can be combined with the electronics modules
- Connection accessories for M8/M12/Sub-D/quick connector, etc.
- M8/M12/Sub-D, etc. connecting cables
- Modular system for choice of connecting cables

Pneumatic interface

- Actuation of the solenoid coils
- MPA-S
- Actuation of pressure sensors
- Actuation of proportional-pressure regulators

Terminal CPX-P

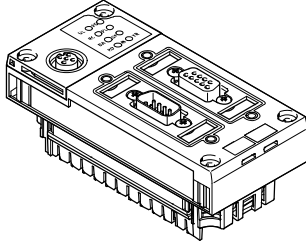
Peripherals overview

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Individual overview of modules

Bus node

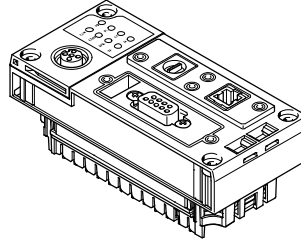
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- Bus node for
- PROFIBUS DP
 - DeviceNet
 - CANopen
 - EtherNet/IP
 - PROFINET
 - EtherCAT

Control block

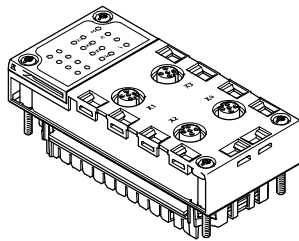
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- CPX-CEC
- Programming with CODESYS
 - Ethernet interface
 - Modbus/TCP
 - EasyIP
 - CANopen master

CTEL interface

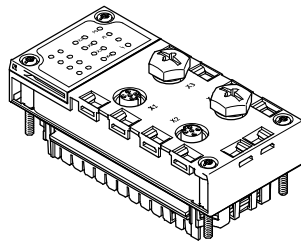
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- CPX-CTEL interface
- CTEL master
 - Max. 4 devices with individual electronic protection
 - Max. 64 inputs/64 outputs per I-Port interface
 - The maximum length of a string is 20 m

Electrical interface CPX-CTEL-2

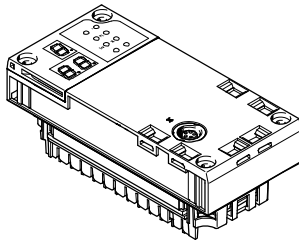
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- Interface CPX-CTEL-2
- Master for IO-Link
 - Max. 2 devices with individual electronic protection
 - Process data length of the inputs and outputs is limited to 16 bytes for inputs and 16 bytes for outputs per port
 - The maximum length of a string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

Modules for controlling pneumatic drive units

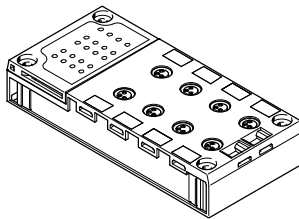
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- CPX-CMIX
- Measuring module
 - CAN input (Festo specification) for measuring signal

- Recording the absolute position values or speed values of the connected drive

Polymer connection block

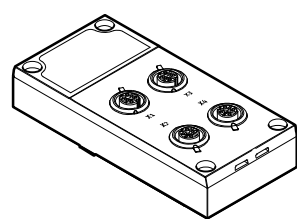


- Direct machine mounting
(connection block to IP65/IP67)
- M8 3-pin
 - M8 4-pin
 - M12 5-pin
 - M12 5-pin quick lock, shielded with metal thread
 - M12 8-pin
 - Sub-D 25-pin
 - Quick connector
 - Spring-loaded terminal with cover

- Protected fitting space
(degree of protection IP20)
- Spring-loaded terminal

- Screening concept
- Optional screening plate for connection block with M12 connection technology

Metal connection block



- Direct machine mounting
(connection block to IP65/IP67)
- M12 5-pin

Terminal CPX-P

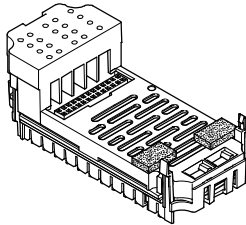
Peripherals overview

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Individual overview of modules

Digital electronics module for inputs/outputs

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Digital inputs

- 4 digital inputs
- 8 digital inputs
- 16 digital inputs

Digital outputs

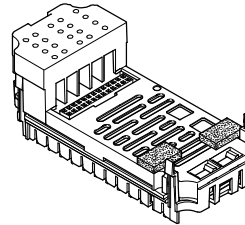
- 4 digital outputs (1 A per channel, individual channel diagnostics)
- 8 digital outputs (0.5 A per channel, individual channel diagnostics)
- 8 digital outputs (2.1 A/50 W lamp load per channel pair, individual channel diagnostics)

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

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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)
- 4 analogue inputs with HART protocol

Analogue temperature inputs

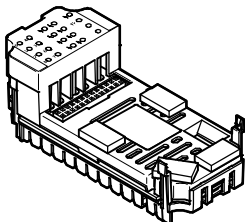
- 4 analogue inputs for temperature measurement (Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni500, Ni1000)
- 4 analogue inputs for temperature measurement (thermocoupler and PT1000 sensor for cold-junction compensation)

Analogue outputs

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

PROFIsafe input module

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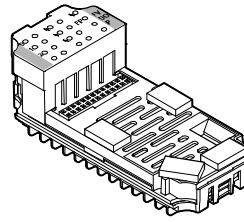


Digital inputs

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

PROFIsafe shut-off module

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Digital outputs

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

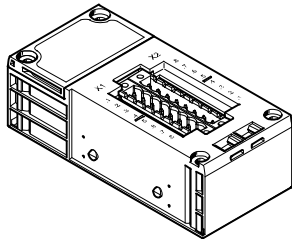
Terminal CPX-P

Peripherals overview

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Individual overview of modules

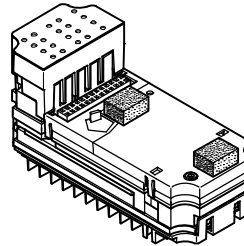
Connection block for NAMUR sensors and HART input/output module



- Direct machine mounting
(connection block to IP65)
- M12 4-pin
- Protected fitting space
(connection block to IP20)
- Screw terminal
 - Spring-loaded terminal

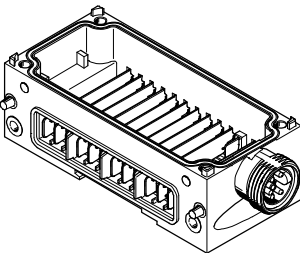
Digital electronics module for NAMUR sensors

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- Digital inputs
- 8 digital inputs for NAMUR sensors or wired mechanical contacts
 - Intrinsically safe design with additional protective measures in the event of failure

Metal interlinking block – Individual linking



- System linking
- Different voltages for supplying the modules
 - Serial communication between the modules
- System supply
- 7/8" 5-pin

- In addition to system linking, power supply for the
- electronics plus sensors (8 A)
 - valves plus actuators (8 A)

- Additional supply
In addition to system linking, power supply for the
- actuators (8 A per supply)

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

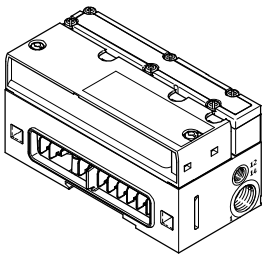


Note
The 7/8" supply is subject to the following restrictions due to the available accessories:

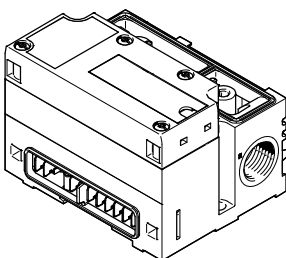
- 5-pin 8 A

Pneumatic interface MPA-S

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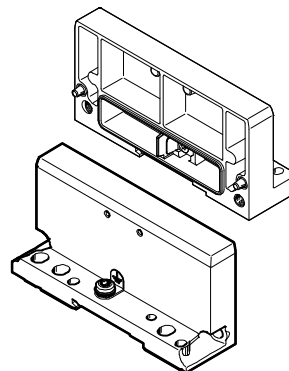


- Valve terminal
- MPA1 (360 l/min)
 - MPA14 (550 l/min)
 - MPA2 (700 l/min)
 - Up to 128 solenoid coils
 - Up to 16 modules can be configured
 - Actuation of pressure sensors
 - Proportional-pressure regulators
 - Pressure sensors
 - Proportional-pressure regulators

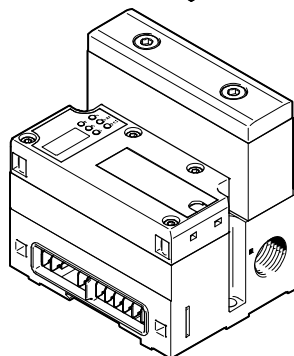


- Valve terminal
- MPA1 (360 l/min)
 - MPA2 (700 l/min)
 - Up to 128 solenoid coils
 - Up to 16 modules can be configured
 - For CPX polymer design
 - For CPX metal design
 - Actuation of pressure sensors
 - Proportional-pressure regulators
 - Pressure sensors
 - Proportional-pressure regulators

End plate



- End plate
- Left
 - Right (for use without valves)



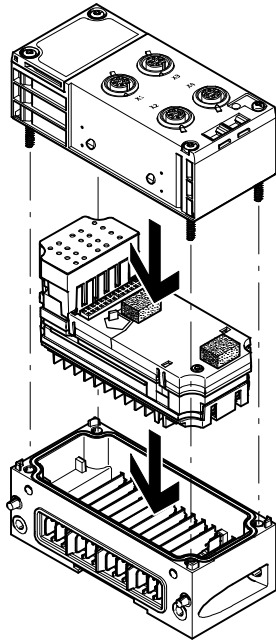
- Valve terminal
- MPAF1 (360 l/min)
 - MPAF2 (900 l/min)
 - Up to 128 solenoid coils
 - Up to 16 modules can be configured
 - With integrated pressure sensor for channel 1
 - For CPX polymer design
 - For CPX metal design

Terminal CPX-P

Peripherals overview

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General basic data and guidelines



Max. 11 modules in total:

- One bus node and/or one control block
- Up to 9 additional input/output modules
- In addition a pneumatic interface
 - Always positioned as the last module on the right-hand side
 - 16 MPA modules can be configured

- 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 supplies.
Always positioned to the right of the interlinking block with system supply

- The connection blocks can be combined with the electronics modules for inputs/outputs, with some restrictions (→ table below)
- The electronics modules for inputs/outputs can be combined with various interlinking blocks

Combinations of connection blocks and digital input modules

	Digital electronics modules						
	CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE	CPX-F8DE-P	CPX-16DE	CPX-M-16DE-D
Connection blocks, polymer design							
CPX-AB-8-M8-3POL	■	■	■	■	–	–	–
CPX-AB-8-M8X2-4POL	–	–	–	–	–	■	–
CPX-AB-4-M12x2-5POL	■	■	■	■	–	–	–
CPX-AB-4-M12x2-5POL-R	■	■	■	■	–	–	–
CPX-P-AB-4XM12-4POL	–	–	–	–	–	–	–
CPX-P-AB-4XM12-4POL-8DE-N-IS	–	–	–	–	–	–	–
CPX-AB-4-M12-8POL	–	–	–	–	–	–	–
CPX-AB-8-KL-4POL	■	■	■	■	■	■	–
CPX-P-AB-2XKL-8POL	–	–	–	–	–	–	–
CPX-P-AB-2XKL-8POL-8DE-N-IS	–	–	–	–	–	–	–
CPX-AB-1-SUB-BU-25POL	■	■	■	■	–	■	–
CPX-AB-4-HAR-4POL	■	■	■	■	–	–	–
Connection blocks, metal design							
CPX-M-AB-4-M12X2-5POL	■	■	■	■	■	–	–
CPX-M-AB-8-M12X2-5POL	–	–	–	–	–	–	■

Terminal CPX-P

Peripherals overview



Combinations of connection blocks and digital input modules for NAMUR sensors		
	Digital electronics modules	
	CPX-P-8DE-N	CPX-P-8DE-N-IS
Connection blocks, polymer design		
CPX-AB-8-M8-3POL	–	–
CPX-AB-8-M8X2-4POL	–	–
CPX-AB-4-M12x2-5POL	–	–
CPX-AB-4-M12x2-5POL-R	–	–
CPX-P-AB-4XM12-4POL	■	–
CPX-P-AB-4XM12-4POL-8DE-N-IS	–	■
CPX-AB-4-M12-8POL	–	–
CPX-AB-8-KL-4POL	–	–
CPX-P-AB-2XKL-8POL	■	–
CPX-P-AB-2XKL-8POL-8DE-N-IS	–	■
CPX-AB-1-SUB-BU-25POL	–	–
CPX-AB-4-HAR-4POL	–	–
Connection blocks, metal design		
CPX-M-AB-4-M12X2-5POL	–	–
CPX-M-AB-8-M12X2-5POL	–	–

Combinations of connection blocks and digital output modules or multi I/O modules						
	Digital electronics modules					
	CPX-4DA	CPX-8DA	CPX-8DA-H	CPX-8DE-8DA	CPX-2ZE2DA	CPX-FVDA-P2
Connection blocks, polymer design						
CPX-AB-8-M8-3POL	■	■	–	–	–	–
CPX-AB-8-M8X2-4POL	■	■	■	–	–	–
CPX-AB-4-M12x2-5POL	■	■	–	–	–	–
CPX-AB-4-M12x2-5POL-R	■	■	■	–	–	–
CPX-P-AB-4XM12-4POL	–	–	–	–	–	–
CPX-P-AB-4XM12-4POL-8DE-N-IS	–	–	–	–	–	–
CPX-AB-4-M12-8POL	–	–	–	■	–	–
CPX-AB-8-KL-4POL	■	■	■	■	–	■
CPX-P-AB-2XKL-8POL	–	–	–	–	–	–
CPX-P-AB-2XKL-8POL-8DE-N-IS	–	–	–	–	–	–
CPX-AB-1-SUB-BU-25POL	■	■	■	■	–	–
CPX-AB-4-HAR-4POL	■	■	–	–	–	–
Connection blocks, metal design						
CPX-M-AB-4-M12X2-5POL	■	■	■	–	–	■
CPX-M-AB-8-M12X2-5POL	–	–	–	–	–	–

Terminal CPX-P

Peripherals overview



Combinations of connection blocks and analogue electronics modules for inputs/outputs								
	Analogue electronics modules							
	CPX-4AE-4AA-H	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, polymer design								
CPX-AB-8-M8-3POL	–	–	–	–	–	–	–	–
CPX-AB-8-M8X2-4POL	–	–	–	–	–	–	–	–
CPX-AB-4-M12x2-5POL	–	■	■	■	■	–	■	■
CPX-AB-4-M12x2-5POL-R	–	■	■	■	■	–	■	■
CPX-P-AB-4XM12-4POL	■	–	–	–	–	–	–	–
CPX-P-AB-4XM12-4POL-8DE-N-IS	–	–	–	–	–	–	–	–
CPX-AB-4-M12-8POL	–	–	–	–	–	–	–	–
CPX-AB-8-KL-4POL	–	■	■	■	■	–	■	■
CPX-P-AB-2XKL-8POL	■	–	–	–	–	–	–	–
CPX-P-AB-2XKL-8POL-8DE-N-IS	–	–	–	–	–	–	–	–
CPX-AB-1-SUB-BU-25POL	–	■	■	■	■	–	–	–
CPX-AB-4-HAR-4POL	–	–	–	–	–	–	■	–
Connection blocks, metal design								
CPX-M-AB-4-M12X2-5POL	–	■	■	■	■	–	■	■
CPX-M-AB-8-M12X2-5POL	–	–	–	–	–	–	–	–

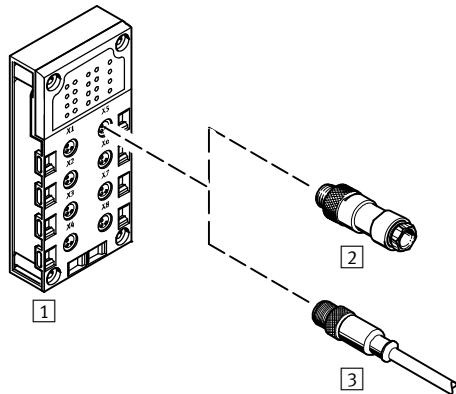
Terminal CPX-P

Key features – Electrical components



Electrical connection – Connection block with M8, 3-pin connection

CPX-AB-8-M8-3POL



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



Note

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

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

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug/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	Socket, M8, 3-pin
		(modular system for choice of connecting cables)	Socket, M8, 4-pin
			Socket, M12, 5-pin
			Open cable end

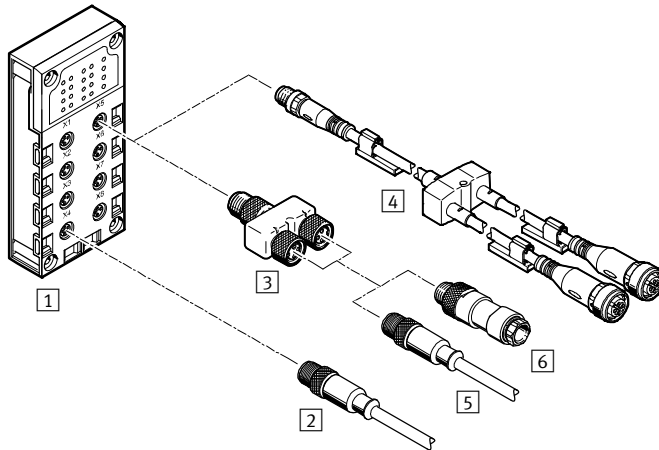
Terminal CPX-P

Key features – Electrical components

FESTO

Electrical connection – Connection block with M8, 4-pin connection

CPX-AB-8-M8X2-4POL



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

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug/connecting cable	Selectable connection technology	Plug/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 all types of sensor/ actuator distributor)	2x socket, M8, 3-pin	–	–
			2x socket, M8, 4-pin	–	–
			2x socket, M12, 5-pin	–	–
			2x socket, type A	–	–
			2x socket, type B	–	–
			2x socket, type C	–	–
			2x socket, plug pattern H	–	–
			2x socket, plug pattern ZB	–	–
			2x socket, plug pattern ZC	–	–
			2x open cable end	–	–

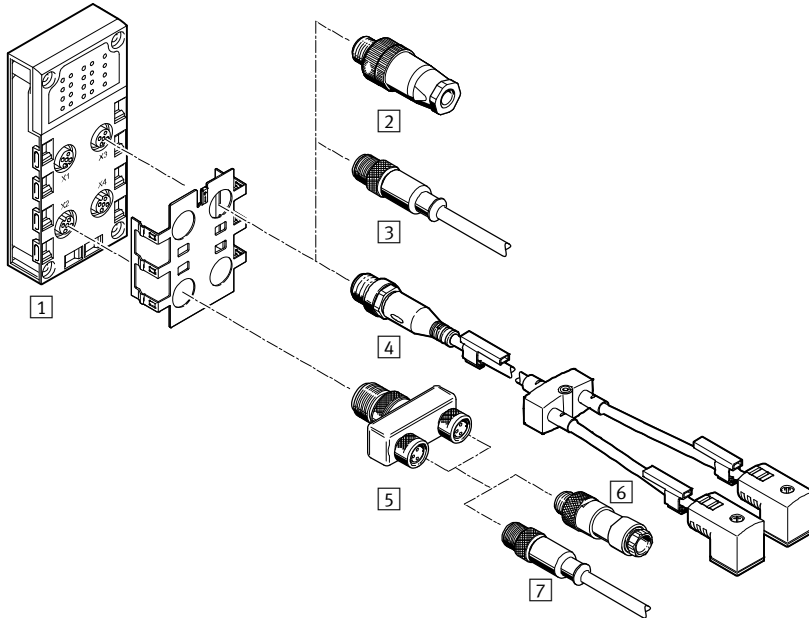
Terminal CPX-P

Key features – Electrical components

FESTO

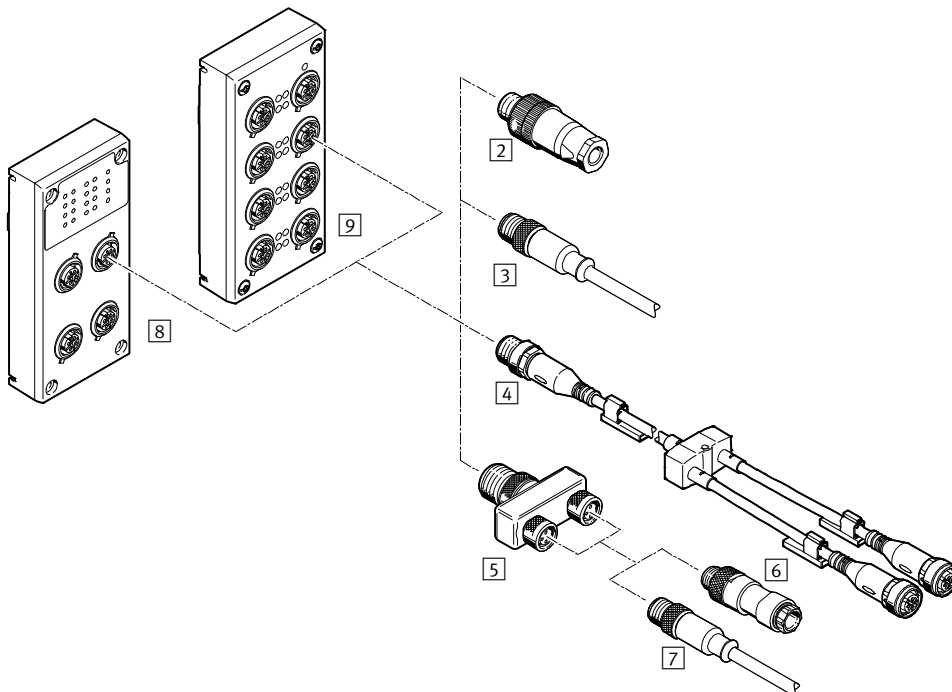
Electrical connection – Connection block with M12, 5-pin connection

CPX-AB-4-M12x2-5POL and CPX-AB-4-M12x2-5POL-R, polymer design



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

CPX-M-AB-8-M12X2-5POL and CPX-M-AB-4-M12X2-5POL, metal design



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

Terminal CPX-P

Key features – Electrical components



Combination of connection block and electrical connection technology					
Connection block	Connection technology	Plug/connecting cable	Connection technology	Plug/connecting cable	Connection technology
1 CPX-AB-4-M12x2-5POL CPX-AB-4-M12x2-5POL-R 8 CPX-M-AB-4-M12X2-5POL 9 CPX-M-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 (modular system for choice of connecting cables)	Socket, M8, 4-pin	–	–
			Socket, M12, 5-pin	–	–
			Open cable end	–	–
		4 NEDY-... (modular system for all types of sensor/actuator distributor)	2x socket, M8, 3-pin	–	–
			2x socket, M8, 4-pin	–	–
			2x socket, M12, 5-pin	–	–
			2x socket, type A	–	–
			2x socket, type B	–	–
			2x socket, type C	–	–
			2x socket, plug pattern H	–	–
			2x socket, plug pattern ZB	–	–
			2x socket, plug pattern ZC	–	–
				–	–
		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
		5 NEDY-L2R1-V1-M12G5-N-M12G4 (T adapter)	Plug M12, 4-pin to 2x socket M12, 5-pin	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
				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

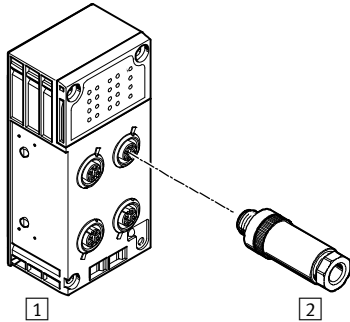
Terminal CPX-P

Key features – Electrical components

FESTO

Electrical connection – Connection block with M12, 4-pin connection

CPX-P-AB-4XM12-4POL



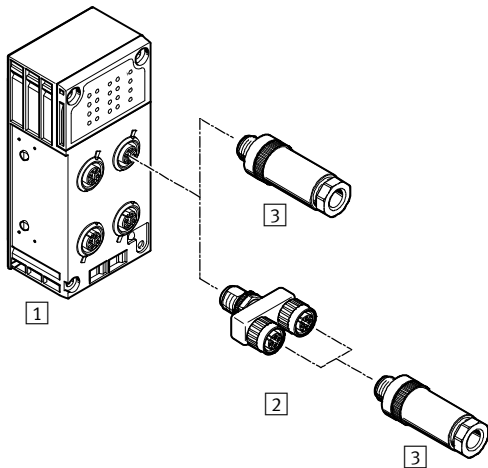
- Suitable for self-assembly and sturdy
- 4 sockets
- 4-pin design per connection

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug/connecting cable	Selectable connection technology
1 CPX-P-AB-4XM12-4POL	Socket, M12, 4-pin	2 SEA-GS-HAR-4POL	Insulation displacement connector
		2 SEA-4GS-7-2,5	Screw terminal
		2 SEA-GS-7	Screw terminal
		2 SEA-GS-9	Screw terminal

Electrical connection – Connection block with M12, 4-pin connection

CPX-P-AB-4XM12-4POL-8DE-N-IS



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

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug/connecting cable	Selectable connection technology	Plug/connecting cable	Selectable connection technology
1 CPX-P-AB-4XM12-4POL-8DE-N-IS	Socket, M12, 4-pin	3 NECU-M-S-A12G4-IS	Plug, M12, 4-pin	–	–
		3 NECU-S-M12G4-...-IS	Plug, M12, 4-pin	–	–
		2 NEDU-M12D4-M12T4-IS (T adapter)	1x plug M12, 4-pin to 2x socket M12, 4-pin	3 NECU-S-M12G4-...-IS	Plug, M12, 4-pin

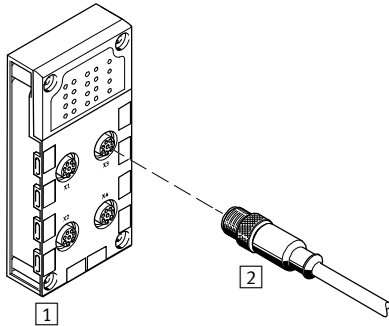
Terminal CPX-P

Key features – Electrical components

FESTO

Electrical connection – Connection block with M12, 8-pin connection

CPX-AB-4-M12-8POL



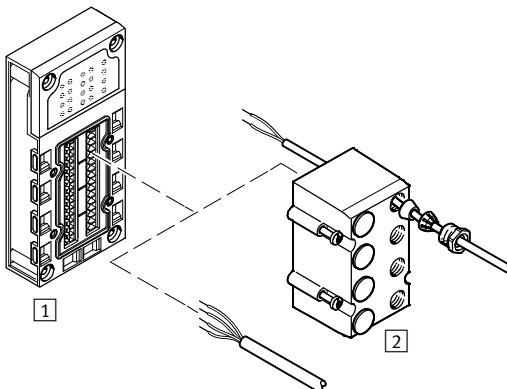
- Connection to cylinder/valve combinations with max. 3 inputs and 2 outputs
- 4 sockets
- 8-pin design per socket

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug/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

Electrical connection – Connection block with spring-loaded terminal connection

CPX-AB-8-KL-4POL



- 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 mm²
- Optional cover with fittings for IP65/67 connection
 - 8 through-holes M9
 - 1 through-hole M16
 - Blanking plugs
 - For I/O distributors, control desks or individual sensors/actuators

Combination of connection block and electrical connection technology

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

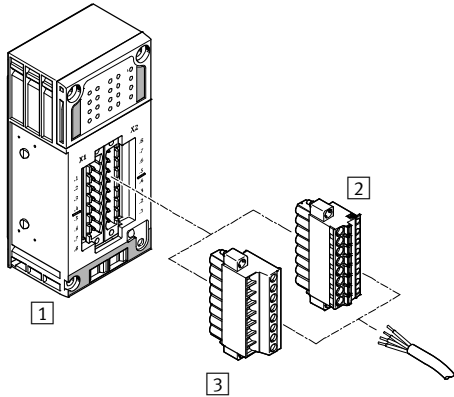
Terminal CPX-P

Key features – Electrical components

FESTO

Electrical connection – Connection block with clamping connector

CPX-P-AB-2XKL-8POL and CPX-P-AB-2XKL-8POL-8DE-N-IS



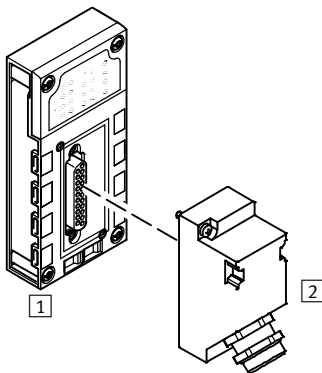
- Quick connection technology for use in control cabinets
- Spring-loaded terminals or screw terminals
- Wire cross sections 0.2 ... 2.5 mm²

Combination of connection block and electrical connection technology

Connection block	Connection technology	Plug/connecting cable	Selectable connection technology
1 CPX-P-AB-2XKL-8POL	Plug, 8-pin	2 NECU-L3G8-C1	Spring-loaded terminals
		3 NECU-L3G8-C2	Screw terminals
1 CPX-P-AB-2XKL-8POL-8DE-N-IS	Plug, 8-pin	2 NECU-L3G8-C1-IS	Spring-loaded terminals
		3 NECU-L3G8-C2-IS	Screw terminals

Electrical connection – Connection block with Sub-D connection

CPX-AB-1-SUB-BU-25POL



- Multi-pin connection for I/O distributor or control console
- One socket, Sub-D
- 25-pin design

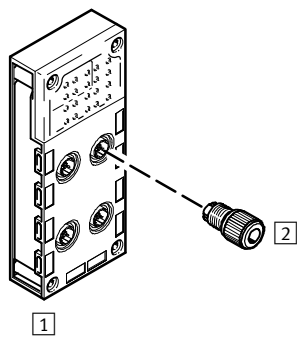
Combination of connection block and electrical connection technology

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

Terminal CPX-P

Key features – Electrical components

Electrical connection – Connection block with quick connector
CPX-AB-4-HAR-4POL



- 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/connecting cable	Selectable connection technology
[1] CPX-AB-4-HAR-4POL	Socket, quick connector, 4-pin	[2] SEA-GS-HAR-4POL	Insulation displacement connectors

Terminal CPX-P

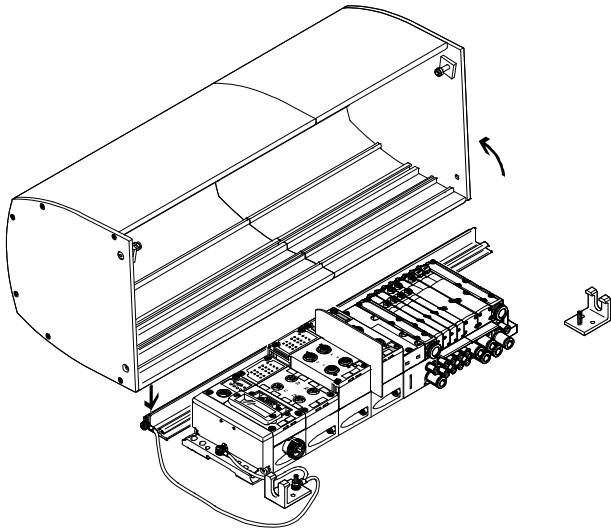
Key features – Assembly

FESTO

Hood

Description

➔ 175



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 is well protected and is quick to install without the need for complex cabinet through-feed for 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 (detent 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 modules underneath in combination with a suitable mounting plate provided by the user
- Protection against electrostatic discharge by using electrically conductive materials and the option of connecting an earth wire
- Protection against disconnection of live plugs (by securing the hood with at least one special lock to EN 600079-0, 9.2 and 20)
- UV protection for the underlying CPX-P and MPA modules

Points to note when using the CPX hood

- CPX-P power supply via angled plugs, no T-plugs
- Electrical supply plate/additional supply only possible with angled plug
- No MPA vertical stacking
- Use of larger push-in 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 range 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-P terminal.

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

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

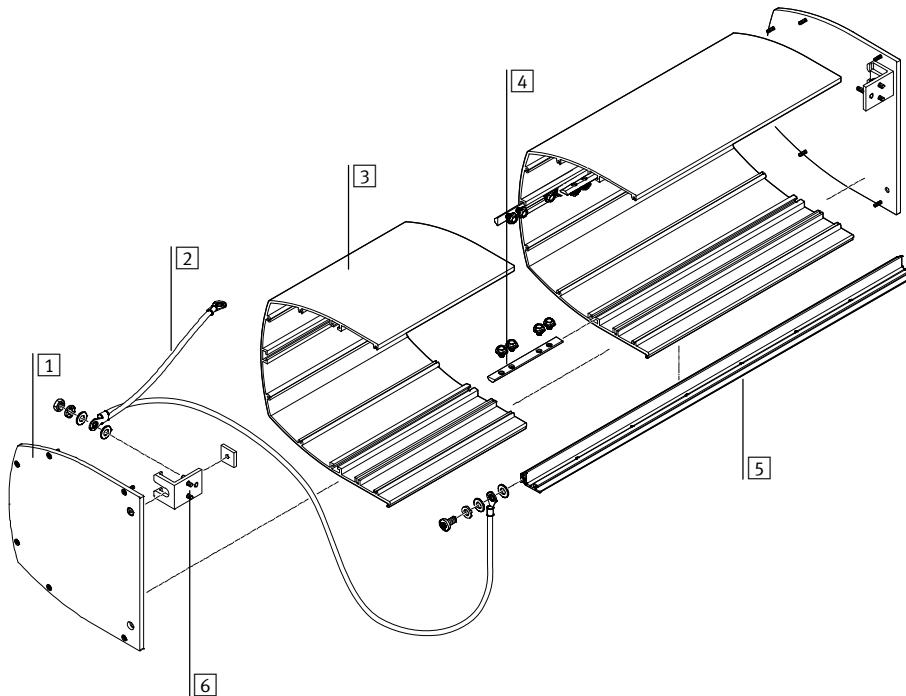
Terminal CPX-P

Characteristics – Assembly

FESTO

Hood

Assembly



Procedure:

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

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

Technical data

Weight:

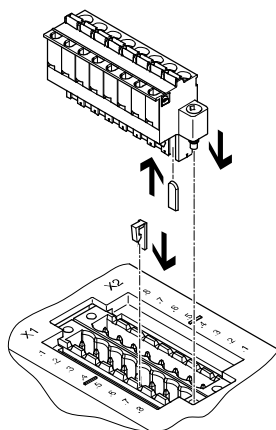
- Hood: approx. 500 g per 100 mm of length

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

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

- RoHS-compliant

Plug coding



The connection blocks CPX-P-AB-2XKL-8POL and CPX-P-AB-2XKL-8POL-8DE-N-IS and the sockets NECU-L3G8 can be matched with one another using the coding elements CPX-P-KDS-AB-2XKL.

This reduces the possibility of the socket being plugged back into an incorrect slot after being disconnected from the CPX-P terminal (connection safeguard).

Terminal CPX-P

Characteristics – Assembly

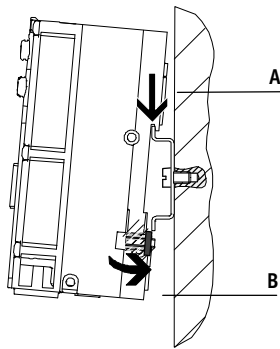
FESTO

Mounting options

Valve terminals with CPX-P terminal support different mounting options for direct machine mounting with a

high degree of protection and for control cabinet installation.

H-rail mounting



The H-rail mounting is part of the rear profile of the CPX-P interlinking blocks. The CPX-P terminal can be attached to the H-rail using the H-rail mounting kit.

The CPX-P terminal is mounted on the H-rail (see arrow A) and

then swivelled onto the H-rail and secured in place with the clamping element (see arrow B).

The optional earthing plate enables a connection to be established to the machine potential/earth in one easy step.

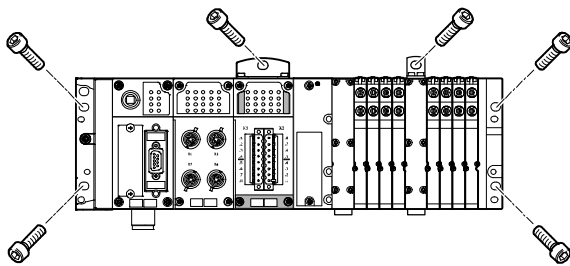
The following mounting kit is needed for H-rail mounting:

- CPX-CPA-BG-NRH

This facilitates mounting of the CPX-P terminal on H-rails to EN 60715.

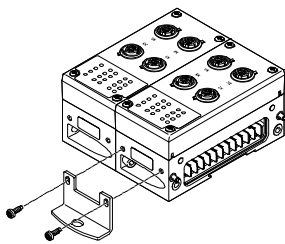
An additional mounting kit may be required for combination with valve terminals.

Wall mounting



The end plates of the CPX-P terminal, the valve terminal and the pneumatic interface include mounting holes for wall mounting. Additional mountings for the CPX-P terminal are available for longer valve terminals.

Additional mountings



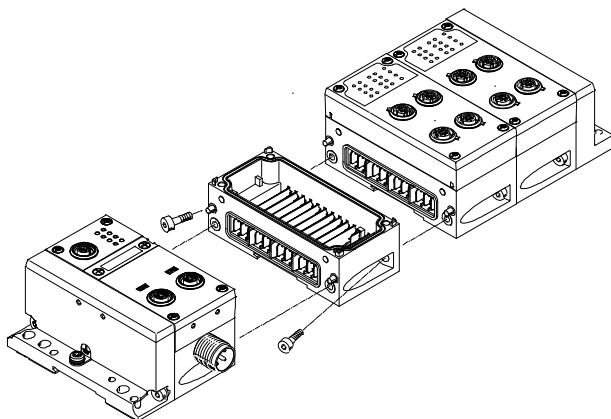
Additional mounting brackets for the CPX-P terminal that can be screwed onto the interlinking blocks are available for longer valve terminals.



Note

For CPX-P terminals with 4 or more interlinking blocks: you will require additional mounting brackets of the type CPX-M-BG-RW approx. every 100 or 150 mm. These are supplied pre-assembled.

Linking with screws



The mechanical connection between the CPX-P modules is created using angled screw connectors.

The CPX-P terminal can thus be expanded at any time.

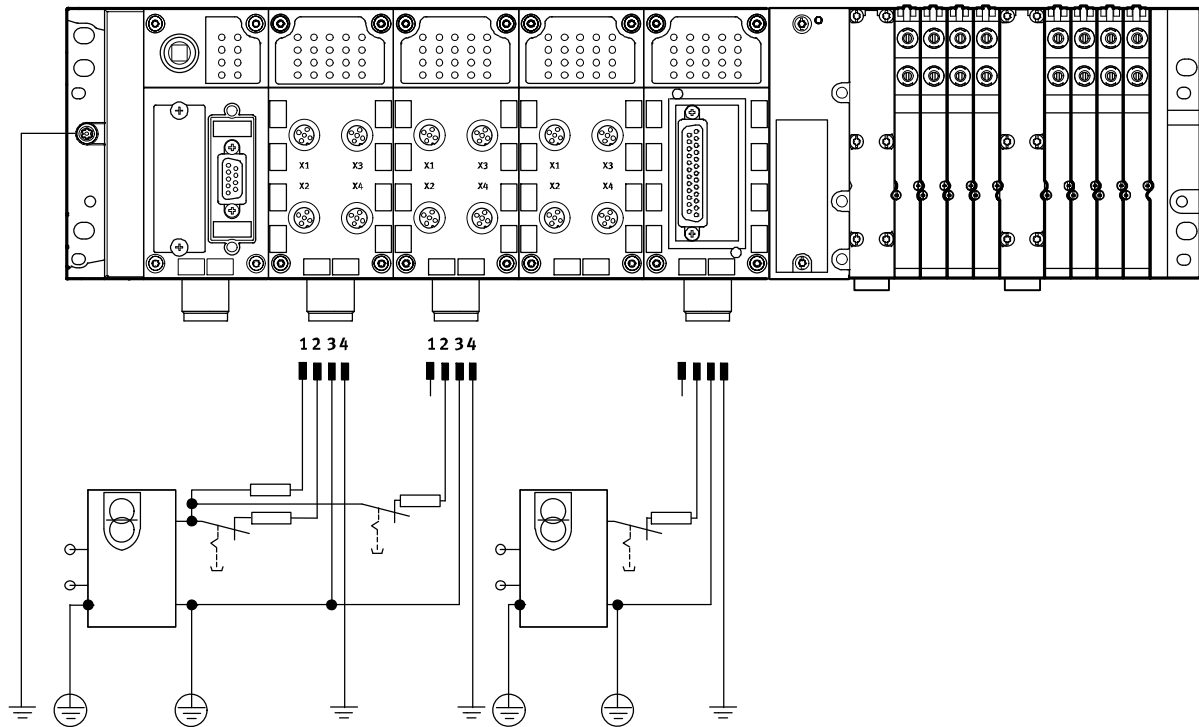
Terminal CPX-P

Key features – Power supply

FESTO

Power supply concept

General



The use of decentralised devices on the fieldbus – particularly with a high degree of protection for direct machine mounting – demands a flexible

power supply concept. A valve terminal with CPX-P can, in principle, be supplied with all voltages via a single connection.

A distinction is made between supply for

- Electronics plus sensors
- Valves plus actuators

Connection technology:

- 7/8"

Interlinking blocks

Interlinking blocks represent the backbone of the CPX-P 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-P terminal to be segmented into voltage zones. This applies in particular to the

separate disconnection of the outputs. The interlinking blocks provide either an easy-to-install central power supply for the entire CPX-P terminal or

galvanically isolated, all-pin disconnectable potential groups/voltage segments.

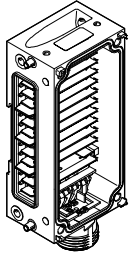
Terminal CPX-P

Key features – Power supply

FESTO

Interlinking blocks

With system supply



- CPX-M-GE-EV-S-7/8-5POL
- CPX-M-GE-EV-S-7/8-5POL-VL

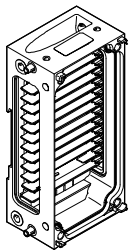
Connection technology

- 7/8" 5-pin

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

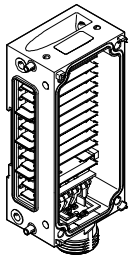
- For actuators that are connected to output modules of the CPX-P terminal

Without power supply



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

With additional supply for outputs



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

Connection technology

- 7/8" 5-pin

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

-  - Note

For 7/8":

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

-  - Note

The valve terminal MPA-S has either a 7/8" 5-pin, 7/8" 4-pin or M18 3-pin power supply for one or more valve voltage zones. Galvanically

isolated, all pins disconnectable with voltage monitoring in the following MPA module.

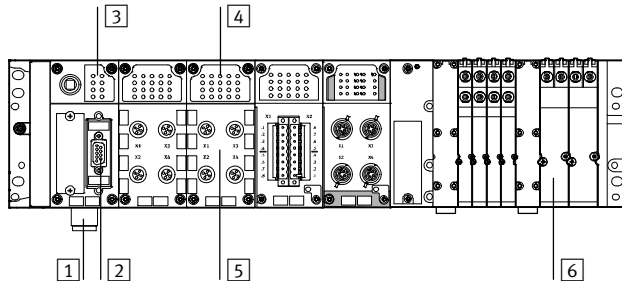
Terminal CPX-P

Key features – Diagnostics

FESTO

Diagnostics

System performance



- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Undervoltage monitoring 2 Diagnostics via bus interface 3 Diagnostic overview LED <ul style="list-style-type: none"> – Fieldbus status – CPX-P status 4 Status and diagnostic LED for module and I/O channels 5 Module and channel-specific | <ul style="list-style-type: none"> diagnostics 6 Valve-specific diagnostic module and solenoid coils 7 MPA pressure sensor – integrated solution on the fieldbus <ul style="list-style-type: none"> – Pre-assembled for channels 1, 3, 5 and external pressures |
|--|--|

Detailed diagnostic functions are needed in order to quickly locate the causes of errors in the electrical installation and therefore reduce downtimes in production plants. A basic distinction is made between on-the-spot diagnostics using LEDs or PC and diagnostics using a bus interface.

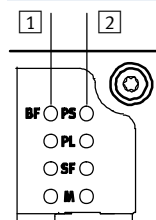
The CPX-P terminal supports on-the-spot diagnostics via a row of LEDs. This is separate from the connection area and therefore provides good visual access to status and diagnostic information.

Module and channel-specific diagnostics are supported, for example

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

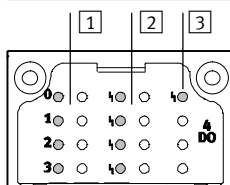
The diagnostic messages can be read out via the bus interface in the higher-order controller and visualised for the central recording and evaluation of error causes. This is done using the individual fieldbus-specific channels. The CPX-CEC also offers the option of access via the integrated Ethernet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

Overview of LEDs on the bus node



- | | |
|--|---|
| <ul style="list-style-type: none"> 1 Fieldbus-specific LEDs <p>On each bus node, a maximum of 4 fieldbus-specific LEDs display the fieldbus communication status of the CPX-P terminal with the higher-order controller.</p> | <ul style="list-style-type: none"> 2 CPX-P-specific LEDs <p>A further 4 CPX-P-specific LEDs provide non-fieldbus-specific information about the status of the CPX-P terminal, for example</p> <ul style="list-style-type: none"> – Power system – Power load – System fault – Modify parameters |
|--|---|

Input/output module status and diagnostic LEDs



- | | | |
|---|--|--|
| <ul style="list-style-type: none"> 1 Status LEDs for the inputs and outputs. <p>Each input and output channel is assigned a status LED.</p> | <ul style="list-style-type: none"> 2 Channel-oriented diagnostic LEDs. <p>Depending on the module design, another diagnostic LED is available for each I/O channel</p> | <ul style="list-style-type: none"> 3 Group diagnostic LEDs. <p>An LED displays the group diagnostics for each module</p> |
|---|--|--|

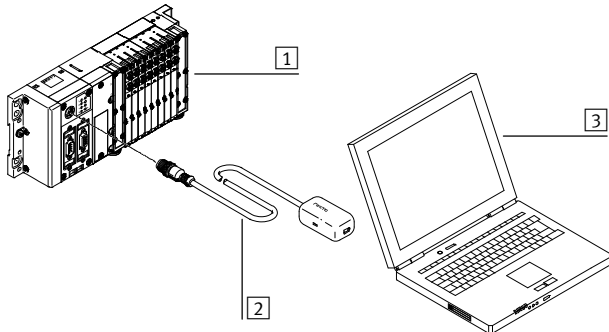
Terminal CPX-P

Key features – Parameterisation

FESTO

Diagnostics

Display on a PC



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

Maintenance Tool (CPX-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-P modules mean that functions can be very easily changed by using configuration software. This reduces

the number of modules needed and, consequently, the amount of storage space required.

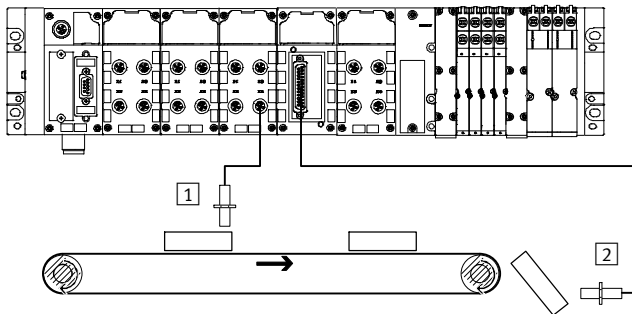
It is therefore possible, for example, to reduce the input debounce time for an input module – normally 3 ms – to

0.1 ms on a "fast" input module for faster processes, or to set the response of a valve following a fieldbus interruption.

Depending on the modules used, parameterisation can be performed

via the following interfaces:

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



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

Terminal CPX-P

Key features – Addressing

Addressing

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

Maximum system configuration:

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

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



Note

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

Overview – Allocated addresses for CPX-P modules

	Inputs [bit]	Outputs [bit]
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-CMIX-M1-1	48	48
CPX-4DE	4	–
CPX-8DE	8	–
CPX-8DE-D	8	–
CPX-8NDE	8	–
CPX-P-8DE-N	16	8
CPX-P-8DE-N	80	16
(inputs configured as counter)		
CPX-P-8DE-N-IS	16	8
CPX-P-8DE-N-IS	80	16
(inputs configured as counter)		
CPX-F8DE-P	48	56
CPX-16DE	16	–
CPX-M-16DE-D	16	–
CPX-4DA	–	4
CPX-8DA	–	8
CPX-8DA-H	–	8
CPX-8DE-8DA	8	8
CPX-2ZE2DA	96	96
CPX-4AE-4AA-H	0, 16, 32, 48, 64, 128, 144, 160, 176, 192 ¹⁾	0, 16, 32, 48, 64 ¹⁾
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

1) Dependent on the DIL switch setting on the module

Terminal CPX-P

Key features – Addressing

FESTO

Overview – Address space for CPX-P bus node and control block							
	Protocol	Max. total		Max. digital		Max. analogue	
		Inputs	Outputs	Inputs	Outputs	Inputs	Outputs
CPX-CEC	• CODESYS Level 2 • TCP/IP • Easy IP • Modbus TCP®	512 bits	512 bits	512 DI	512 DO	32 AI	18 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-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 bits	512 bits	512 DI	512 DO	32 AI	18 AO

-  - Note

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

Terminal CPX-P

Technical data

FESTO

-  - Module width
50 mm



-  - Note

The data given here apply to the CPX-P 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.

Example

Degree of protection IP65 applies only to the fully assembled system with fitted plugs or covers (which must also conform to IP65). 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.

General technical data				
Module no.		562818		
Max. no. of modules ¹⁾	Control block		1	
	Bus node		1	
	I/O modules		9	
	Pneumatic interface		1	
Max. address capacity	Inputs	[bytes]	64	
	Outputs	[bytes]	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-P-specific • PS = Power system • PL = Power load • SF = System fault • M = Modify parameter/forcing active	
	I/O modules		Min. one centralised diagnostic LED Channel-oriented status and diagnostic LED, depending on the module	
	Pneumatic interface		One centralised 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 potential values • Storage of the last 40 errors with timestamp (acyclic access)	

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-P

Technical data

FESTO

General technical data		
Module no.		562818
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
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Power supply	Interlinking block with system supply	
	Electronics plus sensors [A]	8
	Actuators plus valves [A]	8
	Additional supply	
	Actuators [A]	8
Current consumption		Depending on system configuration
Power failure buffering (bus electronics only)	[ms]	10
Power supply connection		7/8" 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
Resistance to interference		EN 61000-6-2 (Industry)
Emitted interference		EN 61000-6-4 (Industry)
Isolation test for galvanically isolated circuits to IEC 1131 Part 2	[V DC]	500
Galvanic isolation of electrical voltages	[V DC]	80
Protection against direct and indirect contact		PELV
Materials		End plates: Die-cast aluminium
Grid dimension	[mm]	50

Operating and environmental conditions		
Module no.		562818
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70

Terminal CPX-P

Technical data

FESTO

Certifications and approvals – Maximum values	
Module no.	562818
ATEX category for gas	II 3G
Type of ignition protection for gas	Ex nA IIC T4 Gc
Explosion-proof ambient temperature [°C]	-5 ≤ Ta ≤ +50
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
	To EU EMC Directive ¹⁾
Degree of protection to EN 60529	IP20, IP65
Certification	c UL us Recognized (OL)
	C-Tick
Explosion protection certification outside the EU	EPL Gc (BR)
Certificate issuing authority	DNV 15.0193 X

- 1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.
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.

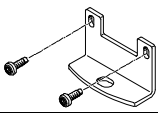
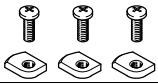
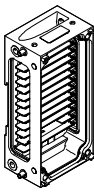
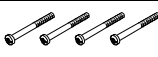
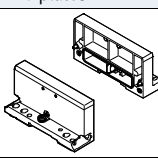
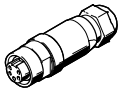
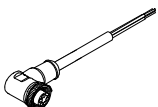
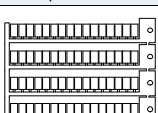
You can select e.g. the individual components required to achieve the ATEX category by choosing the corresponding features in the online product configurator:
→ Internet:cpx-p

Weights [g]						
Control block	CEC...V3	135.0		Connection block	Metal	175.0
Bus node	FB11	120.0		Interlinking block, metal	Without power supply	169.0
	FB13	115.0			System supply, 7/8" 5-pin	187.0
	FB14	115.0		Tie rod	1-way	19.0 ±2.5
	FB33	280.0			2-way	32.5 ±2.5
	FB34	280.0			3-way	46.0 ±2.5
	FB35	280.0			4-way	59.5 ±2.5
	FB36	125.0			5-way	73.0 ±2.5
	FB37	125.0			6-way	86.5 ±2.5
I/O module	CPX	38.0			7-way	100.0 ±2.5
	NAMUR	100.0			8-way	113.5 ±2.5
	HART	77.4			9-way	127.0 ±2.5
CTEL interface	CTEL	110.0			10-way	140.5 ±2.5
Electrical interface	CTEL-2	110.0		End plate for metal design	Left	113.0
Counter module	2ZE2DA	130.0			Right	113.0
Measuring module	CMIX	140.0		Pneumatic interface	MPA-S	238.4

Terminal CPX-P

Accessories

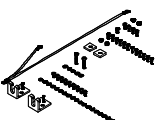
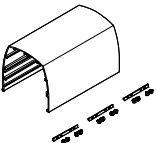
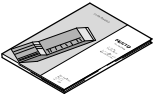
FESTO

Ordering data – Accessories				
Designation			Part no.	Type
Mounting				
	Attachment for wall mounting (for long valve terminals, 2 mounting brackets and 4 screws)		550217	CPX-M-BG-RW-2x
	Mounting for H-rail		526032	CPX-CPA-BG-NRH
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
	With additional 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
Mounting accessories				
	Screws for mounting the bus node/connection block on the interlinking block	Bus node/polymer connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x
End plates				
	End plate	Right	550214	CPX-M-EPR-EV
		Left	550212	CPX-M-EPL-EV
Power supply				
	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", angled, 5-pin – open cable end, 5-pin	2 m	573855	NEBU-G78W5-K-2-N-LE5
Inscription labels				
	Inscription labels 6x10 mm, 64 pieces, in frame		18576	IBS-6x10

Terminal CPX-P

Accessories

FESTO

Ordering data – Accessories				
Designation			Part no.	Type
Hood				
	Mounting rail for attaching the hood	1000 mm	572256	CAFC-X1-S
	Mounting kit for CPX hood		572257	CAFC-X1-BE
	Hood section for CPX-P terminal including mounting attachments for connecting several hood sections in series	200 mm	572258	CAFC-X1-GAL-200
		300 mm	572259	CAFC-X1-GAL-300
User documentation				
	CPX-P 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

Terminal CPX-P

Accessories



User documentation

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

1. Installation
2. Commissioning and parameterisation
3. Diagnostics

Application-oriented explanations are provided for integration of the CPX-P 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.

Device description files and icons are provided to support the integration of the CPX-P terminal in the configuration software of the various controller manufacturers.

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

→ www.festo.com

Overview – User documentation		
Type	Title	Description
Pneumatics		
P.BE-MPA-...	Valve terminals with MPA-S pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the MPA-S pneumatic components.
Electronics		
P.BE-CPX-SYS-...	System description, installation and commissioning	Overview of the design, components and mode of operation of the CPX-P terminal; installation and commissioning instructions as well as basic principles of parameterisation.
P.BE-CPX-FVDA-P2-...	PROFIsafe shut-off module	Connection technology and assembly, installation and commissioning instructions for the PROFIsafe shut-off module of type CPX-FVDA-P2.
P.BE-CPX-EA-...	CPX-P-EA modules, digital	Connection technology and assembly, installation and commissioning instructions for digital input and output modules of type CPX-... as well as the MPA pneumatic interface.
P.BE-CPX-P-EA-...	CPX-P-EA modules, NAMUR sensors	Connection technology and assembly, installation and commissioning instructions for digital input and output modules of type CPX-P-....
P.BE-CPX-F8DE-P-...	Input module CPX-F8DE-P	Connection technology and assembly, installation and commissioning instructions for the PROFIsafe input module of type CPX-F8DE-P.
P.BE-CPX-2ZE2DA-...	I/O module CPX-2ZE2DA	Connection technology and assembly, installation and commissioning instructions for counter modules of type CPX-2ZE2DA.
P.BE-CPX-AX-...	CPX-P-EA modules, analogue	Connection technology and assembly, installation and commissioning instructions for analogue input and output modules of type CPX-... as well as pressure sensors and proportional-pressure regulators.
P.BE-CPX-CTEL...	CPX CTEL interface	Instructions on assembly, installation, commissioning and diagnostics of the CTEL master.
P.BE-CPX-CTEL-LK...	Electrical interface CPX-CTEL-2	Instructions on assembly, installation, commissioning and diagnostics for the electrical interface for IO-Link.
P.BE-CPX-CMIX...	CPX measuring module	Instructions on assembly, installation, commissioning and diagnostics of the measuring module (CMIX).
P.BE-CPX-FB... CPX-FB...	CPX bus node	Instructions on assembly, installation, commissioning and diagnostics of the relevant bus node.
P.BE-CPX-PNIO...	CPX bus node for PROFINET	Instructions on assembly, installation, commissioning and diagnostics of the relevant bus node.
P.BE-CPX-CEC...	CPX CODESYS controller (control block)	Instructions on assembly, installation, commissioning and diagnostics of the relevant control block.

Terminal CPX-P

Technical data – CPX-P-Maintenance Tool

FESTO

Function

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

- Adapter
- Software on CD-ROM



Application

Only from Festo

The CPX-FMT software enables access to CPX valve terminals via Ethernet with the bus nodes EtherNet/IP (FB 36) and PROFINET (FB 33, FB 34, FB 35). The bus nodes or control blocks can be connected directly to a PC via a USB adapter from Festo. Diagnostic data such as the error trace or module

diagnostics can be read out and parameters can be modified in plain text. The data can be used directly on a PC. There is an option, for example, to send screenshots of a configuration or the current error trace directly via 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 the CPX-FMT, only local parameters on the CPX valve terminal can be changed and saved. The configuration of the networks or controller software cannot be influenced.

General technical data		
Type	NEFC-M12G5-0.3-U1G5	
System requirements	PC	IBM-compatible
	Drive	CD-ROM
	Interfaces	USB port (specification USB 1.1 or higher)
	Operating system	Microsoft Windows 2000 or XP
Function 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
Degree of protection to EN 60529	IP20	
CE marking (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	

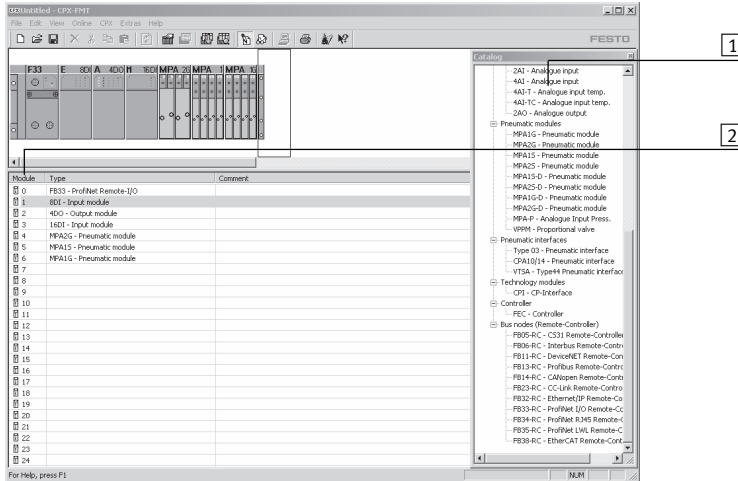
Terminal CPX-P

Technical data – CPX-P Maintenance Tool

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Display components

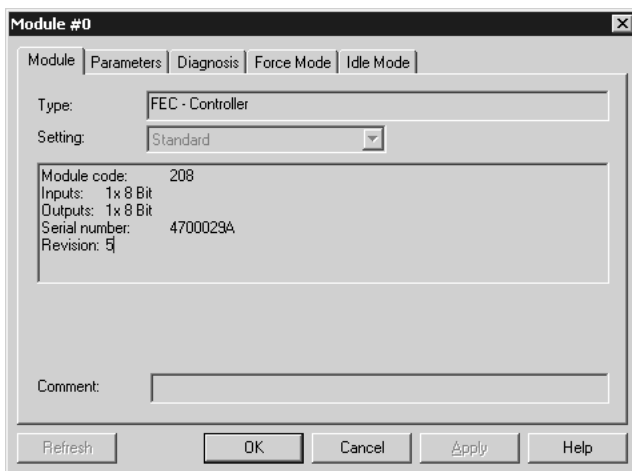
Creating a device configuration using the editor



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

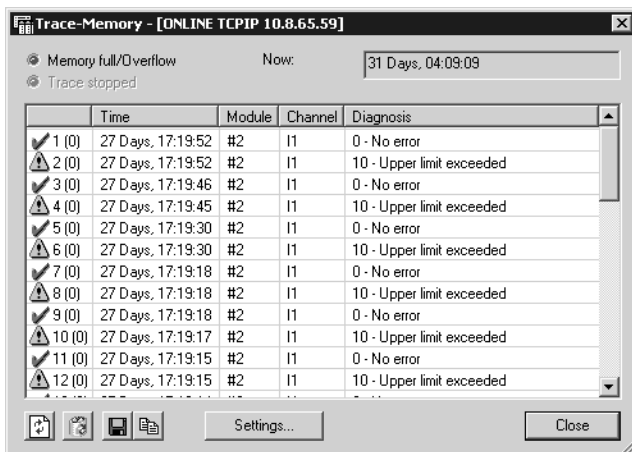
- 1 Module numbers from the graphic system overview
- 2 Catalogue for selecting required modules

Module overview for a selected module



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

Diagnostic memory



Errors which occur during operation are entered into 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.

Terminal CPX-P

Technical data – CPX-P Maintenance Tool



Dimensions

[Download CAD data → www.festo.com](#)

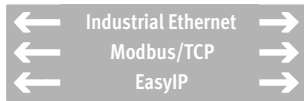
1 Mini B 5P USB connection
2 Plug M12x1, 5-pin

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

Terminal CPX-P

Technical data – Control block CPX-CEC

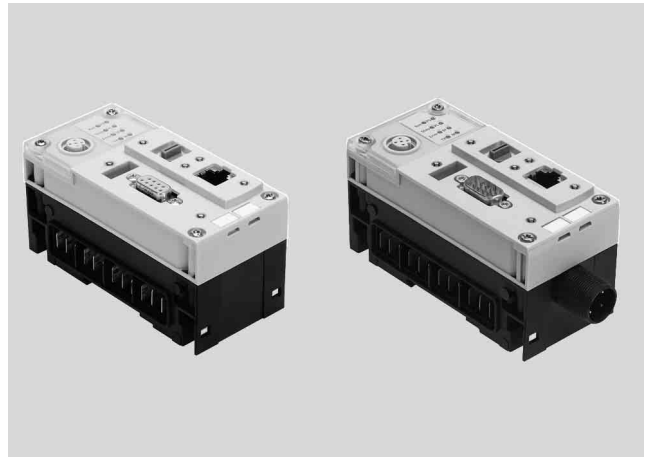
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IT services:



The CODESYS controller is a modern control system for CPX-P 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-P peripherals information, as are switching elements and a diagnostic interface for CPX-FMT.



Application			
Bus connection		Communication protocols	Operating modes
The CPX-CEC is a remote controller that can be connected to a higher-order PLC via the bus nodes of the CPX-P 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.	• Fieldbus via CPX-P bus nodes • Modbus/TCP • EasyIP	• 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-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 preprocessing • Actuation of electric drives as individual axes via CANopen (CPX-CEC-C1/-M1)	• Early warnings and visualisation options • Closed-loop pneumatic applications

Terminal CPX-P

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 (LDR)
			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 modules
LED indicators	Bus-specific	TP: Link/traffic	
	Product-specific	RUN: PLC status	
		STOP: PLC status	
		ERR: PLC runtime error	
		PS: Electronics supply, sensor supply	
		PL: Load supply	
		SF: System fault	
		M: Modify/forcing active	
IP address setting			DHCP
			Via CODESYS
			Via MMI
Function elements	CPX-P diagnostic status, copy CPX-P diagnostic trace, read CPX-P module diagnostics, etc.		
Dimensions (incl. interlinking block) W x L x H [mm]			50 x 107 x 55

Materials	
Housing	PA-reinforced
	PC
Note on materials	RoHS-compliant

Operating and environmental conditions			
Ambient temperature	[°C]	–5 ... +50	
Storage temperature	[°C]	–20 ... +70	
Relative humidity	[%]	95, non-condensing	
Corrosion resistance class CRC ¹⁾		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 of type VTSA	[V DC]	21.6 ... 26.4
	With pneumatics of type MPA	[V DC]	18 ... 30
	Without pneumatic components	[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-P

Technical data – Control block CPX-CEC



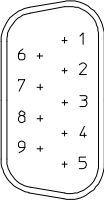
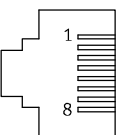
Technical data				
Type		CPX-CEC-C1-V3	CPX-CEC-M1-V3	CPX-CEC-S1-V3
Additional functions		Motion functions for electric drives	SoftMotion functions for electric drives	Diagnostic functions RS232 communication function
CPU data	Flash	[MB]	32	
	RAM	[MB]	256	
	Processor	[MHz]	800	
Control interface		CAN bus	CAN bus	–
Parameterisation		CODESYS V3		
Configuration support		CODESYS V3		
Program memory, user program		[MB]	16	
Flags	CODESYS variable concept			
	Remanent data	[kB]	28	
Control elements		DIL switch for CAN termination		–
		Rotary switch for RUN/STOP		Rotary switch for RUN/STOP
Total number of axes		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		1
	Connection technology	Sub-D plug, 9-pin		Sub-D socket, 9-pin
	Data transmission speed, can be set via software	[kbps]	125, 250, 500, 800, 1000	9.6 ... 230.4
	Supported protocols	CAN bus		RS 232 interface
	Max. cable length	[m]	–	30
	Galvanic isolation	Yes		Yes

Terminal CPX-P

Technical data – Control block CPX-CEC

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



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

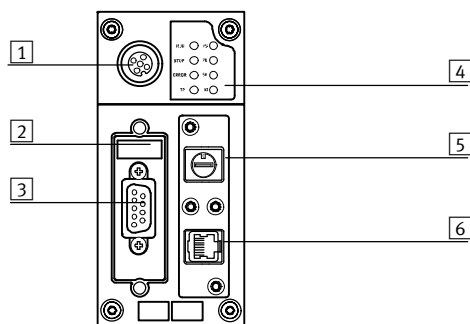
1) If a drive controller with external power supply is connected, CAN ground (optional), pin 6, on the CPX-CEC-C1/-M1 must not be used.

Terminal CPX-P

Technical data – Control block CPX-CEC

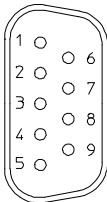
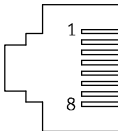
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Connection and display components CPX-CEC-S1



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

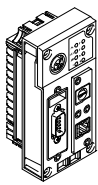
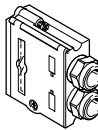
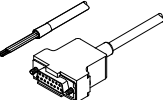
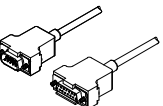
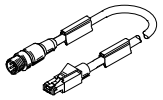
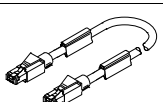
Pin allocation – CPX-CEC-S1

	Pin	Signal	Meaning
RS 232 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
	Shield	Shield	Connection to functional earth
Ethernet interface, RJ45 plug			
	1	TD+	Transmitted data+
	2	TD-	Transmitted data-
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD-	Received data-
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Shield	Shield

Terminal CPX-P

Technical data – Control block CPX-CEC

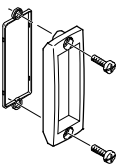
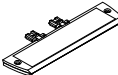
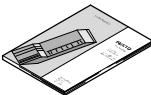
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Ordering data					
Designation				Part no.	Type
Control block					
	Motion functions for electric drives		135 g	3473128	CPX-CEC-C1-V3
	SoftMotion functions for electric drives		135 g	3472765	CPX-CEC-M1-V3
	RS232 communication function		135 g	3472425	CPX-CEC-S1-V3
Fieldbus interface					
	Sub-D plug, 9-pin, for CANopen			532219	FBS-SUB-9-BU-2x5POL-B
	Connecting cable for RS232 interface			539642	FEC-KBG7
	Connecting cable for RS232 interface			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 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		Degree of protection IP 65, IP67		534494 FBS-RJ45-8-GS
	Cover for RJ45 connection		Degree of protection IP 65, IP67		534496 AK-Rj45
	Straight plug, RJ45, 8-pin	Straight plug, M12x1, 4-pin, D-coded	Degree of protection IP20	1 m	8040451 NEBC-D12G4-ES-1-S-R3G4-ET
				3 m	8040452 NEBC-D12G4-ES-3-S-R3G4-ET
				5 m	8040453 NEBC-D12G4-ES-5-S-R3G4-ET
				10 m	8040454 NEBC-D12G4-ES-10-S-R3G4-ET
	Straight plug, RJ45, 8-pin	Straight plug, RJ45, 8-pin	Degree of protection IP20	1 m	8040455 NEBC-R3G4-ES-1-S-R3G4-ET

Terminal CPX-P

Technical data – Control block CPX-CEC

FESTO

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

Terminal CPX-P

Technical data – Bus node for DeviceNet, CPX-FB11

FESTO



Bus node for handling communication between the electrical CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-specific LEDs.

The fieldbus communication status is displayed via the 3 DeviceNet-specific LEDs.



Application

Bus connection

The bus connection can be selected when ordering, either Micro Style as 2xM12 round connectors or Open-Style as a terminal strip with degree of protection IP20.

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

The device diagnostics for all bus nodes CPX-FB11 is effectively gathered via strobed I/O and displayed in the input table of the controller. In addition to cyclic data transmission, acyclic communication is supported through explicit messaging, which enables detailed device diagnostics and parameterisation.

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

An example of this is access to the integrated diagnostic memory function, i.e. storage of the last 40 errors with timestamp, module, channel and error type. With its address capacity of 64 byte inputs and 64 byte outputs, the CPX-FB11 supports any configuration of I/O modules, including pneumatic interface.

Points to note in connection with CPX-CEC

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

In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX-P bus node takes place

by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX-P

Technical data – Bus node for DeviceNet, CPX-FB11

General technical data				
Type				CPX-FB11
Fieldbus interface				Either • Micro Style bus connection: 2xM12 with degree of protection IP65/IP67 • 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/cyclic, strobed I/O and explicit messaging
Configuration support				EDS file and bitmaps
Max. address capacity	Inputs	[bytes]	64	
	Outputs	[bytes]	64	
LED displays (bus-specific)				MS = Module status NS = Network status IO = I/O status
Device-specific diagnostics				Module and channel-oriented diagnostics via 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 process image for inputs • 2 byte inputs and 2 byte outputs, system diagnostics in process image
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
Degree of protection 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]	120

 Note

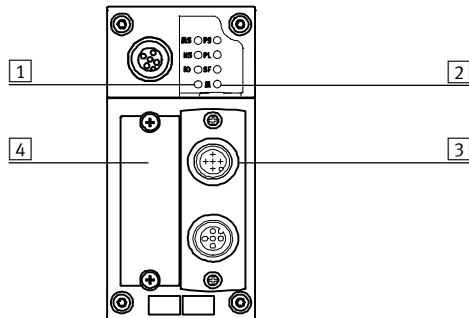
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX-P

Technical data – Bus node for DeviceNet, CPX-FB11

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Connection and display components



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

Pin allocation for the DeviceNet interface

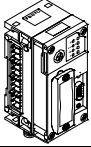
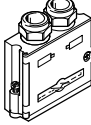
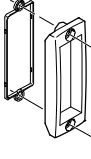
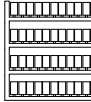
Pin allocation	Pin	Signal-specific wire colour ¹⁾	Signal	Designation
Sub-D plug				
	1	–	n.c.	Not connected
	2	Blue	CAN_L	Received/transmitted data low
	3	Black	0 V bus	0 V CAN interface
	4	–	n.c.	Not connected
	5	Blank	Shield	Connection to housing
	6	–	n.c.	Not connected
	7	White	CAN_H	Received/transmitted data high
	8	–	n.c.	Not connected
	9	Red	24 V DC bus	24 V DC supply CAN interface
Micro Style bus connection (M12), incoming/outgoing				
Incoming 	1	Blank	Shield	Connection to housing
	2	Red	24 V DC bus	24 V DC supply CAN interface
	3	Black	0 V bus	0 V CAN interface
	4	White	CAN_H	Received/transmitted data high
	5	Blue	CAN_L	Received/transmitted data low
Outgoing 	1	Blank	Shield	Connection to housing
	2	Red	24 V DC bus	24 V DC supply CAN interface
	3	Black	0 V bus	0 V CAN interface
	4	White	CAN_H	Received/transmitted data high
	5	Blue	CAN_L	Received/transmitted data low
Open Style bus connection				
	1	Black	0 V bus	0 V CAN interface
	2	Blue	CAN_L	Received/transmitted data low
	3	Blank	Shield	Connection to housing
	4	White	CAN_H	Received/transmitted data high
	5	Red	24 V DC bus	24 V DC supply CAN interface
7/8" bus connection				
	1	Black	Shield	Connection to housing
	2	Blue	24 V DC	24 V DC supply 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 cables

Terminal CPX-P

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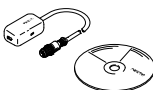
Technical data – Bus node for DeviceNet, CPX-FB11

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, 9-pin Sub-D socket, 5-pin 7/8" plug	571052	CPX-AB-1-7/8-DN
	Micro Style bus connection, 2xM12	525632	FBA-2-M12-5POL
	Socket for Micro Style 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
Covers			
	Cover cap for sealing unused M12 connections (10 pieces)	165592	ISK-M12
	Inspection cover, transparent, for Sub-D connection	533334	AK-SUB-9/15-B
Inscription label			
	Inscription label holder for connection block	536593	CPX-ST-1
	Inscription labels 6x10 mm, 64 pieces, in frame	18576	IBS-6x10

Terminal CPX-P

Technical data – Bus node for DeviceNet, CPX-FB11



Ordering data				
Designation			Part no.	Type
User documentation				
	User documentation 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
Software				
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-0.3-U1G5

Terminal CPX-P

Technical data – Bus node for PROFIBUS-DP, CPX-FB13

FESTO



Bus node for handling communication between the electrical CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-specific LEDs.

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



Application

Bus connection

The bus connection is established via a 9-pin Sub-D socket with a typical PROFIBUS allocation (to EN 50170).

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

An active bus terminal can be connected using the DIL switch integrated in the plug.

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

PROFIBUS-DP implementation

The CPX-FB13 supports the PROFIBUS-DP protocol to EN 50170 Volume 2 for cyclic I/O exchange, parameterisation and diagnostic functions (DPV0).

In addition to DPV0, acyclic communication to the enhanced specification DPV1 is supported. DPV1 provides acyclic access to advanced system information and assigns operating 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.

Points to note in connection with CPX-CEC

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

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

Communication between the control block and CPX-P bus node takes place

by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system:

- 8 byte outputs
- 8 byte inputs

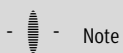
The remaining address capacity of the control block or CPX-P system for actuating the peripherals is:

- 56 byte inputs
- 56 byte outputs

Terminal CPX-P

Technical data – Bus node for PROFIBUS-DP, CPX-FB13

General technical data				
Type			CPX-FB13	
Fieldbus interface			Sub-D socket, 9-pin (EN 50170) Galvanically isolated 5 V	
Baud rate			[Mbps]	0.0096 ... 12
Addressing range			1 ... 125 Set using DIL switch	
Product range			4: Valves	
Ident. number			0x059E	
Communication types			DPV0: Cyclic communication DPV1: Acyclic communication	
Configuration support			GSD file and bitmaps	
Max. address capacity	Inputs	[bytes]	64	
	Outputs	[bytes]	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) - Acyclic parameterisation via DPV1	
Additional functions			- Storage of the last 40 errors with timestamp (access via DPV1) 8-bit system status in process image for inputs 2 byte inputs and 2 byte outputs, system diagnostics in process image	
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
Degree of protection to EN 60529			IP65, IP67	
Temperature range	Operation	[°C]	–5 ... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials			PA reinforced, PC	
RoHS status			RoHS-compliant according to EU directive	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 50
Product weight			[g]	115



Note

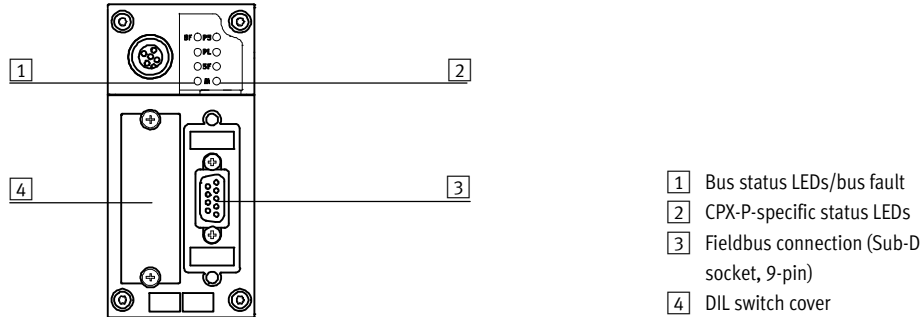
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX-P

Technical data – Bus node for PROFIBUS-DP, CPX-FB13

FESTO

Connection and display components

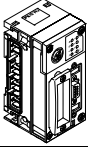
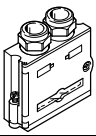
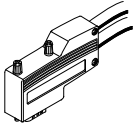
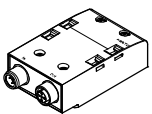
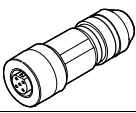
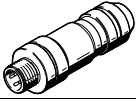
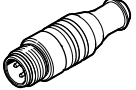
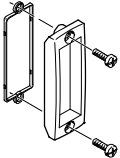
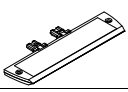
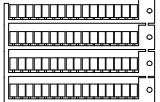


Pin allocation for PROFIBUS-DP interface			
Pin allocation	Pin	Signal	Designation
Sub-D socket			
	1	n.c.	Not connected
	2	n.c.	Not connected
	3	RxD/TxD-P	Received/transmitted data P
	4	CNTR-P ¹	Repeater control signal
	5	DGND	Data reference potential (M5V)
	6	VP	Supply voltage (P5V)
	7	n.c.	Not connected
	8	RxD/TxD-N	Received/transmitted data N
	9	n.c.	Not connected
	Hous- ing	Shield	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	Shield	Connection to FE
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	Shield	Connection to FE

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

Terminal CPX-P

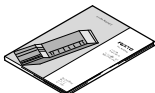
Technical data – Bus node for PROFIBUS-DP, CPX-FB13

Ordering data			
Designation		Part no.	Type
Bus node			
	PROFIBUS bus node	195740	CPX-FB13
Bus connection			
	Sub-D plug, straight	532216	FBS-SUB-9-GS-DP-B
	Sub-D plug, angled	533780	FBS-SUB-9-WS-PB-K
	Bus connection, adapter from 9-pin Sub-D plug to 5-pin M12 plug/socket, B-coded	533118	FBA-2-M12-5POL-RK
	Connection block, adapter from 9-pin Sub-D plug to 5-pin M12 plug/socket, B-coded	541519	CPX-AB-2-M12-RK-DP
	Socket M12x1, 5-pin, straight, for self-assembly of a connecting cable compatible with FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP	1067905	NECU-M-B12G5-C2-PB
	Plug M12x1, 5-pin, straight, for self-assembly of a connecting cable compatible with FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP	1066354	NECU-M-S-B12G5-C2-PB
	Terminating resistor, M12, B-coded for PROFIBUS	1072128	CACR-S-B12G5-220-PB
Covers			
	Cover cap for sealing unused M12 connections (10 pieces)	165592	ISK-M12
	Inspection cover, transparent, for Sub-D connection	533334	AK-SUB-9/15-B
Inscription label			
	Inscription label holder for connection block	536593	CPX-ST-1
	Inscription labels 6x10 mm, 64 pieces, in frame	18576	IBS-6x10

Terminal CPX-P



Technical data – Bus node for PROFIBUS-DP, CPX-FB13

Ordering data				
Designation			Part no.	Type
User documentation				
	User documentation 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
Software				
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-0.3-U1G5

Terminal CPX-P

Technical data – Bus node for CANopen, CPX-FB14

FESTO

CANopen

Bus node for handling communication between the electrical CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-specific LEDs.

The different CANopen statuses and the fieldbus communication status are displayed via 3 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 from Festo or degree of protection IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

There are 4 contacts available for the 4 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 Predefined Connection Set. There are 4 PDOs available for fast I/O data exchange.

Enhanced system information can also be accessed using 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.

Points to note in connection with CPX-CEC

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

In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX-P bus node takes place

by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX-P

Technical data – Bus node for CANopen, CPX-FB14

General technical data				
Type				CPX-FB14
Fieldbus interface				Sub-D plug, 9-pin (to DS 102) Bus interface galvanically isolated via optocoupler 24 V supply for CAN interface via bus
Baud rate		[kbps]	125, 250, 500 and 1000 can be set via DIL switch	
Addressing range				Node ID 1 ... 127 Set using DIL switch
Product family				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	[bytes]	16 digital, 16 analogue channels	
	Outputs	[bytes]	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
Degree of protection 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 electric modules.

Terminal CPX-P

Technical data – Bus node for CANopen, CPX-FB14

Connection and display components



Pin allocation of the CANopen interface

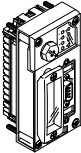
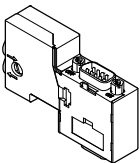
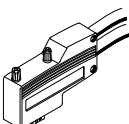
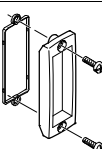
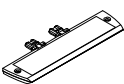
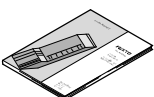
Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	Received/transmitted data low
	3	CAN_GND	0 V CAN interface
	4	n.c.	Not connected
	5	CAN_Shld	Optional shielded connection
	6	GND	Ground ¹⁾
	7	CAN_H	Received/transmitted data high
	8	n.c.	Not connected
	9	CAN_V+	24 V DC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

1) Connected internally via pin 3

Terminal CPX-P

FESTO

Technical data – Bus node for CANopen, 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 socket		532219	FBS-SUB-9-BU-2x5POL-B
	Sub-D socket, angled		533783	FBS-SUB-9-WS-CO-K
	Connection block, 9-pin Sub-D socket, 5-pin 7/8" plug		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
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-Q3-U1G5
User documentation				
	User documentation 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-P

Technical data – Bus node for PROFINET, CPX-FB33

FESTO



Bus node for operating the CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-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 • Baud rate 100 Mbps
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PROFINET implementation

The CPX-FB33 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 transfer both data types (real-time and non-real-time) in parallel.	The bus node features LEDs for bus status and CPX-P 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-P valve terminal. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX-P can be read out and, depending on the function, changed via the diagnostic interface.
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Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX-P control block.	In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX-P bus node takes place	by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system: • 8 byte outputs • 8 byte inputs	The remaining address capacity of the control block or CPX-P system for actuating the peripherals is: • 56 byte inputs • 56 byte outputs
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Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-FB33

FESTO

General technical data				
Type			CPX-FB33	
Fieldbus interface			2x M12 socket, 4-pin, D-coded	
Baud rate			[Mbps]	100
Protocol			PROFINET RT	
			PROFINET IRT	
Max. address capacity	Inputs	[bytes]	64	
	Outputs	[bytes]	64	
LED indicators	(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 start-up (FSU) • Channel-oriented diagnostics via fieldbus • Acyclic data access via fieldbus • System status can be displayed using process data • Additional diagnostic interface for operator units • Acyclic data access via EtherCAT	
Control elements			• DIL switches • Optional memory card	
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	18 ... 30	
Current consumption			[mA]	Typically 120
Degree of protection to EN 60529			IP65, IP67	
Temperature range	Operation	[°C]	– 5... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials			Housing	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 50
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

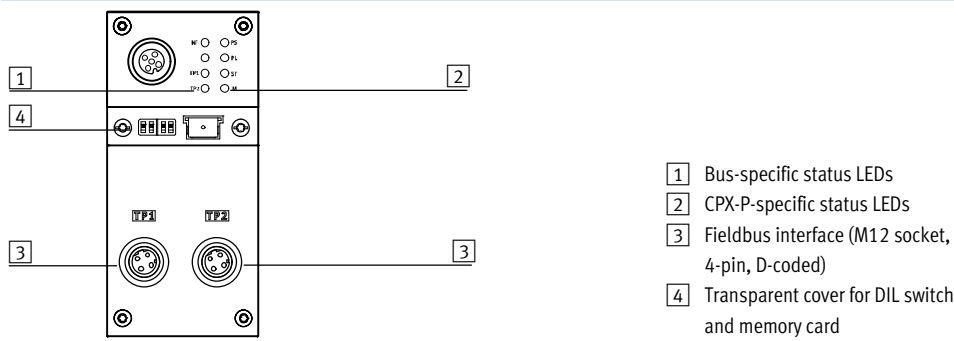
- Screws with metric thread for metal interlinking blocks

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-FB33



Connection and display components

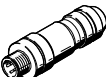
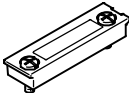
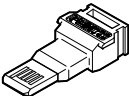
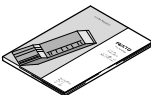


Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing		Shield

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-FB33

FESTO

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
Covers				
	Cover cap for sealing unused M12 connections (10 pieces)		165592	ISK-M12
	Transparent cover for DIL switch and memory card		548757	CPX-AK-P
Function element				
	Memory card for PROFINET bus node, 2MB		4798288	CPX-SK-3
Screws				
	Screws for attaching an inscription label holder to the bus node (12 pieces)		550222	CPX-M-M2,5X8-12X
User documentation				
	Electronics manual, CPX-P 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
Software				
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-0.3-U1G5

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-M-FB34

FESTO



Bus node for operating the CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-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 Mbps

PROFINET implementation

The CPX-M-FB34 supports the PROFINET protocol based on the Ethernet standard and TCP/IP technology to IEEE802.3.

This guarantees 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-P 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 and parameter data of the CPX-P terminal. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX-P can be read out and, depending on the function, changed via the diagnostic interface.

Points to note in connection with CPX-CEC

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

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

Communication between the control block and CPX-P bus node takes place

by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system:

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

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

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

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-M-FB34

FESTO

General technical data				
Type			CPX-M-FB34	
Fieldbus interface			2x RJ45 push-pull socket, AIDA	
Baud rate		[Mbps]	100	
Protocol			PROFINET RT	
			PROFINET IRT	
Max. address capacity	Inputs	[bytes]	64	
	Outputs	[bytes]	64	
LED indicators	(bus-specific)		M/P = Maintenance/PROFenergy 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 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 120
Degree of protection to EN 60529			IP65, IP67	
Temperature range	Operation	[°C]	– 5... +50	
	Storage/transport	[°C]	–20 ... +70	
Housing material			Die-cast aluminium	
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

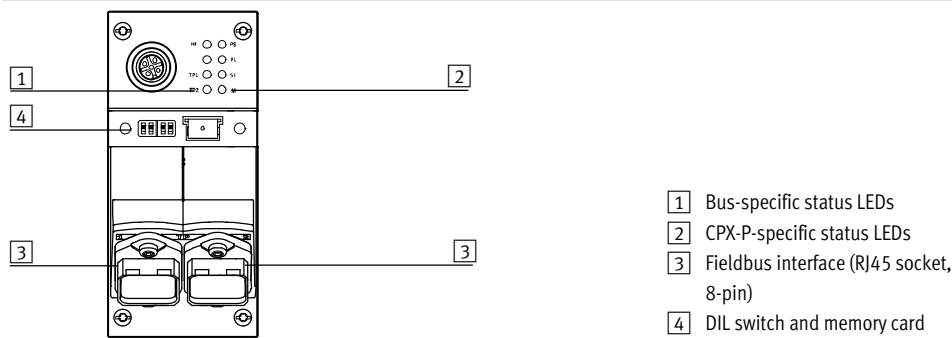
- Screws with metric thread for metal interlinking blocks

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-M-FB34



Connection and display components

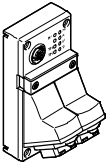
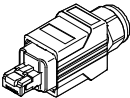
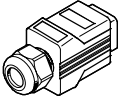
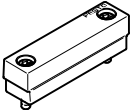
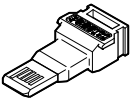
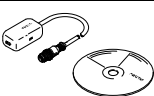
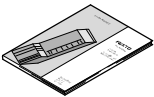


Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
RJ45 socket			
	1	TD+	Transmitted data+
	2	TD-	Transmitted data-
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD-	Received data-
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Shield	Shield

Terminal CPX-P



Technical data – Bus node for PROFINET, 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, 2MB		4798288	CPX-SK-3
	Screws for attaching an inscription label to the bus node (12 pieces)		550222	CPX-M-M2,5X8-12X
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-0.3-U1G5
User documentation				
	Electronics manual, CPX-P 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

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-M-FB35

FESTO



Bus node for operating the CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-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 IP65, IP67 protection.

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 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. 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-P 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 and parameter data of the CPX-P terminal. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX-P can be read out and, depending on the function, changed via the diagnostic interface.

Points to note in connection with CPX-CEC

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

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

Communication between the control block and CPX-P bus node takes place

by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system:

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

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

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

Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-M-FB35



General technical data				
Type		CPX-M-FB35		
Fieldbus interface		2x SCRJ push-pull socket, AIDA		
Baud rate		[Mbps]	100	
Protocol			PROFINET RT	
			PROFINET IRT	
Max. address capacity	Inputs	[bytes]	64	
	Outputs	[bytes]	64	
LED indicators	(bus-specific)		M/P = Maintenance/PROFenergy 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 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	
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:

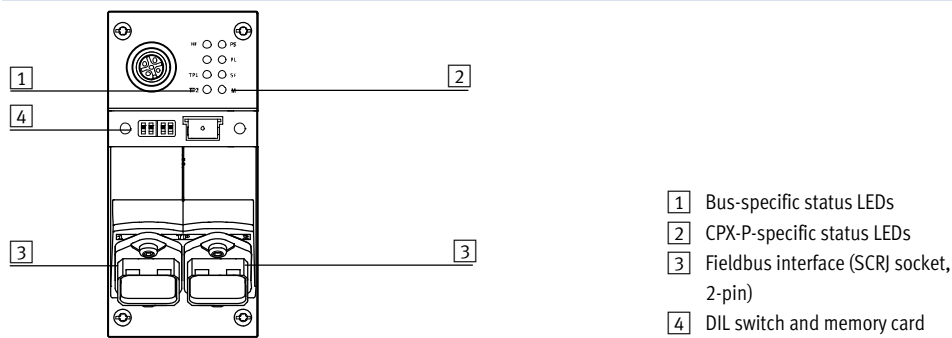
- Self-tapping screws for polymer interlinking blocks
- Screws with metric thread for metal interlinking blocks

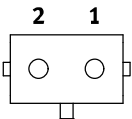
Terminal CPX-P

Technical data – Bus node for PROFINET, CPX-M-FB35



Connection and display components

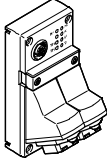
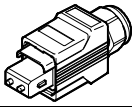
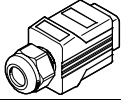
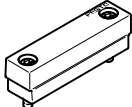
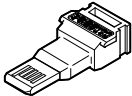
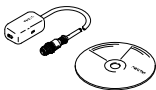


Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
SCRJ socket			
	1	TX	Outgoing
	2	RX	Incoming

Terminal CPX-P



Technical data – Bus node for PROFINET, CPX-M-FB35

Ordering data				
Designation			Part no.	Type
Bus node				
	PROFINET bus node	2x SCRJ push-pull socket, AIDA	548749	CPX-M-FB35
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		4798288	CPX-SK-3
	Screws for attaching an inscription label to the bus node (12 pieces)		550222	CPX-M-M2,5X8-12X
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-Q3-U1G5
User documentation				
	Electronics manual, CPX-P bus node, type CPX-M-FB35	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-P

Technical data – Bus node for EtherNet/IP, CPX-FB36

FESTO



Bus node for handling communication between the electrical CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-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-P terminal are

directly controlled by the EtherNet/IP master (host).

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

enables diagnostic data to be visualised via HTML. Various programs support direct access to the data of the device from the automation network.

The EtherNet/IP node for CPX-P supports the transmission technology that conforms to DIN EN 50173/CAT 5 as an integrated interface.

Points to note in connection with CPX-CEC

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

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

Communication between the control block and CPX-P bus node takes place

by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX-P

Technical data – Bus node for EtherNet/IP, CPX-FB36

General technical data			
Type		CPX-FB36	
Fieldbus interface		2x M12x1 socket, 4-pin, D-coded	
Baud rate	[Mbps]	10/100	
Protocol		EtherNet/IP	
		Modbus TCP	
Max. address capacity, inputs	[bytes]	64	
Max. address capacity, outputs	[bytes]	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 - Undervoltage of modules - 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 displayed 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
Current consumption at nominal voltage		[mA]	Typically 100
Degree of protection to EN 60529		IP65, IP67	
Temperature range	Operation	[°C]	– 5... +50
	Storage/transport	[°C]	–20 ... +70
Materials		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

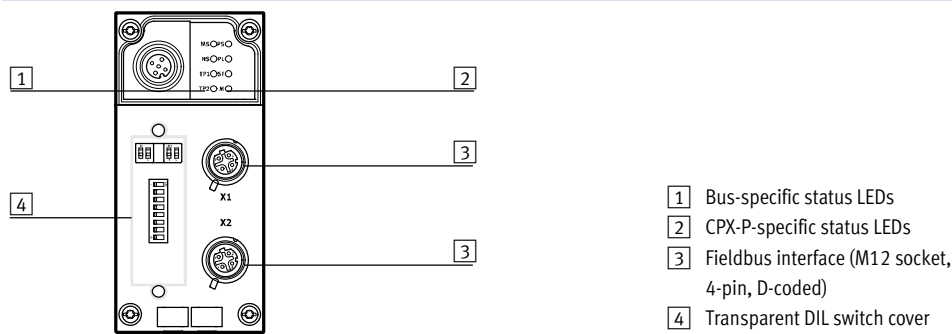
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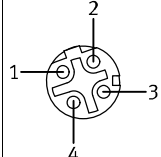
Terminal CPX-P

Technical data – Bus node for EtherNet/IP, CPX-FB36



Connection and display components

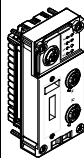
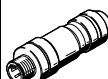
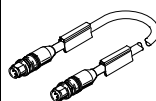
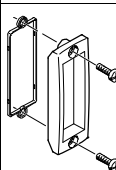
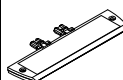
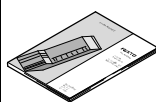


Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing	FE	Shield

Terminal CPX-P

Technical data – Bus node for EtherNet/IP, CPX-FB36

FESTO

Ordering data					
Designation				Part no.	Type
Bus node					
	EtherNet/IP bus node			1912451	CPX-FB36
Bus connection					
	M12x1 plug, 4-pin, D-coded			543109	NECU-M-S-D12G4-C2-ET
	Connecting cable, Straight plug, M12x1, 4-pin, D-coded	Straight plug, M12x1, 4-pin, D-coded	0.5 m	8040446	NEBC-D12G4-ES-0.5-S-D12G4-ET
			1 m	8040447	NEBC-D12G4-ES-1-S-D12G4-ET
			3 m	8040448	NEBC-D12G4-ES-3-S-D12G4-ET
			5 m	8040449	NEBC-D12G4-ES-5-S-D12G4-ET
			10 m	8040450	NEBC-D12G4-ES-10-S-D12G4-ET
		Straight plug, RJ45, 8-pin	1 m	8040451	NEBC-D12G4-ES-1-S-R3G4-ET
			3 m	8040452	NEBC-D12G4-ES-3-S-R3G4-ET
			5 m	8040453	NEBC-D12G4-ES-5-S-R3G4-ET
			10 m	8040454	NEBC-D12G4-ES-10-S-R3G4-ET
		Open end, 4-wire	5 m	8040456	NEBC-LE4-ES-5-D12G4-ET
	Inspection cover, transparent			533334	AK-SUB-9/15-B
	Inscription label holder for connection block			536593	CPX-ST-1
	M12 adapter, 5-pin to mini USB socket, and controller software			547432	NEFC-M12G5-0.3-U1G5
User documentation					
	User documentation for bus node CPX-FB36		German	8024074	CPX-FB36-DE
			English	8024075	CPX-FB36-EN
			Spanish	8024076	CPX-FB36-ES
			French	8024077	CPX-FB36-FR
			Italian	8024078	CPX-FB36-IT
			Chinese	8024079	CPX-FB36-ZH

Terminal CPX-P

Technical data – Bus node for EtherCAT, CPX-FB37

FESTO



Bus node for operating the CPX-P 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-P terminal is displayed as a common message via 4 CPX-P-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 IP65, IP67 protection.	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
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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. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred.	The data bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel. The bus node features LEDs for bus status and CPX-P 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-P can be read out and, depending on the function, changed via the diagnostic interface.	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-P terminal • DC (distributed clocks), time-synchronised data transmission
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Points to note in connection with CPX-CEC

When a bus node is combined with a control block (CPX-CEC, in the fieldbus remote controller operating mode), the connected I/Os and/or valves, sensors and actuators are controlled via the CPX-P control block.	In this case, the bus node only provides the communication interface to the PLC. Communication between the control block and CPX-P bus node takes place	by interlinking the CPX-P modules and takes up the following address capacity in the CPX-P system: • 8/16 byte outputs • 8/16 byte inputs	The remaining address capacity of the control block or CPX-P system for actuating the peripherals is: • 56/48 byte inputs • 56/48 byte outputs
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Terminal CPX-P

Technical data – Bus node for EtherCAT, CPX-FB37

FESTO

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



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-P

Technical data – Bus node for EtherCAT, CPX-FB37

Connection and display components



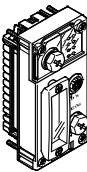
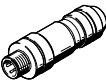
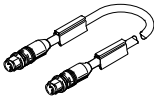
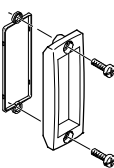
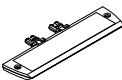
Pin allocation for the fieldbus interface

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	FE	Shield

Terminal CPX-P

Technical data – Bus node for EtherCAT, CPX-FB37

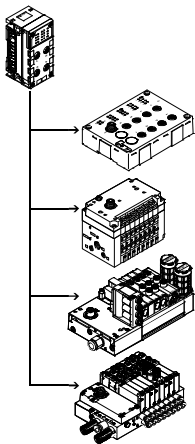
FESTO

Ordering data					
Designation				Part no.	Type
Bus node					
	EtherCAT bus node			2735960	CPX-FB37
Bus connection					
	Plug M12x1, 4-pin, D-coded			543109	NECU-M-S-D12G4-C2-ET
	Connecting cable, straight plug, M12x1, 4-pin, D-coded	Straight plug, M12x1, 4-pin, D-coded	0.5 m	8040446	NEBC-D12G4-ES-0.5-S-D12G4-ET
			1 m	8040447	NEBC-D12G4-ES-1-S-D12G4-ET
			3 m	8040448	NEBC-D12G4-ES-3-S-D12G4-ET
			5 m	8040449	NEBC-D12G4-ES-5-S-D12G4-ET
			10 m	8040450	NEBC-D12G4-ES-10-S-D12G4-ET
		Straight plug, RJ45, 8-pin	1 m	8040451	NEBC-D12G4-ES-1-S-R3G4-ET
			3 m	8040452	NEBC-D12G4-ES-3-S-R3G4-ET
			5 m	8040453	NEBC-D12G4-ES-5-S-R3G4-ET
			10 m	8040454	NEBC-D12G4-ES-10-S-R3G4-ET
		Open end, 4-wire	5 m	8040456	NEBC-LE4-ES-5-D12G4-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
	M12 adapter, 5-pin to mini USB socket, and controller software			547432	NEFC-M12G5-0.3-U1G5
User documentation					
	Electronics manual, CPX-P 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-P

Technical data – I-Port interface, CPX-CTEL

FESTO



The electrical interface CPX-P CTEL master establishes the connection to modules of the CTCL/CTEU series that have an I-Port interface (device). The I/O data from the connected devices are transmitted to the connected CPX-P bus node and thus to the higher-order controller via fieldbus. A maximum of 4 devices can be connected to a CPX-P CTEL master via corresponding M12 interfaces.



Application

I-Port interface

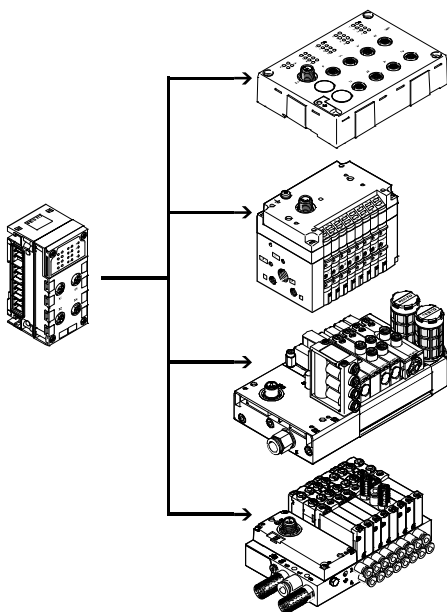
As well as transmitting the communication data, the I-Port interfaces of a CPX-P CTEL master also transmit the

power supply to the connected sensors and the load supply to the valves (or outputs). Both circuits are

supplied separately with 24 V, using a separate reference potential. The connecting cables used must

meet the enhanced requirements resulting from the dual function of signal cable and supply cable.

Configuration example – CPX-P CTEL master with CTCL modules



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

The restrictions compared to IO-Link include:

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

Terminal CPX-P

Technical data – I-Port interface, CPX-CTEL

FESTO

Implementation			
The CPX-P CTEL master from Festo enables modules with an I-Port interface to be connected to a CPX-P system: • Max. 4 devices with individual electronic protection • Max. 64 inputs/64 outputs per I-Port interface • The maximum length of a string is 20 m	The following device variants are available: • Input modules with 16 digital inputs (connection technology M8 3-pin and M12 5-pin) • Valve terminals with I-Port interface (up to 48 solenoid coils, different valve functions)	The decentralised arrangement of the modules and valve terminals with I-Port enables them to be mounted close to the cylinders and actuators or sensors to be controlled. This means that the compressed air supply lines and sensor connecting cables used can be shortened, and it may be possible to use smaller valves, thereby saving costs.	Several CPX-P CTEL masters can be combined in one CPX-P terminal, depending on the address capacity of the bus node. Example: • CPX-FB13 (512 I/O) • A maximum of 2 CPX-P CTEL masters is possible (each with 256 E/A)
Configuration			
Settings	Manual configuration		Automatic configuration
The precise number of the I/O bytes made available depends on the requirements of the connected devices or of the suitable selected operating mode. The operating mode or preset configuration of the CPX-P CTEL master can be specified by the user. DIL switches are used for selecting the operating mode and setting the manual configuration. These DIL switches are not required during continuous operation and are only accessible in the disassembled state.	In the case of manual configuration (tool change mode), the volume of inputs and outputs in the process image of the CPX-P system or of the higher-order fieldbus can be defined manually using the DIL switches.	The process image then always has the same scope, regardless of the connected devices. The I/O length specified always applies to all four I-Ports (max. 8 bytes per I-Port).	In the case of automatic configuration, the I/O length for each I-Port is determined individually and this value is used to select the appropriate or next highest configuration preset.
Power supply for I-Port devices			
The CPX-P CTEL master provides two separate power supplies for the connected devices: • For 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 provided by the power supply for the electronics and sensors of the CPX-P terminal. The power supply for the outputs and valves is provided by the power supply	for the valves of the CPX-P terminal. The interlinking block with additional supply ensures a separate supply voltage for the valves and outputs. This allows the supply voltage to be	disconnected separately. The valves and outputs of the connected I-Port devices can therefore be disconnected separately without disconnecting the devices.

Terminal CPX-P

Technical data – I-Port interface, CPX-CTEL

FESTO

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 socket M12, 5-pin, A-coded
Number of I-Port interfaces			4
Max. cable length			20
Internal cycle time			1 per 8 bits of user data
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, using intermediate supply
LED indicators			X1 ... 4 = status of the I-Port interface 1 ... 4 PS = Electronic supply PL = Load supply - L - = Module error
Diagnostics			• Communication error • Short circuit module • Module-oriented diagnostics • Undervoltage
Parameterisation			• Diagnostic behaviour • Failsafe per channel • Forcing per channel • Idle mode per channel • Module parameters • Tool change mode
Additional functions			Tool change mode
Control elements			DIL switch
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			Typically 65
Max. power supply per channel			4x 1.6
Max. residual current of outputs per channel			4x 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			50
Dimensions (incl. interlinking block) W x L x H			50 x 107 x 55
Product weight			110

Note

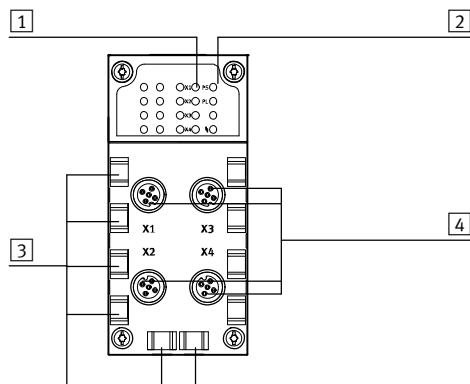
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX-P

Technical data – I-Port interface, CPX-CTEL

FESTO

Connection and display components



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

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

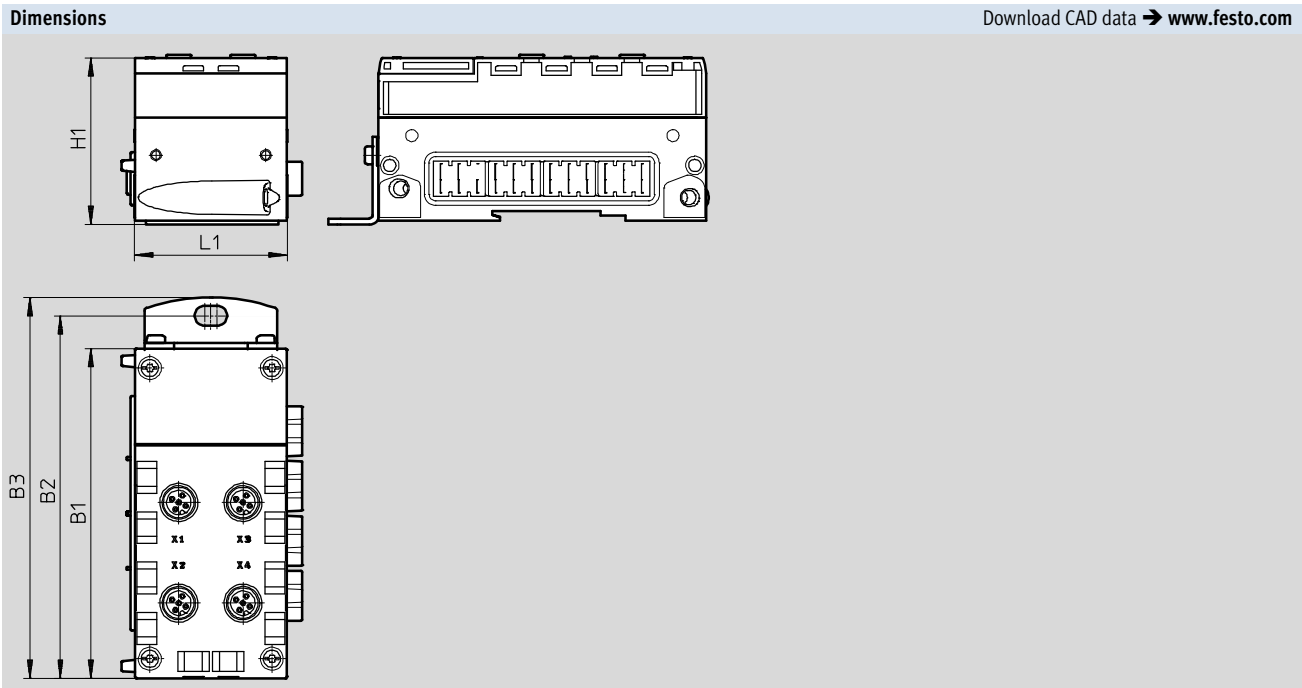
Bus node/control block	Part no.	Interface
		CPX-CTEL-4-M12-5POL
CPX-CEC-C1-V3	3473128	■
CPX-CEC-M1-V3	3472765	■
CPX-CEC-S1-V3	3472425	■
CPX-FB11	526172	■
CPX-FB13	195740	■
CPX-FB14	526174	■
CPX-FB33	548755	■
CPX-M-FB34	548751	■
CPX-M-FB35	548749	■
CPX-FB36	1912451	■
CPX-FB37	2735960	■

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 I-PORT	Communication signal C/Q, data transmission line
	5	0 V _{VALVES}	0 V DC load voltage supply for valves and outputs

Terminal CPX-P

Technical data – I-Port interface, CPX-CTEL

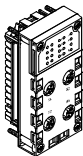
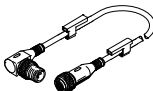
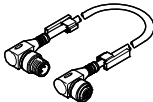
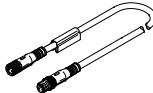
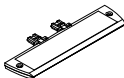
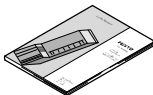


Type	B1	B2	B3	H1	L1
CPX-CTEL-4-M12-5POL	108.1	118.9	124.9	55.1	50

Terminal CPX-P

Technical data – I-Port interface, CPX-CTEL

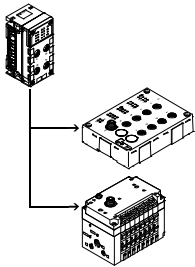
FESTO

Ordering data					
Designation				Part no.	Type
CPX-P 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 characteristic: 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 characteristic: 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 • Straight plug	Cable characteristic: suitable for use with energy chains	5 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
			7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
			10 m	574323	NEBU-M12G5-E-10-Q8N-M12G5
	Inscription label holder for connection block			536593	CPX-ST-1
User documentation					
	User documentation for CPX-P 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	

Terminal CPX-P

Technical data – IO-Link interface, CPX-CTEL-2

FESTO



The electrical interface CPX-CTEL-2... enables the connection of modules with IO-Link interface (IO-Link device) to the CPX-P terminal. The I/O data from the connected devices are transmitted to the connected CPX-P 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 external IO-Link

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

The address space that the module makes available and assigns accordingly in the CPX-P system can be configured according to various presettings. DIL switches are used for selecting the

operating mode and setting the manual configuration. 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 for inputs and 16 bytes for outputs per port

- The driver strength on the C/Q line is limited to 250 mA

- SIO mode is not supported

Power supply for devices

The electrical interface CPX-CTEL-2... provides two separate power supplies for the connected devices:

- For 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 provided by the power supply for the electronics and sensors of the CPX-P terminal. The power supply for the outputs and valves is provided by the power supply

for the valves of the CPX-P terminal. The interlinking block with additional supply ensures a separate supply voltage for the valves and outputs. This allows the supply voltage to be

disconnected separately. The valves and outputs of the connected I-Port devices can therefore be disconnected separately without disconnecting the devices.

Terminal CPX-P

Technical data – IO-Link 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 intermediate supply	
LED indicators			X1 ... 2 = status of the IO-Link interface 1 ... 2 PS = Electronic supply PL = Load supply  = Module error	
Diagnostics			• Communication error • Short circuit module • Module-oriented diagnostics • Undervoltage	
Parameterisation			• Diagnostic behaviour • Failsafe per channel • Forcing per channel • Idle mode per channel • Module parameters	
Additional functions			–	
Control elements			DIL switch	
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]	2x 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

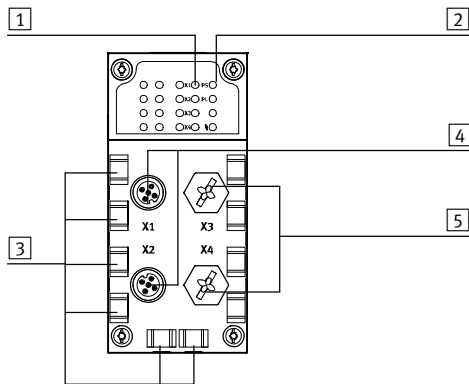
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX-P

Technical data – IO-Link interface, CPX-CTEL-2

FESTO

Connection and display components



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

Combinations of bus nodes/control blocks with interface CPX-CTEL-2

Bus node/control block	Part no.	Interface
		CPX-CTEL-2-M12-5POL-LK
CPX-CEC-C1-V3	3473128	■
CPX-CEC-M1-V3	3472765	■
CPX-CEC-S1-V3	3472425	■
CPX-FB33	548755	■
CPX-M-FB34	548751	■
CPX-M-FB35	548749	■
CPX-FB36	1912451	■

Pin allocation – IO-Link® interface

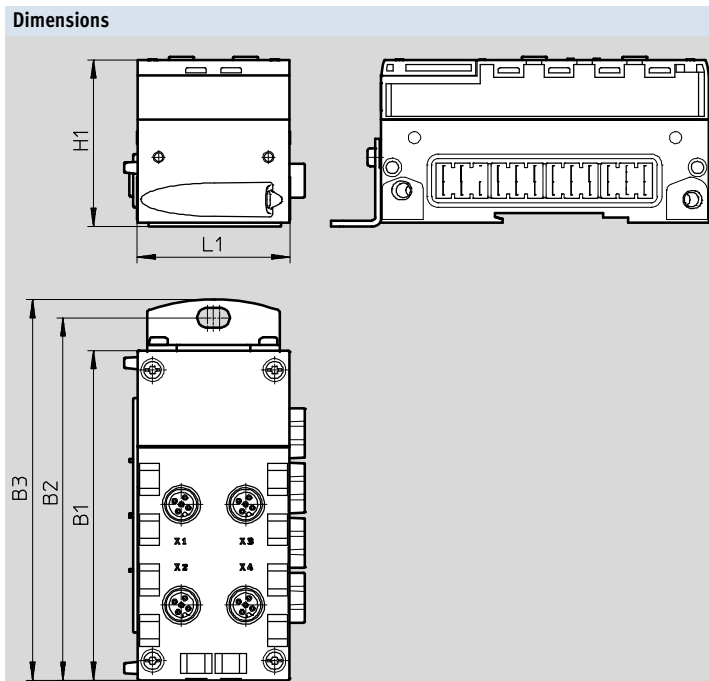
Pin allocation	Pin	Signal	Designation
	1	24 V _{SEN}	24 V DC supply voltage for electronics and inputs
	2	24 V _{VAL}	24 V DC load voltage supply for valves and outputs
	3	0 V _{SEN}	0 V DC supply voltage for electronics and sensors
	4	C/Q I-PORT	Communication signal C/Q, data transmission line
	5	0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

Terminal CPX-P

Technical data – IO-Link interface, CPX-CTEL-2



Dimensions



Technical drawing of the CPX-CTEL-2-M12-5POL-LK terminal block. The drawing includes three views: a front view (top left) showing dimensions H1 (height) and L1 (length); a side view (top right) showing the profile of the block; and a rear view (bottom left) showing the terminal block layout with dimensions B1, B2, and B3. The rear view also shows four terminal blocks labeled X1, X2, X3, and X4.

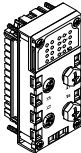
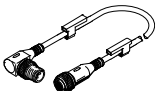
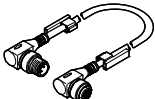
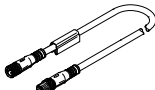
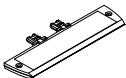
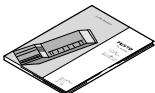
Type	B1	B2	B3	H1	L1
CPX-CTEL-2-M12-5POL-LK	108.1	118.9	124.9	55.1	50

Download CAD data → www.festo.com

Terminal CPX-P

Technical data – IO-Link interface, CPX-CTEL-2

FESTO

Ordering data					
Designation				Part no.	Type
CPX-P 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 characteristic: 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 characteristic: 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 • Straight plug	Cable characteristic: suitable for use with energy chains	5 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
			7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
			10 m	574323	NEBU-M12G5-E-10-Q8N-M12G5
	Inscription label holder for connection block			536593	CPX-ST-1
User documentation					
	User documentation for CPX-P 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

Terminal CPX-P

Technical data – Measuring module, digital

FESTO

The measuring module CPX-CMIX is intended exclusively for use in valve terminals CPX-P.

Movement and measurement in one, as an integral component of the valve terminal CPX-P – the modular peripheral system for decentralised automation tasks.

The modular design means that valves, digital inputs and outputs, positioning modules, end-position controllers and measuring modules, as appropriate to the application, can be combined in almost any way on the terminal CPX-P.

Advantages:

- Pneumatics and electrics – movement and measurement on one platform
- Innovative measurement technology – piston rod drives, rodless drives, rotary drives
- Actuation via fieldbus
- Remote maintenance, remote diagnostics, web server, SMS and e-mail alert are all possible via TCP/IP
- Modules can be quickly exchanged and expanded without altering the wiring



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
Short circuit protection rating				Yes
Power failure buffering			[ms]	10
No. of axis strings				1
Axes per string				1
Length of connecting cable to axis			[m]	≤ 30
Max. no. of modules				9
Indicator				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 indication				Power load
				Error
Control interface				
Data				CAN bus with Festo protocol
				Digital
Electrical connection				5-pin
				M9
				Socket
Materials: housing				PA reinforced
Note on materials				RoHS-compliant
Product weight			[g]	140
Dimensions	Length	[mm]	107	
	Width	[mm]	50	
	Height	[mm]	55	

Terminal CPX-P

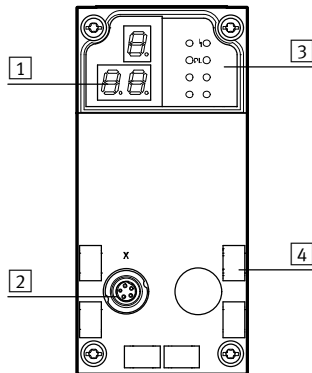
Technical data – Measuring module, digital

FESTO

Operating and environmental conditions

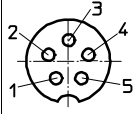
Ambient temperature	[°C]	–5 ... +50
Relative humidity	[%]	5 ... 95, non-condensing
Degree of protection to IEC 60529		IP65

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	Shield	Cable shielding

Permitted bus nodes/CEC

Bus node/CEC	Protocol	Max. no. of CMIX modules
CPX-CEC...	–	9
CPX-FB11	DeviceNet ¹⁾	9
CPX-FB13	PROFIBUS ²⁾	9
CPX-FB14	CANopen	5
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

1) As of revision 20 (R20)

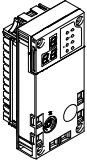
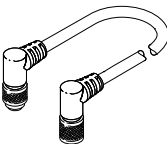
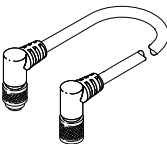
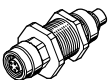
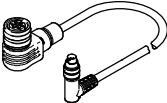
2) As of revision 23 (R23)

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Terminal CPX-P

Technical data – Measuring module, digital

FESTO

Ordering data				
Designation			Part no.	Type
Measuring module				
	Order code in CPX-P configurator: T23		567417	CPX-CMIX-M1-1
Connecting cables				
	Connecting cable M9-M9, 5-pin - Angled socket - Angled plug	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-M9, 5-pin - Straight socket - Straight plug	2 m	540332	KVI-CP-3-GS-GD-2
		5 m	540333	KVI-CP-3-GS-GD-5
		8 m	540334	KVI-CP-3-GS-GD-8
	Connecting component M9-M9, 5-pin, for 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 fastening to the metal interlinking block		550219	CPX-M-M3X22-4X
Inscription labels				
	Inscription labels 6x10, in frames	64 pieces	18576	IBS-6X10
User documentation				
	User documentation for measuring module 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 documentation in paper form is not included in the scope of delivery

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Terminal CPX-P

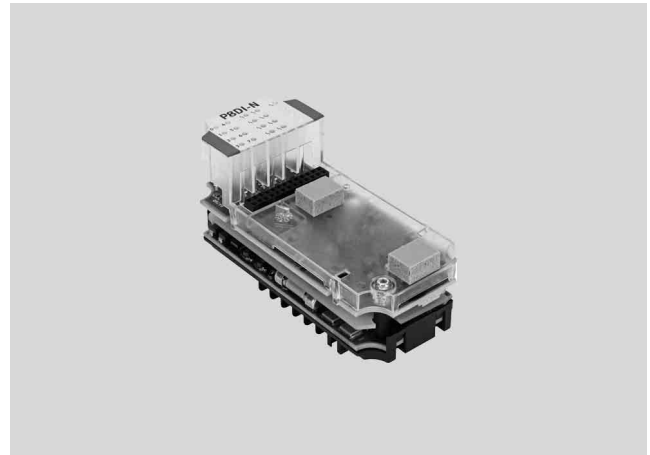
Technical data – Input module, digital, to NAMUR

Function

Digital input modules enable the connection of up to 8 NAMUR sensors (or wired mechanical contacts). In addition, the first 4 channels can alternatively be used as counters or for frequency measurement. M12 and terminal strip connection technology can be used, in either intrinsically safe or non-intrinsically safe design.

Area of application

- Input modules for 24 V DC sensor supply voltage
- 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 protection in each channel



General technical data		
No. of inputs		8
Max. cable length	[m]	200
Input debounce time	[ms]	3 (0, 10, 20 parameterisable)
Fuse protection (short circuit)		Internal electronic fuse per channel
Module current consumption (power supply for electronics)	[mA]	Typically 75
Nominal operating voltage	[V DC]	24 (reverse polarity protected)
Permissible voltage fluctuations	[%]	±25
Power failure buffering	[ms]	20
Residual ripple	[Vpp]	0.4
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
Input characteristics		To EN 60947-5-6
Switching level		To EN 60947-5-6
LED indicators	Group diagnostics	1
	Channel diagnostics	8
	Channel status	8
Diagnostics	Wire break per channel	
	Limit value violation per channel	
	Parameterisation error	
	Overload per channel	
Parameterisation	Data format	
	Input debounce time per channel	
	Input function per channel	
	Replacement value in diagnostic case per channel	
	Upper limit value per channel	
	Signal extension time per channel	
	Gate time per channel	
	Monitoring limit values per channel	
	Monitoring short circuit per channel	
	Monitoring wire break per channel	
	Monitoring parameters	
	Lower limit value per channel	
	Upper limit value per channel	
	Counter configuration per channel	
Control elements	DIL switch	
Additional functions	Frequency measurement	
	Counter function	
Degree of protection to EN 60529		Depending on connection block

Terminal CPX-P

Technical data – Input module, digital, to NAMUR

FESTO

General technical data		
Grid dimension	[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H	[mm]	50 x 107 x 70
Product weight	[g]	100

Explosion protection parameters of the module inputs		
Type	CPX-P-8DE-N	CPX-P-8DE-N-IS
Maximum output power	[mW]	–
Maximum output voltage	[V]	–
Maximum output current	[mA]	–
Maximum external inductance	[mH]	–
Maximum external capacitance	[μF]	–

Certifications and approvals – Maximum values		
Type	CPX-P-8DE-N	CPX-P-8DE-N-IS
ATEX category for gas	–	II (1) G
Type of ignition protection for gas	–	[Ex ia Ga] IIC
ATEX category for dust	–	II (1) D
Type of ignition protection for dust	–	[Ex ia Da] IIIC
Explosion protection certification outside the EU	–	EPL Ga (IEC-EX)
	–	EPL Da (IECEx)
	–	EPL Ga (BR)
	–	EPL Da (BR)
Explosion-proof ambient temperature	[°C]	–5 ≤ Ta ≤ +70
Certificate issuing authority	–	ZELM 12 ATEX 0500 X
	–	IECEx ZLM 12.0007 X
	–	DNV 15.0192 X

 Note The module CPX-P-8DE-N-IS has additional safety measures for possible faults such as non-resettable fuses to ensure safe operation as per the ignition protection type. If the module is operated within the permissible parameters, these protective measures will be irrelevant.	 Note Only the end plate, the pneumatic interface or another module in intrinsically safe design are permitted directly to the right of modules in intrinsically safe design (CPX-P-8DE-N-IS) within the CPX-P terminal.	 Note The insulating plate CPX-P-AB-IP must be mounted between a module in intrinsically safe design (CPX-P-8DE-N-IS) and another, non-intrinsically safe CPX input or output module.	 Note The above-mentioned certifications for the CPX-P-8DE-N-IS module do not apply if the module is used outside the appropriately configured terminal CPX-P.
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Materials	
Housing	PA-reinforced PC
Note on materials	RoHS-compliant

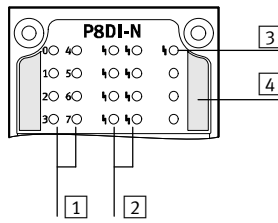
Operating and environmental conditions		
Type	CPX-P-8DE-N	CPX-P-8DE-N-IS
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Relative humidity	[%]	95, non-condensing
CE marking (see declaration of conformity) ¹⁾	–	To EU Explosion Protection Directive (ATEX)

1) Additional information www.festo.com/sp → Certificates.

Terminal CPX-P

Technical data – Input module, digital, to NAMUR

Connection and display components

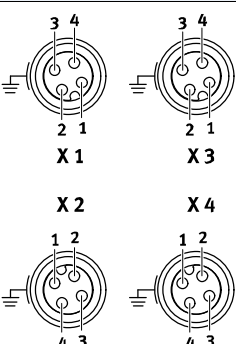
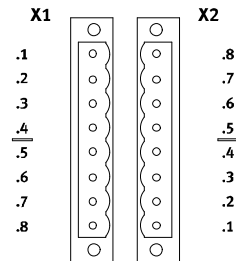


- 1 Status LEDs (green)
For allocation to inputs
→ Pin allocation for module
- 2 Channel-related error LEDs (red)
- 3 Error LED (red, module error)
- 4 Marking for intrinsically safe variant, CPX-P-8DE-N-IS (blue)

Combinations of connection block and digital input module

Connection blocks	Part no.	Digital input module	
		CPX-P-8DE-N	CPX-P-8DE-N-IS
CPX-P-AB-4XM12-4POL	565706	■	–
CPX-P-AB-2XKL-8POL	565704	■	–
CPX-P-AB-4XM12-4POL-8DE-N-IS	565705	–	■
CPX-P-AB-2XKL-8POL-8DE-N-IS	565703	–	■

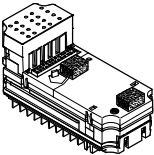
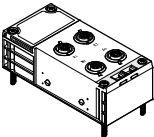
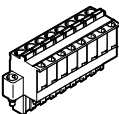
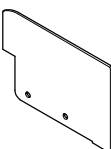
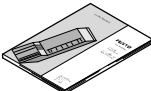
Pin allocation

Connection block outputs		CPX-P-8DE-N and CPX-P-8DE-N-IS	
CPX-P-AB-4XM12-4POL and CPX-P-AB-4XM12-4POL-8DE-N-IS			
		X1.1: BN+ [0] X1.2: BU– [0] X1.3: BN+ [1] X1.4: BU– [1] X2.1: BN+ [2] X2.2: BU– [2] X2.3: BN+ [3] X2.4: BU– [3]	X3.1: BN+ [4] X3.2: BU– [4] X3.3: BN+ [5] X3.4: BU– [5] X4.1: BN+ [6] X4.2: BU– [6] X4.3: BN+ [7] X4.4: BU– [7]
CPX-P-AB-2XKL-8POL and CPX-P-AB-2XKL-8POL-8DE-N-IS			
		X1.1: BN+ [0] X1.2: BU– [0] X1.3: BN+ [1] X1.4: BU– [1] X1.5: BN+ [2] X1.6: BU– [2] X1.7: BN+ [3] X1.8: BU– [3]	X2.1: BN+ [4] X2.2: BU– [4] X2.3: BN+ [5] X2.4: BU– [5] X2.5: BN+ [6] X2.6: BU– [6] X2.7: BN+ [7] X2.8: BU– [7]

Terminal CPX-P

Technical data – Input module, digital, to NAMUR

FESTO

Ordering data					
Designation				Part no.	Type
Input module, digital, to NAMUR					
	8 digital inputs		565933 CPX-P-8DE-N		
	8 digital inputs, intrinsically safe design		 Note An intrinsically safe circuit may only be constructed using components and accessories approved for intrinsically safe operation.	565934 CPX-P-8DE-N-IS	
Connection block					
	Made of polymer	4x socket, M12, 4-pin	For non-intrinsically safe design		565706 CPX-P-AB-4XM12-4POL
			For intrinsically safe design		565705 CPX-P-AB-4XM12-4POL-8DE-N-IS
	2x plug, 8-pin	For non-intrinsically safe design		565704 CPX-P-AB-2XKL-8POL	
		For intrinsically safe design		565703 CPX-P-AB-2XKL-8POL-8DE-N-IS	
Plug					
	Push-in T-connector	1x plug M12, 4-pin	2x socket M12, 4-pin		562248 NEDU-M12D4-M12T4-IS ¹
	Socket	8-pin	Spring-loaded terminal	Black	565712 NECU-L3G8-C1
				Blue	565711 NECU-L3G8-C1-IS ¹
			Screw terminal	Black	565710 NECU-L3G8-C2
				Blue	565709 NECU-L3G8-C2-IS ¹
	Plug, M12, 4-pin	Spring-loaded terminal	For cable diameter 4 ... 8 mm		575719 NECU-M-S-A12G4-IS ¹
		Screw terminal	For cable diameter 2.5 ... 2.9 mm		570955 NECU-S-M12G4-P1-Q6-IS ¹
			For cable diameter 4 ... 6 mm		570953 NECU-S-M12G4-P1-IS ¹
			For cable diameter 6 ... 8 mm		570954 NECU-S-M12G4-P2-IS ¹
			For cable diameter 2x3 mm or 2x5 mm		570956 NECU-S-M12G4-D-IS ¹
Cover					
	Cover cap for closing off unused ports (10 pieces)		For M12 connections		165592 ISK-M12
Coding element					
	Ensures that a coded socket NECU-L3G8 can only be inserted in the matching coded connection block CPX-P-AB-2XKL (96 pieces of each)		For NECU-L3G8		565713 CPX-P-KDS-AB-2XKL
Screening plate					
	Insulating plate for safe separation of intrinsically safe and non-intrinsically safe areas of the CPX terminal			565708	CPX-P-AB-IP
User documentation					
	User documentation		German	575378	P.BE-CPX-P-EA-DE
			English	575379	P.BE-CPX-P-EA-EN
			Spanish	575380	P.BE-CPX-P-EA-ES
			French	575381	P.BE-CPX-P-EA-FR
			Italian	575382	P.BE-CPX-P-EA-IT
			Swedish	575383	P.BE-CPX-P-EA-SV

1) Component preferred for operation in intrinsically safe circuits.

Terminal CPX-P

Technical data – Input module, digital

FESTO

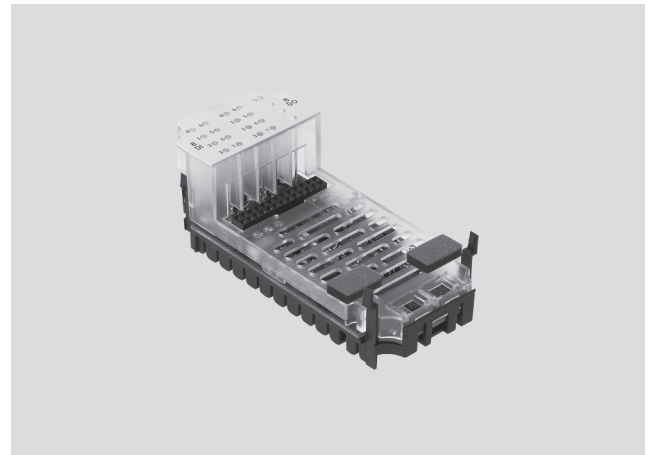
Function

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).

Area of application

- 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 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
Fuse protection		Internal electronic fuse per module	Internal electronic fuse per module	Internal electronic fuse per channel	Internal electronic fuse per module
Intrinsic current consumption at operating voltage		[mA]	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		IEC 1131-T2			
Switching logic		Positive logic (PNP)			Negative logic (NPN)
LED indicators	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 extension time			
Degree of protection to EN 60529		Depending on connection block			
Temperature range	Operation	[°C]	–5 ... +50		
	Storage/transport	[°C]	–20 ... +70		
Materials		PA reinforced, PC			
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		

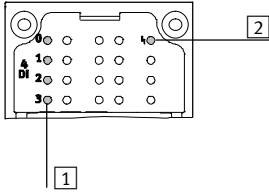
Terminal CPX-P

Technical data – Input module, digital

FESTO

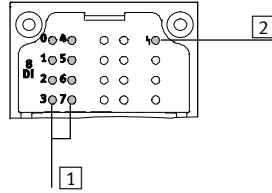
Connection and display components

CPX-4DE



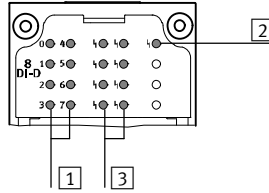
1 Status LEDs (green)

CPX-8DE



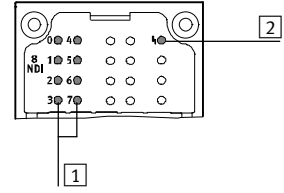
2 Error LED (red, module error)

CPX-8DE-D



3 Channel-related error LEDs (red)

CPX-8NDE

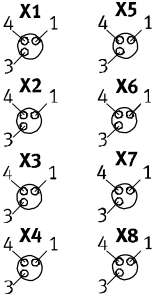
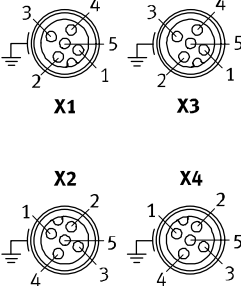


For allocation to inputs
➔ Pin allocation for module

Combinations of connection blocks and digital input modules

Connection blocks	Part no.	Digital input modules			
		CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE
CPX-AB-8-M8-3POL	195706	■	■	■	■
CPX-AB-4-M12X2-5POL	195704	■	■	■	■
CPX-AB-4-M12X2-5POL-R	541254	■	■	■	■
CPX-AB-8-KL-4POL	195708	■	■	■	■
CPX-AB-1-SUB-BU-25POL	525676	■	■	■	■
CPX-AB-4-HAR-4POL	525636	■	■	■	■
CPX-M-AB-4-M12X2-5POL	549367	■	■	■	■

Pin allocation

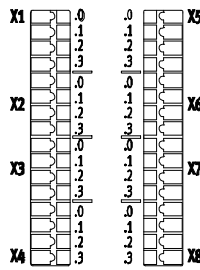
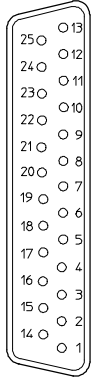
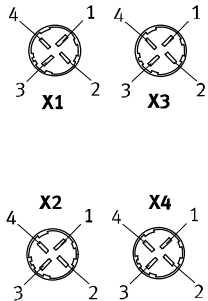
Connection block inputs		CPX-4DE	CPX-8DE, CPX-8DE-D and CPX-8NDE		
CPX-AB-8-M8-3POL					
	X1.1: 24 V_{SEN} X1.3: 0 V_{SEN} X1.4: Input x X2.1: 24 V_{SEN} X2.3: 0 V_{SEN} X2.4: Input x+1 X3.1: 24 V_{SEN} X3.3: 0 V_{SEN} X3.4: Input x+1 X4.1: 24 V_{SEN} X4.3: 0 V_{SEN} X4.4: n.c.	X5.1: 24 V_{SEN} X5.3: 0 V_{SEN} X5.4: Input x+2 X6.1: 24 V_{SEN} X6.3: 0 V_{SEN} X6.4: Input x+3 X7.1: 24 V_{SEN} X7.3: 0 V_{SEN} X7.4: Input x+3 X8.1: 24 V_{SEN} X8.3: 0 V_{SEN} X8.4: n.c.	X1.1: 24 V_{SEN} x X1.3: 0 V_{SEN} x X1.4: Input x X2.1: 24 V_{SEN} x+1 X2.3: 0 V_{SEN} x+1 X2.4: Input x+1 X3.1: 24 V_{SEN} x+2 X3.3: 0 V_{SEN} x+2 X3.4: Input x+2 X4.1: 24 V_{SEN} x+3 X4.3: 0 V_{SEN} x+3 X4.4: Input x+3	X5.1: 24 V_{SEN} x+4 X5.3: 0 V_{SEN} x+4 X5.4: Input x+4 X6.1: 24 V_{SEN} x+5 X6.3: 0 V_{SEN} x+5 X6.4: Input x+5 X7.1: 24 V_{SEN} x+6 X7.3: 0 V_{SEN} x+6 X7.4: Input x+6 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⁾					
	X1.1: 24 V_{SEN} X1.2: Input x+1 X1.3: 0 V_{SEN} X1.4: Input x X1.5: FE X2.1: 24 V_{SEN} X2.2: n.c. X2.3: 0 V_{SEN} X2.4: Input x+1 X2.5: FE	X3.1: 24 V_{SEN} X3.2: Input x+3 X3.3: 0 V_{SEN} X3.4: Input x+2 X3.5: FE X4.1: 24 V_{SEN} X4.2: n.c. X4.3: 0 V_{SEN} X4.4: Input x+3 X4.5: 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 X2.1: 24 V_{SEN} x+2 X2.2: Input x+3 X2.3: 0 V_{SEN} x+2 X2.4: Input x+2 X2.5: 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 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, additional shielding on metal thread

Terminal CPX-P

Technical data – Input module, digital

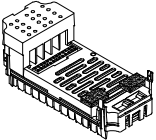
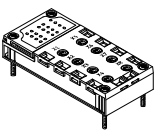
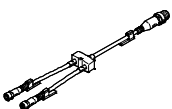
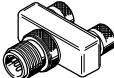
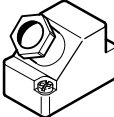
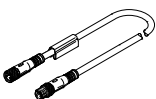
FESTO

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 X2.0: 24 V _{SEN} X2.1: 0 V _{SEN} X2.2: Input x+1 X2.3: FE X3.0: 24 V _{SEN} X3.1: 0 V _{SEN} X3.2: Input x+1 X3.3: FE X4.0: 24 V _{SEN} X4.1: 0 V _{SEN} X4.2: n.c. X4.3: FE	X5.0: 24 V _{SEN} X5.1: 0 V _{SEN} X5.2: Input x+2 X5.3: FE X6.0: 24 V _{SEN} X6.1: 0 V _{SEN} X6.2: Input x+3 X6.3: FE X7.0: 24 V _{SEN} X7.1: 0 V _{SEN} X7.2: Input x+3 X7.3: FE X8.0: 24 V _{SEN} X8.1: 0 V _{SEN} X8.2: n.c. X8.3: FE	X1.0: 24 V _{SEN} x X1.1: 0 V _{SEN} x X1.2: Input x X1.3: FE X2.0: 24 V _{SEN} x+1 X2.1: 0 V _{SEN} x+1 X2.2: Input x+1 X2.3: FE X3.0: 24 V _{SEN} x+2 X3.1: 0 V _{SEN} x+2 X3.2: Input x+2 X3.3: FE X4.0: 24 V _{SEN} x+3 X4.1: 0 V _{SEN} x+3 X4.2: Input x+3 X4.3: FE	X5.0: 24 V _{SEN} x+4 X5.1: 0 V _{SEN} x+4 X5.2: Input x+4 X5.3: FE X6.0: 24 V _{SEN} x+5 X6.1: 0 V _{SEN} x+5 X6.2: Input x+5 X6.3: FE X7.0: 24 V _{SEN} x+6 X7.1: 0 V _{SEN} x+6 X7.2: Input x+6 X7.3: 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 u. 3 23: 0 V _{SEN} x+2 u. 3 24: 0 V _{SEN} x+2 u. 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 X2.1: 24 V _{SEN} X2.2: n.c. X2.3: 0 V _{SEN} X2.4: Input x+1	X3.1: 24 V _{SEN} X3.2: Input x+3 X3.3: 0 V _{SEN} X3.4: Input x+2 X4.1: 24 V _{SEN} X4.2: n.c. X4.3: 0 V _{SEN} X4.4: Input x+3	X1.1: 24 V _{SEN} x X1.2: Input x+1 X1.3: 0 V _{SEN} x X1.4: Input x X2.1: 24 V _{SEN} x+2 X2.2: Input x+3 X2.3: 0 V _{SEN} x+2 X2.4: Input x+2	X3.1: 24 V _{SEN} x+4 X3.2: Input x+5 X3.3: 0 V _{SEN} x+4 X3.4: Input x+4 X4.1: 24 V _{SEN} x+6 X4.2: Input x+7 X4.3: 0 V _{SEN} x+6 X4.4: Input x+6

Terminal CPX-P

Technical data – Input module, digital

FESTO

Ordering data					
Designation				Part no.	Type
Input module, digital					
	4 digital inputs, positive logic (PNP)			195752	CPX-4DE
	8 digital inputs, positive logic (PNP)			195750	CPX-8DE
	8 digital inputs, positive logic (PNP), enhanced diagnostic function			541480	CPX-8DE-D
	8 digital inputs, negative logic (NPN)			543813	CPX-8NDE
Connection block					
	Made of polymer	8x socket M8, 3-pin	195706	CPX-AB-8-M8-3POL	
		4x socket M12, 5-pin	195704	CPX-AB-4-M12X2-5POL	
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R	
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL	
		1x socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL	
		4x socket, quick connector, 4-pin	525636	CPX-AB-4-HAR-4POL	
	Made of metal	4x socket M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL	
Distributors					
	Modular system for all types of sensor/actuator distributors			–	NEDY-... ➔ Internet: nedy
	1x plug M12, 4-pin	2x socket M8, 3-pin	8005311	NEDY-L2R1-V1-M8G3-N-M12G4	
		2x socket, M12, 5-pin	8005310	NEDY-L2R1-V1-M12G5-N-M12G4	
Plug					
	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 diameter 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 all types of connecting cables			–	NEBU-... ➔ Internet: nebu

Terminal CPX-P

Technical data – Input module, digital

FESTO

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
	Set of fittings		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User documentation				
	User documentation	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-P

Technical data – PROFIsafe input module

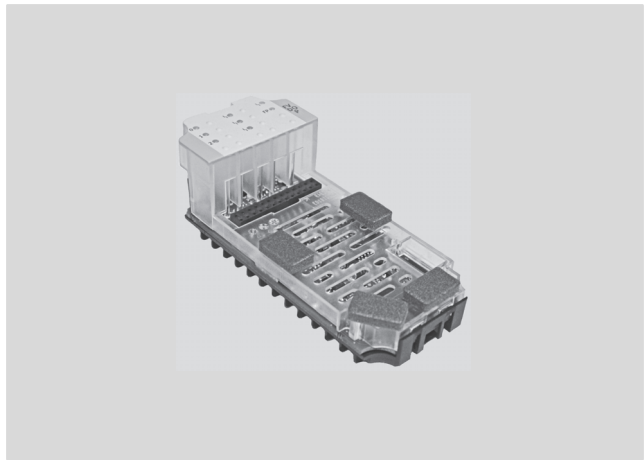
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Function

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.

Area of application

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



Description			
Module-based passivation		Channel-by-channel passivation	
While channel-by-channel passivation is disabled, the input module, in accordance with PROFIsafe specifications, switches all information in the input image to the safe status, even when there is only one channel error.		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 5 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 entire 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.
Application areas			
• Use as an input module for a higher-order safety controller. Several input modules can be used together that can monitor independently operating 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	 Note The safety integrity level, Performance Level and category for the system as a whole correspond to that of the component in the safety chain with the lowest characteristic value.
Application examples			
• Two-hand control device for starting a function • Emergency stop switch for incidents		• Operating mode selector switch with 4 positions • Rotary indexing table	• Light curtain • Acknowledge button with request • End-position switches • Protective door with two NO switches

Terminal CPX-P

Technical data – PROFIsafe input module



General technical data			
Type			CPX-F8DE-P
No. of inputs			8
Safety function			Reliable detection and evaluation of input statuses
Max. address capacity	Inputs	[bytes]	6
	Outputs	[bytes]	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			[Vpp] 2 within voltage range
Electrical isolation			Channel – channel No
Input characteristics			To IEC 61131-2, type 2
Switching logic			Inputs PNP (positive switching)
Safety integrity level	As per EN 62061		Reliable detection and evaluation of input statuses up to SIL CL3
	As per EN 61508		Reliable detection and evaluation of input statuses up to SIL3
Performance Level			As per ISO 13849 Reliable detection and evaluation of input statuses up to Cat 4 and PL e
Failure rate per hour (PFH)			1.0x 10 ⁻⁹
Certificate issuing authority			01/205/5444.00/15
LED indicators	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 switch
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-P

Technical data – PROFIsafe input module

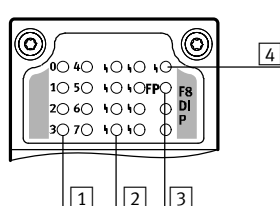
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Materials	
Note on materials	RoHS-compliant

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

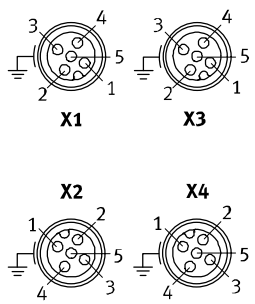
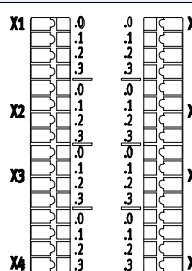
The PROFIsafe input module CPX-F8DE-P can only be connected as of software release 21 or release 30 (in the case of CPX-FB13).

Terminal CPX-P

Technical data – PROFIsafe input module

FESTO

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

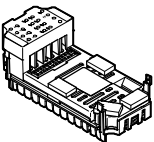
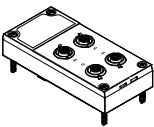
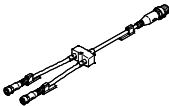
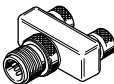
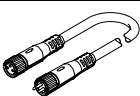
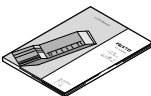
Pin allocation		
Connection block inputs	CPX-F8DE-P	
CPX-M-AB-4-M12X2-5POL		
	X1.1: 24 V_{SEN} X1.2: Input x+1 X1.3: 0 V_{SEN} X1.4: Input x X1.5: FE X2.1: 24 V_{SEN} X2.2: Input x+3 X2.3: 0 V_{SEN} X2.4: Input x+2 X2.5: FE	X3.1: 24 V_{SEN} X3.2: Input x+5 X3.3: 0 V_{SEN} X3.4: Input x+4 X3.5: FE X4.1: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

Technical data – PROFIsafe input module

FESTO

Combinations of interlinking blocks and PROFIsafe input module		
Interlinking blocks	Part no.	PROFIsafe input module
		CPX-F8DE-P
CPX-M-GE-EV-S-7/8-5POL	550208	■
CPX-M-GE-EV-S-7/8-5POL-VL	8022165	■
CPX-M-GE-EV	550206	■
CPX-M-GE-EV-FVO	567806	–
CPX-M-GE-EV-Z-7/8-5POL	550210	■
CPX-M-GE-EV-Z-7/8-5POL-VL	8022158	■

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					
	Made of polymer	Spring-loaded terminal, 32-pin		195708	CPX-AB-8-KL-4POL
	Made of metal	4x socket M12, 5-pin	Unclocked sensor supply	549367	CPX-M-AB-4-M12X2-5POL
Distributors					
	Modular system for all types of sensor/actuator distributors			–	NEDY-... ➔ Internet: nedy
	1x 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 diameter 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 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-P

Technical data – Input module, digital, 16 inputs

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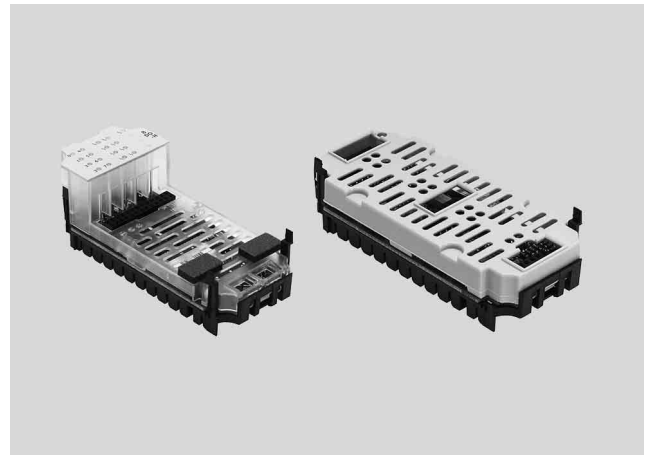
Function

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).

Area of 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 protection



General technical data				
Type		CPX-16DE		CPX-M-16DE-D
No. of inputs		16		16
Max. residual current of inputs per module		[A]	1.8	1.8
Intrinsic current consumption at operating voltage		[mA]	Typically 15	Typically 34
Fuse protection		Internal electronic fuse per module		Internal electronic fuse per channel pair, additional safety fuse
Nominal operating voltage		[V DC]	24	
Operating voltage range		[V DC]	18 ... 30	
Electrical isolation	Channel – channel		No	
	Channel – internal bus		No	
Switching level	Signal 0	[V DC]	≤ 5	
	Signal 1	[V DC]	≥ 11	
Input debounce time		[ms]	3 (0.1, 10, 20 parameterisable)	
Input characteristic			IEC 1131-T2	
Switching logic			Positive logic (PNP)	
LED indicators	Group diagnostics		1	1
	Channel diagnostics		–	16
	Channel status		16	16
Diagnostics			Short circuit/overload per channel	
Parameterisation			• Module monitoring • Behaviour after short circuit • Input debounce time • Signal extension time	
Degree of protection to EN 60529			Depending on connection block	
Temperature range	Operation	[°C]	–5 ... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials			PA reinforced, PC	
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	

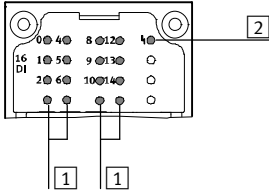
Terminal CPX-P

Technical data – Input module, digital, 16 inputs

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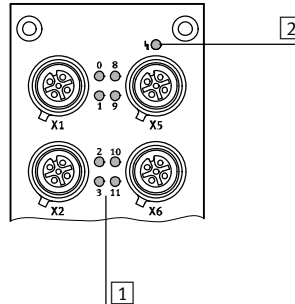
Connection and display components

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)

Combinations of connection blocks and digital input modules

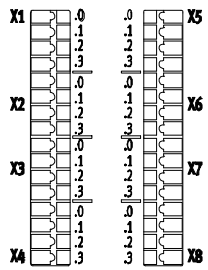
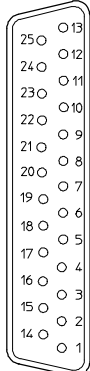
Connection blocks	Part no.	Digital input modules	
		CPX-16DE	CPX-M-16DE-D
CPX-AB-8-M8X2-4POL	541256	■	–
CPX-AB-8-KL-4POL	195708	■	–
CPX-AB-1-SUB-BU-25POL	525676	■	–
CPX-M-AB-8-M12X2-5POL	549335	–	■

Pin allocation

Connection block inputs	CPX-16DE	
CPX-AB-8-M8x2-4POL		
	X1.1: 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

Terminal CPX-P

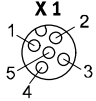
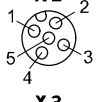
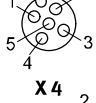
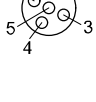
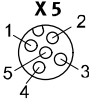
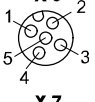
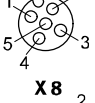
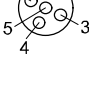
Technical data – Input module, digital, 16 inputs

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

Terminal CPX-P

Technical data – Input module, digital, 16 inputs

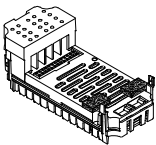
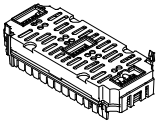
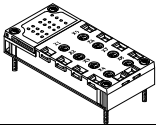
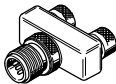
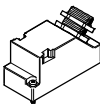
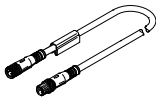
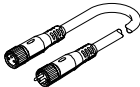
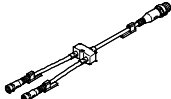
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Pin allocation		
Connection block inputs		CPX-M-16DE-D
CPX-M-AB-8-M12X2-5POL		
 X1  X2  X3  X4  X5  X6  X7  X8	X1.1: 24 V_{SX} X1.2: Input x+1 X1.3: 0 V_{SX} X1.4: Input x X1.5: FE X2.1: 24 V_{SX+2} X2.2: Input x+3 X2.3: 0 V_{SX+2} X2.4: Input x+2 X2.5: FE 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 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	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 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 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 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-P

Technical data – Input module, digital, 16 inputs

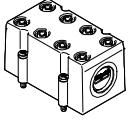
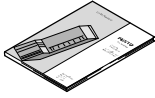
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Ordering data					
Designation				Part no.	Type
Input module, digital					
	16 digital inputs, internal electronic fuse for each module			543815	CPX-16DE
	16 digital inputs, internal electronic fuse per channel pair			550202	CPX-M-16DE-D
Connection block					
	Made of polymer	8x socket, M8, 4-pin	541256	CPX-AB-8-M8X2-4POL	
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL	
		1x socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL	
	Made of metal	8x socket M12, 5-pin	549335	CPX-M-AB-8-M12X2-5POL	
Plug					
	Push-in T-connector	1x plug, M8, 4-pin	2x socket M8, 3-pin	8005312	NEDY-L2R1-V1-M8G3-N-M8G4
	For push-in T-connector	M8 3-pin	Solderable	18696	SEA-GS-M8
			Screw-in	192009	SEA-3GS-M8-S
	Sub-D plug, 25-pin			527522	SD-SUB-D-ST25
Connecting cable					
	For push-in T-connector	1x socket, M8, 3-pin 1x plug M8, 3-pin	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 all types of connecting cable			–	NEBU-... ➔ Internet: nebu
	Modular system for all types of sensor/actuator distributors			–	NEDY-... ➔ Internet: nedy

Terminal CPX-P

FESTO

Technical data – Input module, digital, 16 inputs

Ordering data				
Designation			Part no.	Type
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67)	• 8 cable through-feeds M9 • 1 cable through-feed for multi-pin plug	538219	AK-8KL
	Set of fittings for cover AK-8KL		538220	VG-K-M9
	Cover cap for closing off unused M8 ports (10 pieces)		177672	ISK-M8
User documentation				
	User documentation	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-P

Technical data – Output module, digital

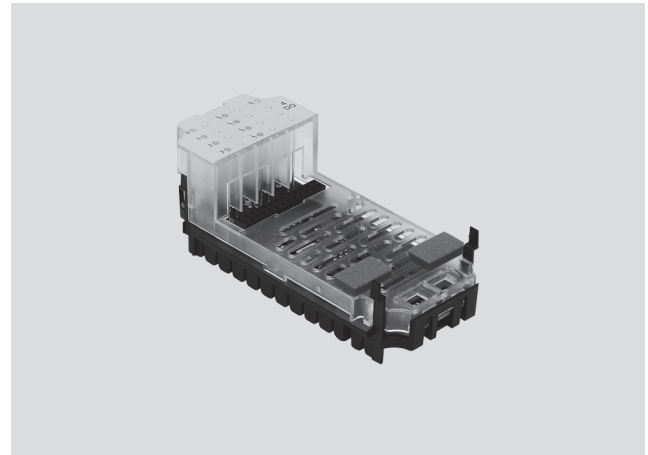
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Function

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

Area of application

- 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 protection in each channel



General technical data				
Type		CPX-4DA	CPX-8DA	CPX-8DA-H
Number of outputs		4	8	8
Max. power supply	Per module [A]	4		8.4
	Per channel [A]	1 (24 W lamp load, 4 channels can be connected in parallel)	0.5 (12 W lamp load, 8 channels can be connected in parallel)	2.1 (50 W lamp load), per channel pair
Fuse protection (short circuit)		Internal electronic fuse per channel		
Module current consumption (power supply for electronics) [mA]		Typically 16		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 intermediate supply		
Output characteristic		To IEC 1131-2		
Switching logic		Positive logic (PNP)		
LED indicators	Group diagnostics	1	1	1
	Channel diagnostics	4	8	8
	Channel status	4	8	8
Diagnostics		• Short circuit/overload, channel x • Undervoltage at outputs		
Parameterisation		• Module monitoring • Behaviour after short circuit • Fail-safe channel x • Forcing channel x • Idle mode channel x		
Degree of protection to EN 60529		Depending on connection block		
Temperature range	Operation [°C]	–5 ... +50		
	Storage/transport [°C]	–20 ... +70		
Materials		PA reinforced, PC		
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		

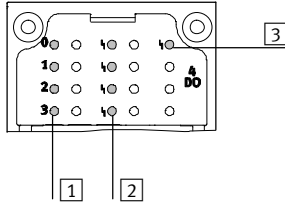
Terminal CPX-P

Technical data – Output module, digital

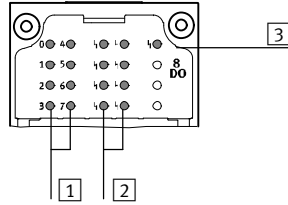
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Connection and display components

CPX-4DA



CPX-8DA



- 1 Status LEDs (yellow)
For allocation to outputs
→ Pin allocation for module
- 2 Channel-related error LEDs (red)
- 3 Error LED (red, module error)

Combinations of connection block and digital output module

Connection blocks	Part no.	Digital output module		
		CPX-4DA	CPX-8DA	CPX-8DA-H
CPX-AB-8-M8-3POL	195706	■	■	–
CPX-AB-8-M8X2-4POL	541256	■	■	■
CPX-AB-4-M12X2-5POL	195704	■	■	–
CPX-AB-4-M12X2-5POL-R	541254	■	■	■
CPX-AB-8-KL-4POL	195708	■	■	■
CPX-AB-1-SUB-BU-25POL	525676	■	■	■
CPX-AB-4-HAR-4POL	525636	■	■	–
CPX-M-AB-4-M12X2-5POL	549367	■	■	■

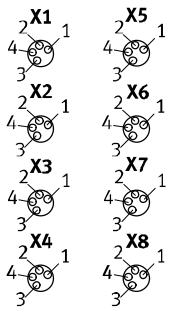
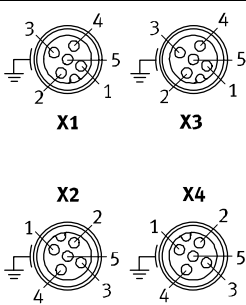
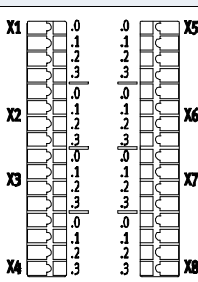
Pin allocation

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 X2.1: n.c. X2.3: 0 V_{OUT} X2.4: Output x+1 X3.1: n.c. X3.3: 0 V_{OUT} X3.4: Output x+1 X4.1: n.c. X4.3: 0 V_{OUT} X4.4: n.c.	X5.1: n.c. X5.3: 0 V_{OUT} X5.4: Output x+4 X6.1: n.c. X6.3: 0 V_{OUT} X6.4: Output x+5 X7.1: n.c. X7.3: 0 V_{OUT} X7.4: Output x+6 X8.1: n.c. X8.3: 0 V_{OUT} X8.4: Output x+7

Terminal CPX-P

Technical data – Output module, digital

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Pin allocation				
Connection block outputs		CPX-4DA		CPX-8DA and CPX-8DA-H
CPX-AB-8-M8X2-4POL				
	X1.1: 0 V _{OUT} X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X2.1: 0 V _{OUT} X2.2: n.c. X2.3: 0 V _{OUT} X2.4: Output x+1 X3.1: 0 V _{OUT} X3.2: Output x+3 X3.3: 0 V _{OUT} X3.4: Output x+2 X4.1: 0 V _{OUT} X4.2: n.c. X4.3: 0 V _{OUT} X4.4: Output x+3	X5.1: 0 V _{OUT} X5.2: n.c. X5.3: 0 V _{OUT} X5.4: n.c. X6.1: 0 V _{OUT} X6.2: n.c. X6.3: 0 V _{OUT} X6.4: n.c. X7.1: 0 V _{OUT} X7.2: n.c. X7.3: 0 V _{OUT} X7.4: n.c. X8.1: 0 V _{OUT} x+1 X8.2: n.c. X8.3: 0 V _{OUT} x+3 X8.4: n.c.	X1.1: 0 V _{OUT} X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X2.1: 0 V _{OUT} X2.2: Output x+3 X2.3: 0 V _{OUT} X2.4: Output x+2 X3.1: 0 V _{OUT} X3.2: Output x+5 X3.3: 0 V _{OUT} X3.4: Output x+4 X4.1: 0 V _{OUT} X4.2: Output x+7 X4.3: 0 V _{OUT} X4.4: Output x+6	X5.1: 0 V _{OUT} X5.2: n.c. X5.3: 0 V _{OUT} X5.4: n.c. X6.1: 0 V _{OUT} X6.2: n.c. X6.3: 0 V _{OUT} X6.4: n.c. X7.1: 0 V _{OUT} X7.2: n.c. X7.3: 0 V _{OUT} X7.4: n.c. X8.1: 0 V _{OUT} X8.2: n.c. X8.3: 0 V _{OUT} X8.4: n.c.
CPX-AB-4-M12X2-5POL ¹⁾				
	X1.1: n.c. X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X1.5: FE X2.1: n.c. X2.2: n.c. X2.3: 0 V _{OUT} X2.4: Output x+1 X2.5: FE	X3.1: n.c. X3.2: Output x+3 X3.3: 0 V _{OUT} X3.4: Output x+2 X3.5: FE X4.1: n.c. X4.2: n.c. X4.3: 0 V _{OUT} X4.4: Output x+3 X4.5: FE	X1.1: n.c. X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X1.5: FE X2.1: n.c. X2.2: Output x+3 X2.3: 0 V _{OUT} X2.4: Output x+2 X2.5: FE	X3.1: n.c. X3.2: Output x+5 X3.3: 0 V _{OUT} X3.4: Output x+4 X3.5: 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				
	X1.0: n.c. X1.1: 0 V _{OUT} X1.2: Output x X1.3: FE X2.0: n.c. X2.1: 0 V _{OUT} X2.2: Output x+1 X2.3: FE X3.0: n.c. X3.1: 0 V _{OUT} X3.2: Output x+1 X3.3: FE X4.0: n.c. X4.1: 0 V _{OUT} X4.2: n.c. X4.3: FE	X5.0: n.c. X5.1: 0 V _{OUT} X5.2: Output x+2 X5.3: FE X6.0: n.c. X6.1: 0 V _{OUT} X6.2: Output x+3 X6.3: FE X7.0: n.c. X7.1: 0 V _{OUT} X7.2: Output x+3 X7.3: FE X8.0: n.c. X8.1: 0 V _{OUT} X8.2: n.c. X8.3: FE	X1.0: n.c. X1.1: 0 V _{OUT} X1.2: Output x X1.3: FE X2.0: n.c. X2.1: 0 V _{OUT} X2.2: Output x+1 X2.3: FE X3.0: n.c. X3.1: 0 V _{OUT} X3.2: Output x+2 X3.3: FE X4.0: n.c. X4.1: 0 V _{OUT} X4.2: Output x+3 X4.3: FE	X5.0: n.c. X5.1: 0 V _{OUT} X5.2: Output x+4 X5.3: FE X6.0: n.c. X6.1: 0 V _{OUT} X6.2: Output x+5 X6.3: FE X7.0: n.c. X7.1: 0 V _{OUT} X7.2: Output x+6 X7.3: FE X8.0: n.c. X8.1: 0 V _{OUT} X8.2: Output x+7 X8.3: FE

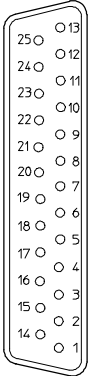
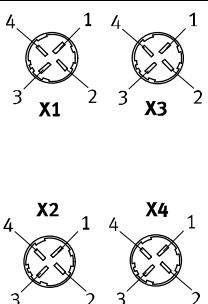
1) Not suitable for CPX-8DA-H.

2) Speedcon quick lock, additional shielding on metal thread

Terminal CPX-P

Technical data – Output module, digital

FESTO

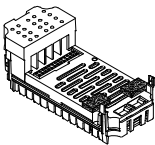
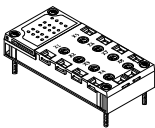
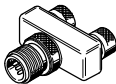
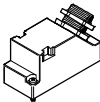
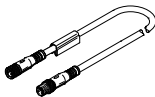
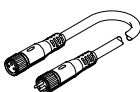
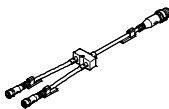
Pin allocation				
Connection block outputs	CPX-4DA		CPX-8DA and CPX-8DA-H	
CPX-AB-1-SUB-BU-25POL				
	1: Output x 2: Output x+1 3: Output x+1 4: n.c. 5: n.c. 6: 0 V _{OUT} 7: n.c. 8: 0 V _{OUT} 9: n.c. 10: n.c. 11: 0 V _{OUT} 12: 0 V _{OUT} 13: FE	14: Output x+2 15: Output x+3 16: Output x+3 17: n.c.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

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

Terminal CPX-P

Technical data – Output module, digital

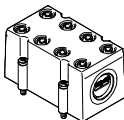
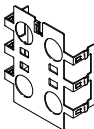
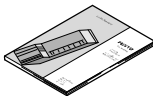
FESTO

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						
	Made of polymer	8x socket, M8, 3-pin		195706	CPX-AB-8-M8-3POL	
		8x socket, M8, 4-pin		541256	CPX-AB-8-M8X2-4POL	
		4x socket, M12, 5-pin		195704	CPX-AB-4-M12X2-5POL	
		4x socket, M12, 5-pin with quick-lock technology		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	
		4x socket, quick connector, 4-pin		525636	CPX-AB-4-HAR-4POL	
	Made of metal	4x socket, M12, 5-pin		549367	CPX-M-AB-4-M12X2-5POL	
Plug						
	Push-in T-connector	1x plug, M8, 4-pin	2x socket M8, 3-pin	8005312	NEDY-L2R1-V1-M8G3-N-M8G4	
		1x plug M12, 4-pin	2x socket M8, 3-pin	8005311	NEDY-L2R1-V1-M8G3-N-M12G4	
	Plug	M8 3-pin	2x socket, M12, 5-pin	8005310	NEDY-L2R1-V1-M12G5-N-M12G4	
			Solderable	18696	SEA-GS-M8	
			Screw-in	192009	SEA-3GS-M8-S	
		Insulation displacement connector	Q1 ... 0.14 mm ²	564945	NECU-S-M8G3-HX-Q3	
			Q14 ... 0.34 mm ²	562024	NECU-S-M8G3-HX	
			M12, 4-pin	PG7, for cable diameter 4 ... 6 mm	18666	SEA-GS-7
				PG7, for cable diameter 2.5 ... 2.9 mm	192008	SEA-4GS-7-2,5
		PG9, for cable diameter 6 ... 8 mm		18778	SEA-GS-9	
		PG11, for 2x cable diameter 3 ... 5 mm		18779	SEA-GS-11-DUO	
		M12, 5-pin	PG7, for cable diameter 4 ... 6 mm	175487	SEA-M12-5GS-PG7	
			PG11, for 2x cable diameter 2.5 ... 5 mm	192010	SEA-5GS-11-DUO	
	HARAX® plug, 4-pin			525928	SEA-GS-HAR-4POL	
	Sub-D plug, 25-pin			527522	SD-SUB-D-ST25	
Connecting cable						
	Connecting cable	1x socket M8, 3-pin 1x plug M8, 3-pin	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 all types of connecting cable			–	NEBU-... → Internet: nebu	
	Modular system for all types of sensor/actuator distributors			–	NEDY-... → Internet: nedy	

Terminal CPX-P

Technical data – Output module, digital

FESTO

Ordering data				
Designation			Part no.	Type
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67)	• 8 cable through-feeds M9 • 1 cable through-feed for multi-pin plug	538219	AK-8KL
	Set of fittings for hood AK-8KL		538220	VG-K-M9
	Cover cap for closing off unused ports (10 pieces)	For M8 connections	177672	ISK-M8
		For M12 connections	165592	ISK-M12
Screening plate				
	Screening plate for connection block • CPX-AB-4-M12X2-5POL • CPX-AB-4-M12X2-5POL-R		526184	CPX-AB-S-4-M12
User documentation				
	User documentation	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

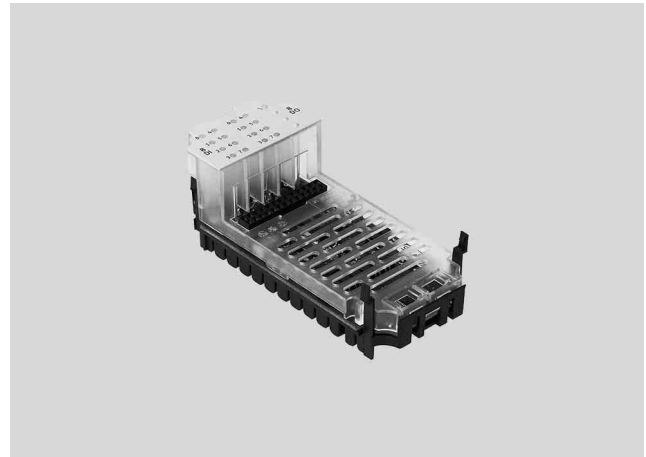
Terminal CPX-P

Technical data – Input/output module, digital

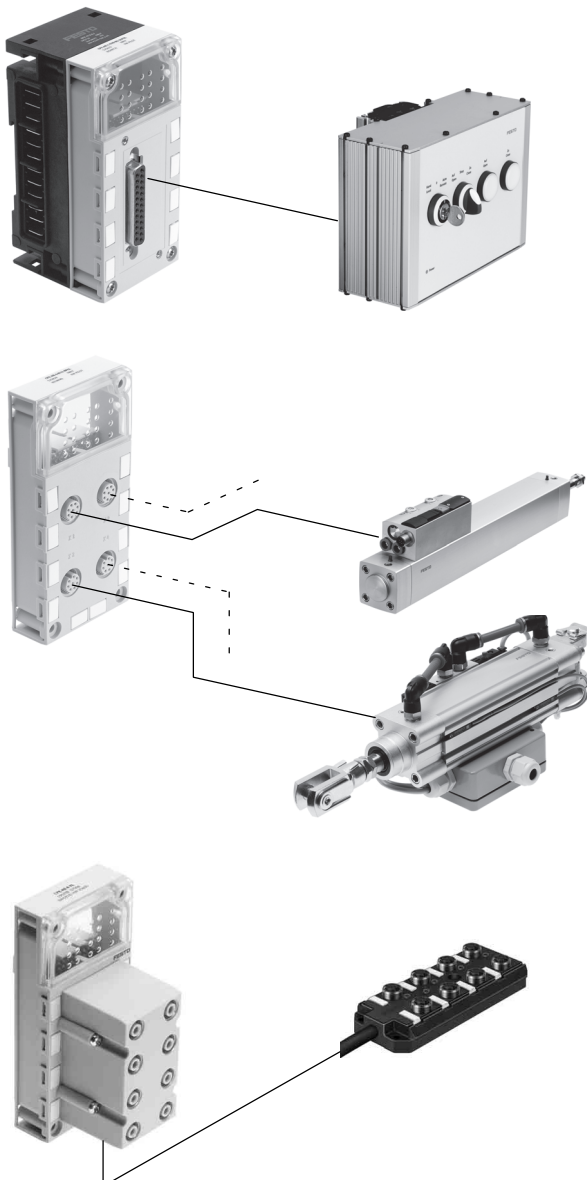
FESTO

Area of 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)
- 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. Because the module supports Sub-D connection blocks, consoles with pushbuttons and lamps can be connected to the CPX-P terminal with minimal installation effort.

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

Support for the M12 connection block (8-pin) means that 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 socket. 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 two ports 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 ports.

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 connecting cable for multi-pin plug connection for self-assembly) support the cost-effective and economical integration of critical installation areas such as energy chains or upstream functions.

Terminal CPX-P

Technical data – Input/output module, digital

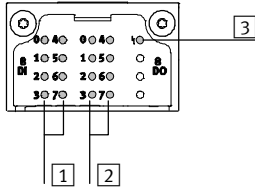
General technical data			
Type			CPX-8DE-8DA
Number	Inputs		8
	Outputs		8
Max. power supply per module	Sensor supply	[A]	0.7
	Outputs	[A]	4
Max. power supply per channel			0.5 (12 W lamp load, channels A0 ... A03 can be connected in parallel to A4 ... A7)
Fuse protection (short circuit)			Internal electronic fuse per channel
Intrinsic current consumption at nominal operating voltage			[mA] Typically 22
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 intermediate supply
Characteristic curve	Inputs		IEC 1131-T2
	Outputs		IEC 1131-T2
Switching level, inputs	Signal 0	[V DC]	≤ 5
	Signal 1	[V DC]	≥ 11
Input debounce time			[ms] 3 (0.1 ms, 10 ms, 20 ms parameterisable)
Switching logic			Positive logic (PNP)
LED indicators	Group diagnostics		1
	Channel status		16
Diagnostics			• Short circuit/overload per channel • Undervoltage at outputs
Parameterisation			• Input debounce time • Failsafe per channel • Forcing per channel • Idle mode per channel • Signal extension time • Module monitoring • Behaviour after short circuit
Degree of protection to EN 60529			Depending on connection block
Temperature range	Operation	[°C]	–5 ... +50
	Storage/transport	[°C]	–20 ... +70
Materials			PA reinforced, PC
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

Terminal CPX-P

Technical data – Input/output module, digital

Connection and display components

CPX-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)

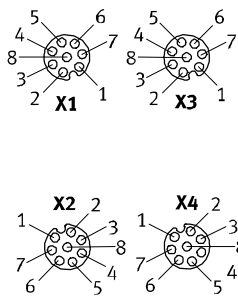
Combinations of connection blocks and digital I/O module

Connection blocks	Part no.	Digital I/O module
		CPX-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

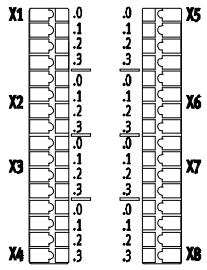
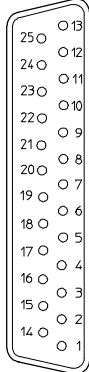


X1.1: 24 V _{SEN}	X3.1: 24 V _{SEN}
X1.2: Input x	X3.2: Input x+4
X1.3: Input x+1	X3.3: Input x+5
X1.4: 0 V _{SEN}	X3.4: 0 V _{SEN}
X1.5: Output x	X3.5: Output x+4
X1.6: Output x+1	X3.6: Output x+5
X1.7: Input x+4	X3.7: n.c.
X1.8: 0 V _{OUT}	X3.8: 0 V _{OUT}
X2.1: 24 V _{SEN}	X4.1: 24 V _{SEN}
X2.2: Input x+2	X4.2: Input x+6
X2.3: Input x+3	X4.3: Input x+7
X2.4: 0 V _{SEN}	X4.4: 0 V _{SEN}
X2.5: Output x+2	X4.5: Output x+6
X2.6: Output x+3	X4.6: Output x+7
X2.7: Input x+6	X4.7: n.c.
X2.8: 0 V _{OUT}	X4.8: 0 V _{OUT}

Terminal CPX-P

Technical data – Input/output module, digital

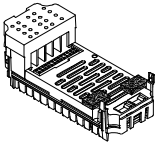
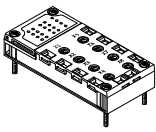
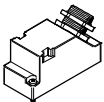
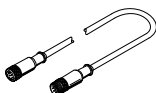
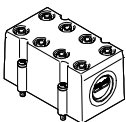
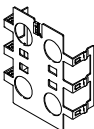
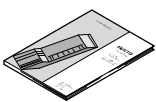
FESTO

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

Terminal CPX-P

Technical data – Input/output module, digital

FESTO

Ordering data				
Designation			Part no.	Type
Input/output module, digital				
	8 digital inputs, 8 digital outputs		526257	CPX-8DE-8DA
Connection block				
	Made of polymer	4x socket M12, 8-pin	526178	CPX-AB-4-M12-8POL
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL
		1x socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL
Plug				
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	Connecting cable M12		525617	KM12-8GD8GS-2-PU
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
	Set of fittings		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User documentation				
	User documentation	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-P

Technical data – Counter module, digital

FESTO

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.

Area of 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

- | | | | |
|---|---|---|---|
| <ul style="list-style-type: none"> • Recording travel and speed of a conveyor • Position and speed synchronisation of conveyors and pick & place applications | <ul style="list-style-type: none"> • Counting goods e.g. in packaging installations • Systems for filling by weight and volume • Monitoring motor speeds | <ul style="list-style-type: none"> • Measuring equipment for determining the position of axis systems (linear, rotatory) • Control of fast-switching valves • Control of the opening time of a valve | <ul style="list-style-type: none"> • 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

- | | | | |
|---|--|--|--|
| <ul style="list-style-type: none"> • 5 V incremental encoder, single-ended or differential, with two 90° phase offset tracks | <ul style="list-style-type: none"> • 24 V incremental encoder, single-ended, with two 90° phase offset tracks | <ul style="list-style-type: none"> • 24 V pulse generator with or without direction level • 24 V direct current motors | <ul style="list-style-type: none"> • Absolute encoder with SSI interface (13 bits to 25 bits) |
|---|--|--|--|

Terminal CPX-P

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, if an intermediate supply is used
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 indicators	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
Degree of protection to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	–5 ... +50
	Storage/transport	[°C]	–20 ... +70
Certification			UL - Recognized (OL)
Information on materials – housing			Polymer
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

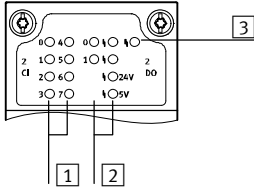
Terminal CPX-P

Technical data – Counter module, digital

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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

Pin allocation		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

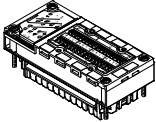
- - Note

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-P

Technical data – Counter module, digital



Ordering data				
Designation			Part no.	Type
Counter module, digital				
	2 digital inputs, 2 digital outputs		576046	CPX-2ZE2DA
User documentation				
	User documentation for 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-P

Technical data – HART input/output module

FESTO

Function

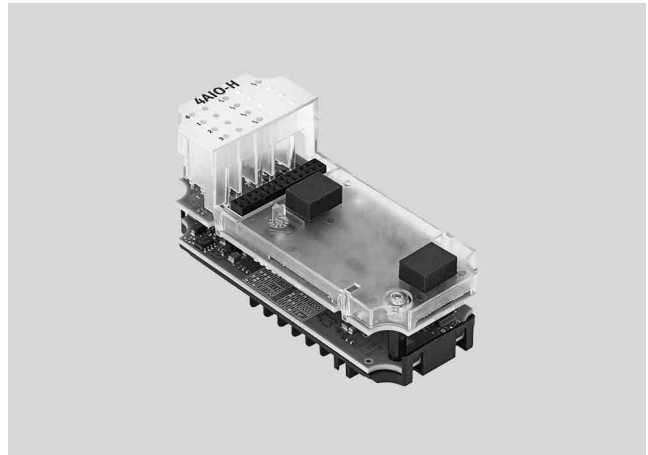
The HART input/output module allows the connection of up to 4 sensors or actuators. The corresponding communication channel is made available for sensors or actuators that communicate using the HART protocol.

With the HART protocol, a conventional analogue 4 ... 20 mA current signal is modulated by a second frequency-modulated signal.

Each of the 4 connections of the module can be configured as inputs or outputs.

Area of application

- Multi I/O module for 24 V DC supply voltage
- Supports connection blocks with M12 and terminal connection
- Module features can be parameterised
- The module receives the voltage supply for the electronics, outputs and the sensors from the interlinking block
- Module protection and diagnostics through integrated electronic protection



General technical data				
Type			CPX-4AE-4AA-H	
Protocol			HART	
Number of selectable analogue inputs/outputs			4	
Sensor type			0 ... 20 mA	4 ... 20 mA 4 ... 20 mA with HART
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	18 ... 30	
Power failure buffering		[ms]	10	
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 170	
Maximum short circuit current		[mA]	22	
Maximum open circuit voltage		[V]	28.8	
Minimum available sensor voltage			20.7 V DC at 20 mA	
Fuse protection (short circuit)			Internal electronic fuse per channel	
Reverse polarity protection			For all electrical connections	
Electrical isolation	Channel – channel		No	
	Channel – internal bus		Yes	
Signal range			0 ... 20 mA	4 ... 20 mA 4 ... 20 mA with HART
Data format			15 bits + prefix	
			Scalable to 15 bits	
Maximum load		[Ω]	750	
Maximum input resistance		[Ω]	300	
Max. cable length		[m]	500	
Basic error limit at 25 °C		[%]	±0.1	
Operating error limit related to the ambient temperature range		[%]	±0.3	
Repetition accuracy			0.05% at 20 °C	
LED indicators	Group diagnostics		1	
	Channel diagnostics		4	
	Channel status		4	
Control elements			DIL switch	
Diagnostics			• Wire break per channel • Limit value violation per channel • Short circuit/overload per channel • Parameterisation error • Overflow/underflow • Limit violation to NE43 per channel	

Terminal CPX-P

Technical data – HART input/output module

FESTO

General technical data	
Parameterisation	• Data format • Failsafe per channel • Forcing per channel • Limit value monitoring per channel • Idle mode per channel • Measured value smoothing • Signal range per channel • Monitoring of overflow/underflow • Monitoring to NE43, inputs • Monitoring wire break per channel • Wire break per channel • Limit value violation per channel • Short circuit/overload per channel • Parameterisation error • Overflow/underflow • Limit violation to NE43 per channel • Number of HART repetitions • Hysteresis for limit values • HART variables (4 pieces) • Behaviour after short circuit/overload
Degree of protection to EN 60529	Depending on connection block

Technical data – Mechanical components	
Type of mounting	On interlinking block
Product weight	[g] 77.4
Grid dimension	[mm] 50
Dimensions (incl. interlinking block and connection block)	[mm] 50 x 107 x 70
W x L x H	

Materials	
Housing	PA reinforced, PC
Note on materials	RoHS-compliant

Operating and environmental conditions	
Ambient temperature	[°C] –5 ... +50
Storage temperature	[°C] –20 ... +70
Relative humidity	[%] 95, non-condensing
Corrosion resistance class CRC ¹⁾	1 (when installed)
CE marking (see declaration of conformity) ³⁾	To EU EMC Directive ²⁾

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.
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.
- 3) Additional information www.festo.com/sp → Certificates.

Safety characteristics	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 according to FN 942017-4 and EN 60068-2-6

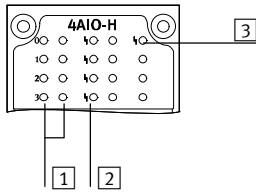
Terminal CPX-P

Technical data – HART input/output module

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Connection and display components

CPX-4EA-4AA-H



- 1 Status LEDs:
– Inputs (green)
– Outputs (yellow)
→ Pin allocation for module
- 2 Error LEDs (red)
Allocation to inputs/outputs
→ Pin allocation for module

- 3 Error LED (red)
(module error)

Combinations of bus nodes/control blocks with HART input/output module

Bus node/control block	Part no.	Protocol	Can be combined as of release	HART variables in process image only	Full HART functionality
CPX-FB11	526172	DeviceNet	25	■	–
CPX-FB13	195740	PROFIBUS	34	–	■
CPX-FB14	526174	CANopen	30	■	–
CPX-FB33	548755	PROFINET RT, M12	33	–	■
CPX-M-FB34	548751	PROFINET RT, RJ45	33	–	■
CPX-M-FB35	548749	PROFINET RT, SCRJ	33	–	■
CPX-FB36	1912451	EtherNet/IP	15	–	■
CPX-FB37	2735960	EtherCAT	7	■	–

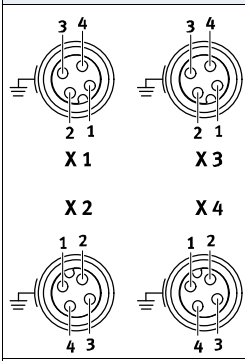
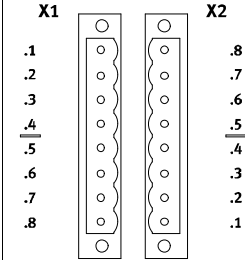
Combinations of connection blocks with HART input/output module

Connection blocks	Part no.	HART input/output module
		CPX-4EA-4AA-H
CPX-P-AB-4XM12-4POL	565706	■
CPX-P-AB-2XKL-8POL	565704	■

Terminal CPX-P

Technical data – HART input/output module

FESTO

Pin allocation					
Connection block inputs/outputs		CPX-4AE-4AA-H			
		Inputs		Outputs	
CPX-P-AB-4XM12-4POL					
		X1.1: 24 V _{SEN x} X1.2: 0 V X1.3: Input x X1.4: 0 V	X3.1: 24 V _{SEN x+2} X3.2: 0 V X3.3: Input x+2 X3.4: 0 V	X1.1: Output I0+ X1.2: 0 V X1.3: – X1.4: 0 V	X3.1: Output I2+ X3.2: 0 V X3.3: – X3.4: 0 V
		X2.1: 24 V _{SEN x+1} X2.2: 0 V X2.3: Input x+1 X2.4: 0 V	X4.1: 24 V _{SEN x+3} X4.2: 0 V X4.3: Input x+3 X4.4: 0 V	X2.1: Output I1+ X2.2: 0 V X2.3: – X2.4: 0 V	X4.1: Output I3+ X4.2: 0 V X4.3: – X4.4: 0 V
CPX-P-AB-2XKL-8POL					
		X1.1: 24 V _{SEN x} X1.2: 0 V X1.3: Input x X1.4: 0 V	X2.1: 24 V _{SEN x+2} X2.2: 0 V X2.3: Input x+2 X2.4: 0 V	X1.1: Output I0+ X1.2: 0 V X1.3: – X1.4: 0 V	X2.1: Output I2+ X2.2: 0 V X2.3: – X2.4: 0 V
		X1.5: 24 V _{SEN x+1} X1.6: 0 V X1.7: Input x+1 X1.8: 0 V	X2.5: 24 V _{SEN x+3} X2.6: 0 V X2.7: Input x+3 X2.8: 0 V	X1.5: Output I1+ X1.6: 0 V X1.7: – X1.8: 0 V	X2.5: Output I3+ X2.6: 0 V X2.7: – X2.8: 0 V

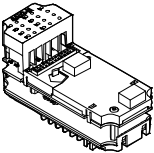
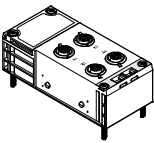
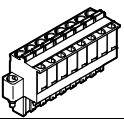
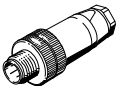
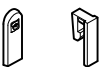
-  - Note

In the case of mixed operation of inputs and outputs in one module, the connections are first assigned input signals and then output signals, in ascending order.

Terminal CPX-P

Technical data – HART input/output module

FESTO

Ordering data				
Designation			Part no.	Type
HART input/output module				
	4 analogue inputs/outputs		8059847	CPX-4AE-4AA-H
Connection block				
	Made of polymer	4x socket, M12, 4-pin	565706	CPX-P-AB-4XM12-4POL
		2x plug, 8-pin	565704	CPX-P-AB-2XKL-8POL
Plugs				
	Socket, 8-pin	Spring-loaded terminal	Connection cross-section 0.2 ... 2.5 mm ²	565712 NECU-L3G8-C1
		Screw terminal	Connection cross-section 0.2 ... 2.5 mm ²	565710 NECU-L3G8-C2
	Plug M12x1, 4-pin, straight, A-coded	Insulation displacement connector	Connection cross-section 0.25 ... 0.5 mm ²	525928 SEA-GS-HAR-4POL
		Screw terminal	Connection cross-section 0.14 ... 0.5 mm ²	192008 SEA-4GS-7-2,5
			Connection cross-section 0.75 mm ² Permissible cable diameter 4 ... 6 mm	18666 SEA-GS-7
			Connection cross-section 0.75 mm ² Permissible cable diameter 6 ... 8 mm	18778 SEA-GS-9
Cover				
	Cover cap for sealing unused ports M12x1 (10 pieces)		165592	ISK-M12
Coding element				
	Ensures that a coded socket NECU-L3G8 can only be inserted in the matching coded connection block CPX-P-AB-2XKL (96 pieces of each)		For NECU-L3G8	565713 CPX-P-KDS-AB-2XKL

Terminal CPX-P

Technical data – Analogue module for inputs

FESTO

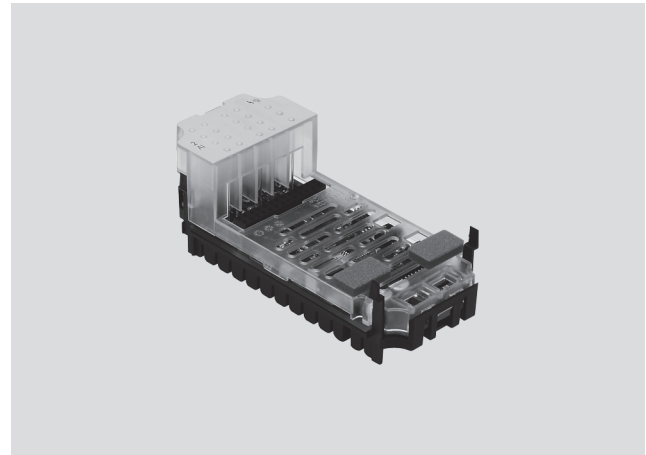
Function

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

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

Area of 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	
Number of analogue inputs	2		4		4	
Max. power supply per module [A]	0.7					
Fuse protection	Internal electronic fuse					
Current consumption from 24 V sensor supply (quiescent current) [mA]	Typically 50					
Current consumption from 24 V sensor supply (at full load) [A]	Max. 0.7					
Nominal operating voltage for load voltage [V DC]	24 ±2%					
Nominal operating voltage [V DC]	24					
Operating voltage range [V DC]	18 ... 30					
Signal range (parameterisable for each channel via 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 bits + prefix		15 bits + prefix		12 bits + prefix	
	Scalable to 15 bits		Scalable to 15 bits		Scalable to 15 bits	
Cable length [m]	Max. 30 (shielded)					

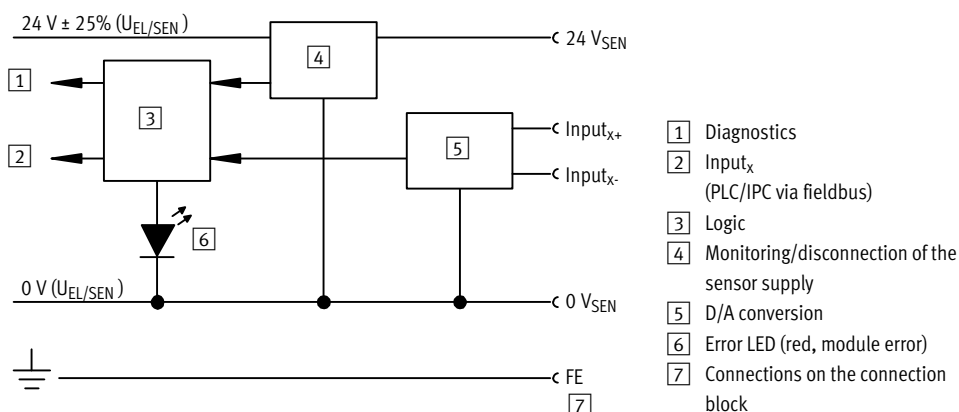
Terminal CPX-P

Technical data – Analogue module for inputs

FESTO

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 indicators	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				
	Monitoring wire break per channel				
	Behaviour after short circuit				
	–	Behaviour after overload at input	–		
	–	Sensor supply active	–		
Degree of protection to EN 60529		Depending on connection block			
Temperature range	Operation	[°C]	–5 ... +50		
	Storage/transport	[°C]	–20 ... +70		
Materials		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 50		
Product weight		[g]	38	46	38

Internal structure, basic diagram



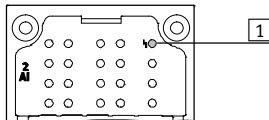
Terminal CPX-P

Technical data – Analogue module for inputs

FESTO

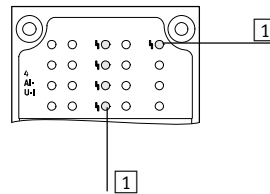
Connection and display components

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



1 Error LED (red, module error)

CPX-4AE-U-I

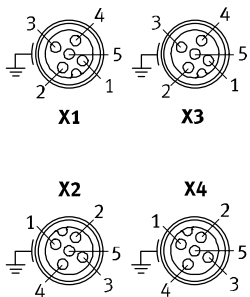
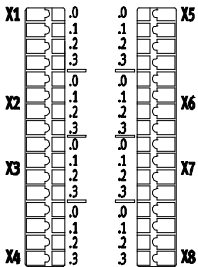


1 Error LED (red, module error)
2 Channel-related error LEDs (red)

Combinations of connection blocks and analogue module

Connection blocks	Part no.	Analogue module		
		CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-I
CPX-AB-4-M12X2-5POL	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

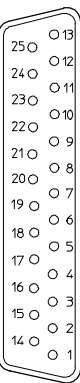
Connection block inputs	CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-I			
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾						
	X1.1: 24 V _{SEN} X1.2: Input U0+ X1.3: 0 V _{SEN} X1.4: Input U0− X1.5: FE ²⁾	X3.1: 24 V _{SEN} X3.2: Input U1+ X3.3: 0 V _{SEN} X3.4: Input U1− X3.5: FE ²⁾	X1.1: 24 V _{SEN} X1.2: Input 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⁾
CPX-AB-8-KL-4POL						
	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, additional shielding on metal thread
2) FE/additional shielding on metal thread

Terminal CPX-P

Technical data – Analogue module for inputs



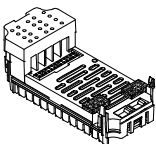
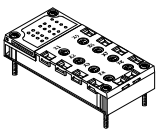
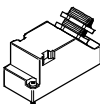
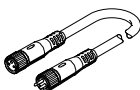
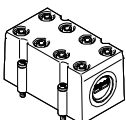
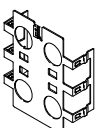
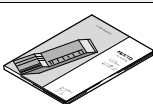
Pin allocation												
Connection block inputs			CPX-2AE-U-I			CPX-4AE-U-I			CPX-4AE-I			
CPX-AB-1-SUB-BU-25POL												
	1:	Input U0–	14:	Input U1–	1:	Input 0–	14:	Input 2–	1:	Input I0–	14:	Input I2–
	2:	Input U0+	15:	Input U1+	2:	Input 0+	15:	Input 2+	2:	Input I0+	15:	Input I2+
	3:	Input I0–	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:	Shield ¹⁾	Housing: FE		13:	Shield ¹⁾	Housing: FE		13:	Shield ¹⁾	Housing: FE	

1) Connect shield to functional earth FE

Terminal CPX-P

Technical data – Analogue module for inputs

FESTO

Ordering data					
Designation				Part no.	Type
Input module, analogue					
	2 analogue current or voltage inputs			526168	CPX-2AE-U-I
	4 analogue current or voltage inputs			573710	CPX-4AE-U-I
	4 analogue current inputs			541484	CPX-4AE-I
Connection block					
	Made of polymer	4x socket, M12, 5-pin		195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lock technology, 5-pin		541254	CPX-AB-4-M12X2-5POL-R
		Spring-loaded terminal, 32-pin		195708	CPX-AB-8-KL-4POL
		1x socket, Sub-D, 25-pin		525676	CPX-AB-1-SUB-BU-25POL
	Made of metal	4x socket, M12, 5-pin		549367	CPX-M-AB-4-M12X2-5POL
Plug					
	Plug	M12, 5-pin	PG7, for cable diameter 4 ... 6 mm	175487	SEA-M12-5GS-PG7
	Sub-D plug, 25-pin			527522	SD-SUB-D-ST25
Connecting cable					
	Modular system for all types of connecting cable			–	NEBU-... ➔ Internet: nebu
Cover					
	Cover for CPX-AB-8-KL-4POL (IP65/67)		• 8 cable through-feeds M9 • 1 cable through-feed for multi-pin plug	538219	AK-8KL
	Set of fittings for cover AK-8KL			538220	VG-K-M9
	Cover cap for closing off unused M12 ports (10 pieces)			165592	ISK-M12
Screening plate					
	Screening plate for connection block • CPX-AB-4-M12X2-5POL • CPX-AB-4-M12X2-5POL-R			526184	CPX-AB-S-4-M12
User documentation					
	User documentation		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-P

Technical data – Analogue input module with pressure sensors

FESTO

Function

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

Area of application

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



General technical data				
Type		CPX-4AE-P-B2		CPX-4AE-P-D10
Number of analogue inputs		4		
Pneumatic connection		QS-4		
Nominal operating voltage		[V DC]	24	
Operating voltage range		[V DC]	18 ... 30	
Intrinsic current consumption		[mA]	Typically 50	
Measured variable		4x relative or 2x differential pressure measurement		
Displayable units		• kPa • mbar • psi		
Pressure measuring range	Start value	[bar]	–1	0
	End value	[bar]	1	10
Internal cycle time		[ms]	5	
Data format		• 15 bits + prefix • Binary notation in mbar, kPa, psi		
LED indicators		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		
Degree of protection to EN 60529		IP65, IP67		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation (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		PA reinforced, PC		
Grid dimension		[mm]	50	
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55	
Product weight		[g]	112	



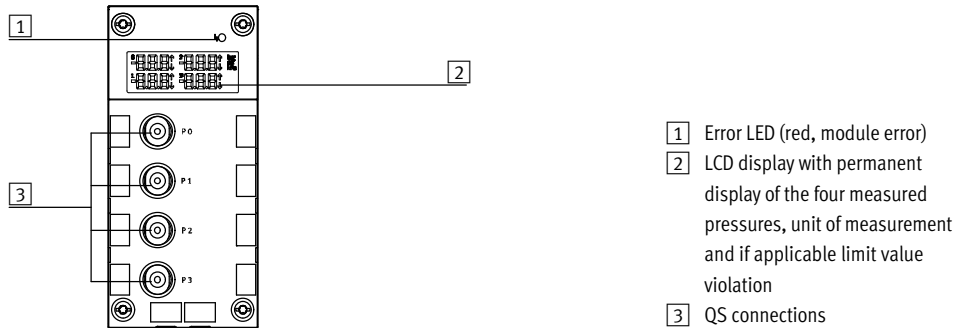
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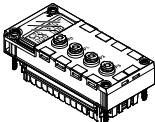
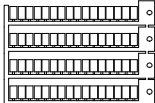
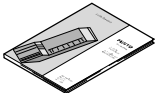
Extreme pneumatic conditions, e.g. high cycle rates with high pressure amplitudes, can damage the sensors.

Terminal CPX-P

Technical data – Analogue input module with pressure sensors

Connection and display components



Ordering data				
Designation		Part no.	Type	
Input module, analogue				
	4 analogue pressure inputs, pressure range -1 ... +1 bar	560361	CPX-4AE-P-B2	
	4 analogue pressure inputs, pressure range 0 ... 10 bar	560362	CPX-4AE-P-D10	
Inscription labels				
	Inscription labels 6x10 mm, 64 pieces, in frame	18576	IBS-6x10	
User documentation				
	User documentation	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-P

Technical data – Analogue module for temperature inputs

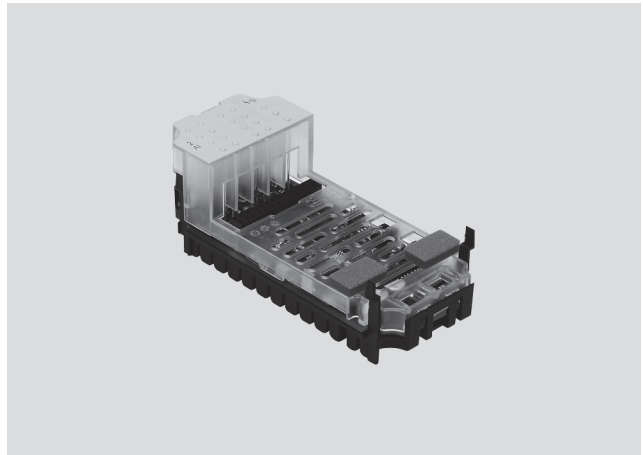
FESTO

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.

Area of application

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

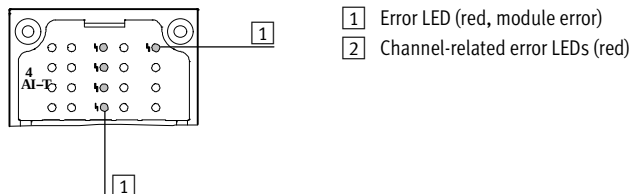
Terminal CPX-P

Technical data – Analogue module for temperature inputs

General technical data		
Data format		15 bits + prefix, complement of two, binary notation in tenths of a degree
Cable length	[m]	Max. 200 (shielded)
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
LED indicators	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
Degree of protection to EN 60529		Depending on connection block
Temperature range	Operation	–5 ... +50
	Storage/transport	–20 ... +70
Materials		PA reinforced, PC
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

Connection and display components

CPX-4AE-T



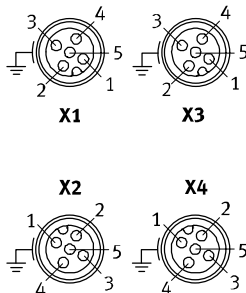
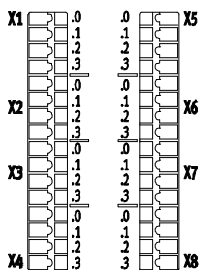
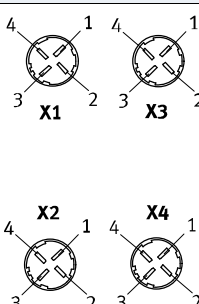
Combinations of connection blocks and analogue module

Connection blocks	Part no.	Temperature module
		CPX-4AE-T
CPX-AB-4-M12X2-5POL	195704	■
CPX-AB-4-M12X2-5POL-R	541254	■
CPX-AB-8-KL-4POL	195708	■
CPX-AB-4-HAR-4POL	525636	■
CPX-M-AB-4-M12X2-5POL	549367	■

Terminal CPX-P

Technical data – Analogue module for temperature inputs

FESTO

Pin allocation		
Connection block inputs		CPX-4AE-T
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾		
	X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0– X1.5: FE²⁾ X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1– X2.5: FE²⁾	X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2– X3.5: 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		
	X1.0: Input I0+ X1.1: Input I0– X1.2: Input U0– X1.3: FE X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE X3.0: Input I1+ X3.1: Input I1– X3.2: Input U1– X3.3: FE X4.0: n.c. X4.1: n.c. X4.2: Input U1+ X4.3: FE	X5.0: Input I2+ X5.1: Input I2– X5.2: Input U2– X5.3: FE X6.0: n.c. X6.1: n.c. X6.2: Input U12+ X6.3: FE X7.0: Input I3+ X7.1: Input I3– X7.2: Input U3– X7.3: 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– X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1–	X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2– X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3–

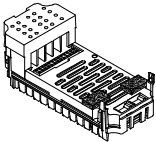
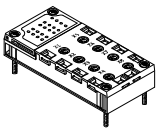
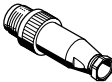
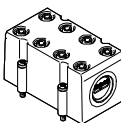
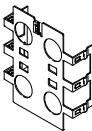
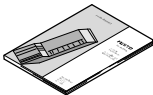
1) Speedcon quick lock, additional shielding on metal thread

2) FE/additional shielding on metal thread

Terminal CPX-P

Technical data – Analogue module for temperature inputs

FESTO

Ordering data				
Designation			Part no.	Type
Input module, analogue				
	2 or 4 analogue temperature inputs		541486	CPX-4AE-T
Connection block				
	Made of polymer	4x socket M12, 5-pin	195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL
		4x socket, quick connector, 4-pin	525636	CPX-AB-4-HAR-4POL
	Made of metal	4x socket M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL
Plug				
	Plug M12, 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
	Set of fittings		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User documentation				
	User documentation	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-P

Technical data – Analogue module for thermocoupler

FESTO

Function

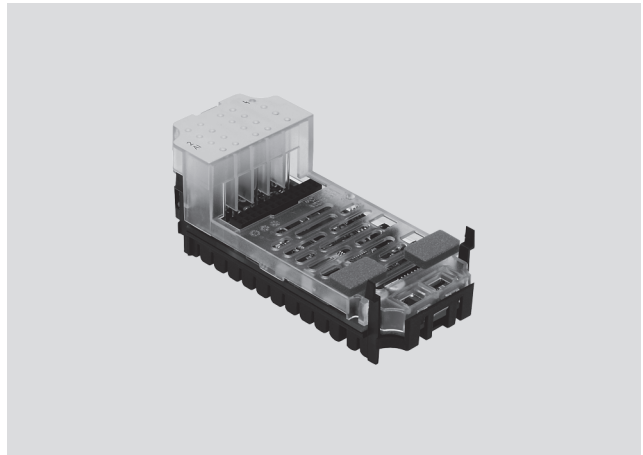
The CPX-4AE-TC analogue input module with 4 channels for temperature measurement enables up to 4 thermocoupler sensors to be connected.

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).

Area of application

- 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
Number of analogue inputs		4
Fuse protection (short circuit)		Internal electronic fuse per channel
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Sensor type (parameterisable for each channel via software)		• Type B +400 ... +1820 °C, 8 µV/°C • Type E -270 ... +900 °C, 60 µV/°C • Type J -200 ... +1200 °C, 51 µV/°C • Type K -200 ... +1370 °C, 40 µV/°C • Type N -200 ... +1300 °C, 38 µV/°C • Type R 0 ... +1760 °C, 12 µV/°C • Type S 0 ... +1760 °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 conductor	[Ω]	10
Max. residual current per module	[mA]	30
Max. permissible input voltage	[V]	±30
Internal cycle time (module)	[ms]	250

Terminal CPX-P

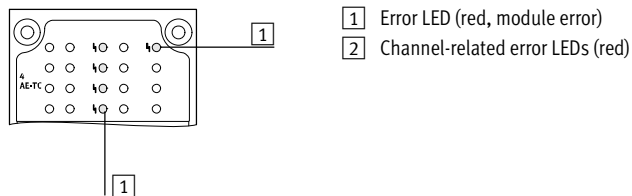
Technical data – Analogue module for thermocoupler

FESTO

General technical data		
Data format		• 15 bits + prefix, complement of two • Binary notation in tenths of a degree
Cable length	[m]	Max. 50 (shielded)
Electrical isolation	Channel – channel	No
	Channel – internal bus	Yes
LED indicators	Group diagnostics	1
	Channel diagnostics	4
Diagnostics		• Parameterisation error • Wire break per channel • Limit value violation per channel
Parameterisation		• Monitoring wire break per channel • Unit of measurement • Cold-junction compensation • Sensor type per channel • Limit value monitoring per channel • Measured value smoothing
Degree of protection to EN 60529		Depending on connection block
Temperature range	Operation	[°C] –5 ... +50
	Storage/transport	[°C] –20 ... +70
Materials		PA reinforced, PC
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

Connection and display components

CPX-4AE-TC

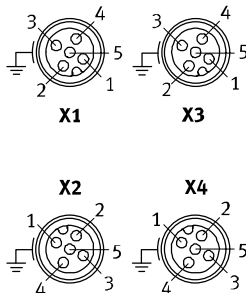
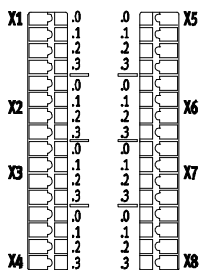


Combinations of connection blocks and analogue module		
Connection blocks	Part no.	Temperature module
		CPX-4AE-TC
CPX-AB-4-M12X2-5POL	195704	■
CPX-AB-4-M12X2-5POL-R	541254	■
CPX-AB-8-KL-4POL	195708	■
CPX-M-AB-4-M12X2-5POL	549367	■

Terminal CPX-P

Technical data – Analogue module for thermocoupler

FESTO

Pin allocation		
Connection block inputs		CPX-4AE-TC
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾		
	X1.1: Cold junction compensation 0+ X1.2: Input signal U0+ X1.3: Cold junction compensation 0– X1.4: Input signal U0– X1.5: FE²⁾ X2.1: Cold junction compensation 1+ X2.2: Input signal U1+ X2.3: Cold junction compensation 1– X2.4: Input signal U1– X2.5: FE²⁾	X3.1: Cold junction compensation 2+ X3.2: Input signal U2+ X3.3: Cold junction compensation 2– X3.4: Input signal U2– X3.5: FE²⁾ X4.1: Cold junction compensation 3+ X4.2: Input signal U3+ X4.3: Cold junction compensation 3– X4.4: Input signal U3– X4.5: FE²⁾
CPX-AB-8-KL-4POL		
	X1.0: Cold junction compensation 0+ X1.1: Cold junction compensation 0– X1.2: Input signal U0– X1.3: FE X2.0: n.c. X2.1: n.c. X2.2: Input signal U0+ X2.3: FE X3.0: Cold junction compensation 1+ X3.1: Cold junction compensation 1– X3.2: Input signal U1– X3.3: FE X4.0: n.c. X4.1: n.c. X4.2: Input signal U1+ X4.3: FE	X5.0: Cold junction compensation 2+ X5.1: Cold junction compensation 2– X5.2: Input signal U2– X5.3: FE X6.0: n.c. X6.1: n.c. X6.2: Input signal U2+ X6.3: FE X7.0: Cold junction compensation 3+ X7.1: Cold junction compensation 3– X7.2: Input signal U3– X7.3: FE X8.0: n.c. X8.1: n.c. X8.2: Input signal U3+ X8.3: FE

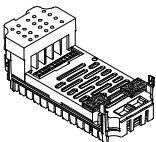
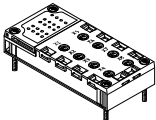
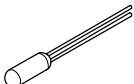
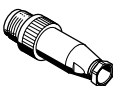
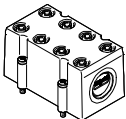
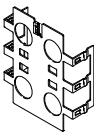
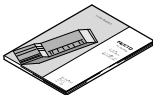
1) Speedcon quick lock, additional shielding on metal thread

2) FE/additional shielding on metal thread

Terminal CPX-P

Technical data – Analogue module for thermocoupler

FESTO

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				
	Made of polymer	4x socket M12, 5-pin	195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL
	Made of 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				
	Plug M12, 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
	Set of fittings		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User documentation				
	User documentation		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-P

Technical data – Analogue module for outputs

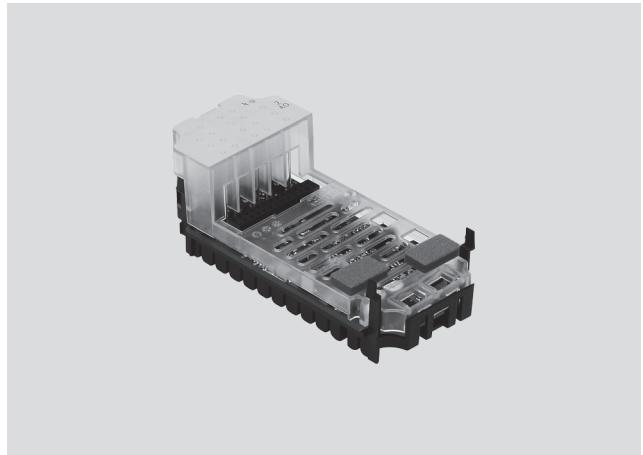
FESTO

Function

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

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

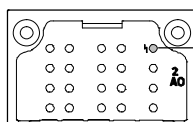
Terminal CPX-P

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 bits + prefix, linear scaling 12 bits right-justified 12 bits left-justified, S7 compatible 12 bits left-justified, S5 compatible	
Cable length		[m]	Max. 30 (shielded)	
LED indicators	Group diagnostics		1	
	Channel diagnostics		Yes, via 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 value falling below nominal range/full-scale value • Monitoring value exceeding nominal range/full-scale value • Monitoring wire break • Signal range	
Degree of protection to EN 60529			Depending on connection block	
Temperature range	Operation	[°C]	–5 ... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials			PA reinforced, PC	
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	

Connection and display components

CPX-2AA-U-I



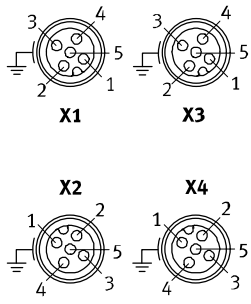
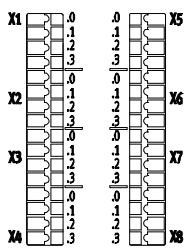
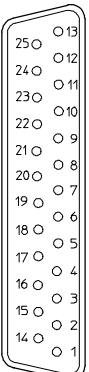
1 Error LED (red, module error)

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

Terminal CPX-P

Technical data – Analogue module for outputs

FESTO

Pin allocation		
Connection block outputs		CPX-2AA-U-I
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾		
	X1.1: 24 V_{OUT} X1.2: Output U0+ X1.3: 0 V_{OUT} X1.4: Output GND X1.5: FE²⁾ X2.1: 24 V_{OUT} X2.2: Output I0+ X2.3: 0 V_{OUT} X2.4: Output GND X2.5: FE²⁾	X3.1: 24 V_{OUT} X3.2: Output U1+ X3.3: 0 V_{OUT} X3.4: Output GND X3.5: FE²⁾ X4.1: 24 V_{OUT} X4.2: Output I1+ X4.3: 0 V_{OUT} X4.4: Output GND X4.5: FE²⁾
CPX-AB-8-KL-4POL		
	X1.0: 24 V_{OUT} X1.1: 0 V_{OUT} X1.2: Output GND X1.3: FE X2.0: n.c. X2.1: n.c. X2.2: Output U0+ X2.3: FE X3.0: 24 V_{OUT} X3.1: 0 V_{OUT} X3.2: Output GND X3.3: FE X4.0: n.c. X4.1: n.c. X4.2: Output I0+ X4.3: FE	X5.0: 24 V_{OUT} X5.1: 0 V_{OUT} X5.2: Output GND X5.3: FE X6.0: n.c. X6.1: n.c. X6.2: Output U1+ X6.3: FE X7.0: 24 V_{OUT} X7.1: 0 V_{OUT} X7.2: Output GND X7.3: FE X8.0: n.c. X8.1: n.c. X8.2: Output I1+ X8.3: FE
CPX-AB-1-SUB-BU-25POL		
	1: Output GND 2: Output U0+ 3: Output GND 4: Output I0+ 5: n.c. 6: n.c. 7: n.c. 8: n.c. 9: 24 V_{OUT} 10: 24 V_{OUT} 11: 0 V_{OUT} 12: 0 V_{OUT} 13: Shield³⁾	14: Output GND 15: Output U1+ 16: Output GND 17: Output I1+ 18: 24 V_{OUT} 19: n.c. 20: 24 V_{OUT} 21: n.c. 22: 0 V_{OUT} 23: 0 V_{OUT} 24: 0 V_{OUT} 25: FE Housing: FE

1) Speedcon quick lock, additional shielding on metal thread

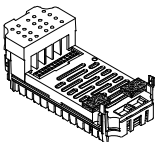
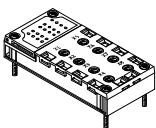
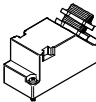
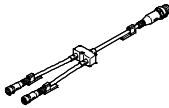
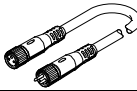
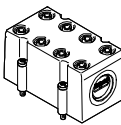
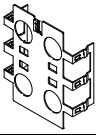
2) FE/additional shielding on metal thread

3) Connect shield to functional earth FE

Terminal CPX-P

Technical data – Analogue module for outputs

FESTO

Ordering data					
Designation				Part no.	Type
Output module, analogue					
	2 analogue current or voltage outputs			526170	CPX-2AA-U-I
Connection block					
	Made of polymer	4x socket, M12, 5-pin	195704	CPX-AB-4-M12X2-5POL	
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R	
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL	
		1x socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL	
	Made of metal	4x socket, M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL	
Plug					
	Plug	M12, 5-pin	PG7, for cable diameter 4 ... 6 mm	175487	SEA-M12-5GS-PG7
	Sub-D plug, 25-pin			527522	SD-SUB-D-ST25
Connecting cable					
	Modular system for all types of sensor/actuator distributors			–	NEDY-... ➔ Internet: nedy
	Modular system for all types of connecting cable			–	NEBU-... ➔ Internet: nebu
Cover					
	Cover for CPX-AB-8-KL-4POL (IP65/67)		• 8 cable through-feeds M9 • 1 cable through-feed for multi-pin plug	538219	AK-8KL
	Set of fittings for hood AK-8KL			538220	VG-K-M9
	Cover cap for closing off unused M12 ports (10 pieces)			165592	ISK-M12
Screening plate					
	Screening plate for connection block • CPX-AB-4-M12X2-5POL • CPX-AB-4-M12X2-5POL-R			526184	CPX-AB-S-4-M12
User documentation					
	User documentation		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-P

Technical data – PROFIsafe shut-off module

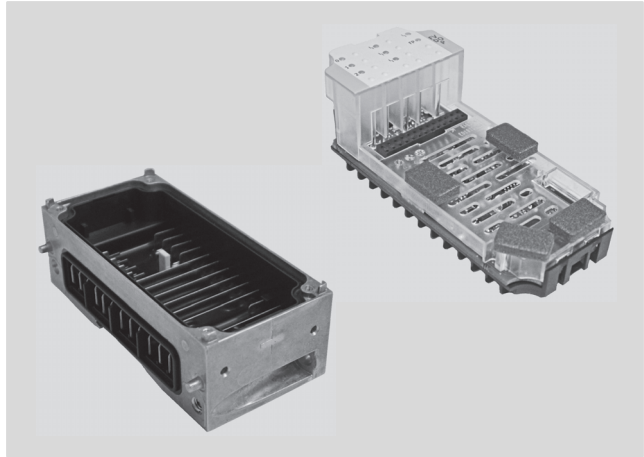
FESTO

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-P terminal and via a connection block to two consuming devices. Actuation takes place via the bus node (PROFINET) of the CPX-P terminal.

Area 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 nodes
- The shut-off module is supplied with voltage for the electronics and the outputs by the interlinking block
- The outputs are supplied from the power supply for valves (V_{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. address capacity	Inputs	[B]	6	
	Outputs	[B]	6	
Max. cable length		[m]	200	
Max. power supply	Per module	[A]	5	
	Per channel	[A]	1.5	
Fuse protection (short circuit)				Internal electronic fuse per channel
Current consumption of module		[mA]	Typically 65 (power supply for valves)	
		[mA]	Typically 25 (power supply for electronics)	
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	20.4 ... 28.8	
Voltage drop per channel				0.6
Residual ripple				2 within voltage range
Load capacity to FE				400
Max. response time to shut-off command				23
Electrical isolation	Channel – channel		No	
	Channel – internal bus		Yes, with intermediate supply	
Switching logic				P-M switching
Safety integrity level				Safe Switch Off, SIL 3
Performance Level				Safe Switch Off/category 3, Performance Level e
Failure rate per hour (PFH)				1.0×10^{-9}
Certificate issuing authority				01/205/50294/13
LED indicators	Group diagnostics		1	
	Channel diagnostics		3	
	Channel status		3	
	Failsafe protocol active		1	
Diagnostics				• Short circuit/overload per channel • Undervoltage at valves • Cross circuit • Wire break per channel
Parameterisation				• Monitoring wire break per channel • Diagnostic behaviour
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-P

Technical data – PROFIsafe shut-off module

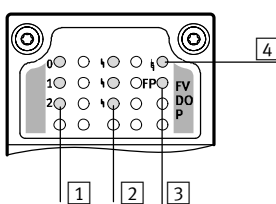
FESTO

Materials	
Housing	PA reinforced, PC
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 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-related error LEDs (red)
- 3** Fail-safe 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

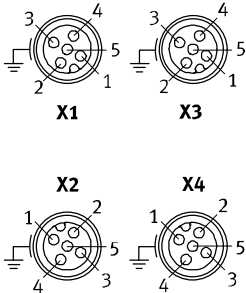
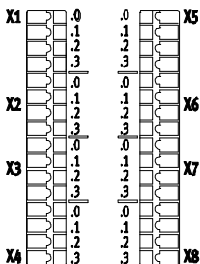
The PROFIsafe shut-off module CPX-FVDA-P2 can only be connected as of software release 21 or release 30 (in the case of CPX-FB13).

Terminal CPX-P

Technical data – PROFIsafe shut-off module

FESTO

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 switched off) X1.2: 24 V_{OUT} 1 (cannot be switched off) X1.3: 0 V_{OUT} 1 (can be switched off via fieldbus) X1.4: 24 V_{OUT} 1 (can be switched off via fieldbus) X1.5: FE X2.1: 0 V_{OUT} 2 (cannot be switched off) X2.2: 24 V_{OUT} 2 (cannot be switched off) X2.3: 0 V_{OUT} 2 (can be switched off via fieldbus) X2.4: 24 V_{OUT} 2 (can be switched off via fieldbus) X2.5: FE	X3.1: n.c. X3.2: n.c. X3.3: n.c. X3.4: n.c. X3.5: FE X4.1: n.c. X4.2: n.c. X4.3: n.c. X4.4: n.c. X4.5: FE
CPX-AB-8-KL-4POL		
	X1.0: 0 V_{OUT} 1 (cannot be switched off) X1.1: 0 V_{OUT} 1 (can be switched off via fieldbus) X1.2: 24 V_{OUT} 1 (can be switched off via fieldbus) X1.3: FE X2.0: n.c. X2.1: n.c. X2.2: 24 V_{OUT} 1 (cannot be switched off) X2.3: FE X3.0: 0 V_{OUT} 2 (cannot be switched off) X3.1: 0 V_{OUT} 2 (can be switched off via fieldbus) X3.2: 24 V_{OUT} 2 (can be switched off via fieldbus) X3.3: FE X4.0: n.c. X4.1: n.c. X4.2: 24 V_{OUT} 2 (cannot be switched off) X4.3: FE	X5.0: n.c. X5.1: n.c. X5.2: n.c. X5.3: n.c. X6.0: n.c. X6.1: n.c. X6.2: n.c. X6.3: n.c. X7.0: n.c. X7.1: n.c. X7.2: n.c. X7.3: n.c. X8.0: n.c. X8.1: n.c. X8.2: n.c. X8.3: n.c.

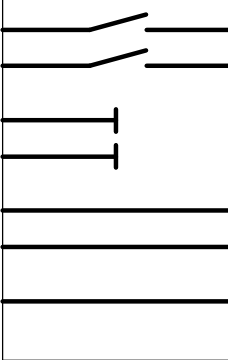
Terminal CPX-P

Technical data – PROFIsafe shut-off module

FESTO

Combinations of interlinking blocks and PROFIsafe shut-off module		
Interlinking blocks	Part no.	PROFIsafe shut-off module
		CPX-FVDA-P2
CPX-M-GE-EV-S-7/8-5POL	550208	–
CPX-M-GE-EV-S-7/8-5POL-VL	8022165	–
CPX-M-GE-EV	550206	–
CPX-M-GE-EV-FVO	567806	■
CPX-M-GE-EV-Z-7/8-5POL	550210	–
CPX-M-GE-EV-Z-7/8-5POL-VL	8022158	–

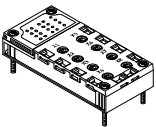
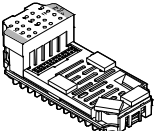
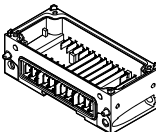
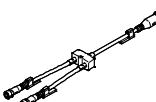
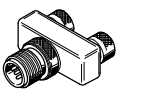
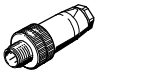
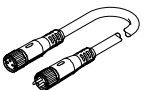
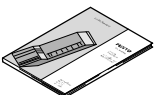
General technical data		
Type	CPX-M-GE-EV-FVO	
Nominal operating voltage	[V DC]	24
Acceptable current load (per contact/contact rail)	[A]	16
Degree of protection to EN 60529		Depending on connection block
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant
Materials		Die-cast aluminium
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-P

Technical data – 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
	Polymer 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 (for CPX-FVDA-P2 only)		567806	CPX-M-GE-EV-FVO
Distributors				
	Modular system for all types of sensor/actuator distributors		–	NEDY-... ➔ Internet: nedy
	1x 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 diameter 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 all types of connecting cables		–	NEBU-... ➔ Internet: nebu
User documentation				
	User documentation 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-P

Technical data – Interlinking block with system supply

FESTO

Function

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

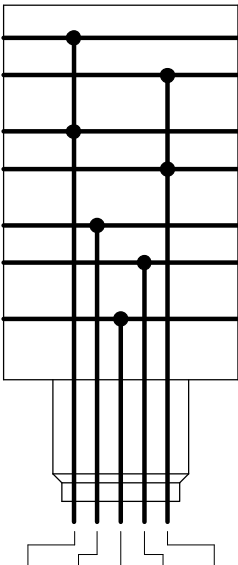
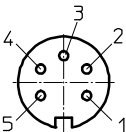
Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Area of application

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



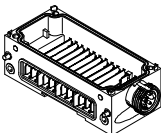
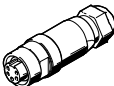
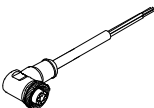
General technical data			
Nominal operating voltage	[V DC]	24	
Degree of protection to EN 60529		Depending on connection block	
Ambient temperature	[°C]	–5 ... +50	
Note on materials		RoHS-compliant	
Grid dimension	[mm]	50	
Dimensions W x L x H	[mm]	50 x 107 x 35	
Electrical connection		7/8", 5-pin	
Current supply	Sensors and electronics	[A]	Max. 8
	Valves and outputs	[A]	Max. 8
Materials		Die-cast aluminium	
Product weight	[g]	187	

Pin allocation																
Circuitry		Pin	Allocation													
Round plug, 5-pin																
 0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE <table><tr><td>7/8"</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td></td><td>0V</td><td>0V</td><td>FE</td><td>24V</td><td>24V</td></tr></table>	7/8"	1	2	3	4	5		0V	0V	FE	24V	24V	7/8"		1	0 V valves and outputs
	7/8"	1	2	3	4	5										
		0V	0V	FE	24V	24V										
			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													

Terminal CPX-P

FESTO

Technical data – Interlinking block with system supply

Ordering data					
Designation				Part no.	Type
Interlinking block with system supply					
	7/8" connection, metal interlinking block	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 sockets 7/8"					
	Power supply socket	5-pin		543107	NECU-G78G5-C2
	Angled socket, 5-pin – open cable end, 5-pin	2 m		573855	NEBU-G78W5-K-2-N-LE5
Mounting accessories					
	Screws for mounting the bus node/connection block on an interlinking block	Bus node/polymer connection block	550219	CPX-M-M3x22-4x	
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x	

Terminal CPX-P

Technical data – Interlinking block

FESTO

Function

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

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

Area of application

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



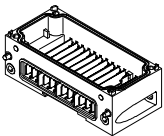
General technical data		
Electrical connection		–
Nominal operating voltage	[V DC]	24
Acceptable current load (per contact/contact rail)	[A]	16
Degree of protection to EN 60529		Depending on connection block
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant
Materials		Aluminium
Grid dimension	[mm]	50
Dimensions W x L x H	[mm]	50 x 107 x 35
Product weight	[g]	169

Pin allocation			
Circuitry		Pin	Allocation
0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE		–	–
		–	–
		–	–
		–	–

Terminal CPX-P

Technical data – Interlinking block

FESTO

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

Terminal CPX-P

Technical data – Interlinking block with additional supply for outputs



Function

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

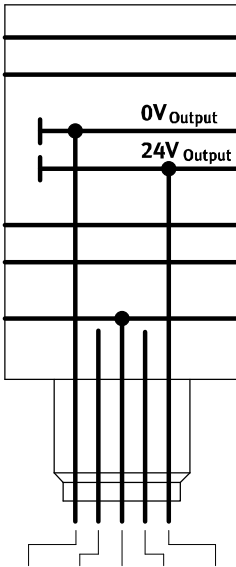
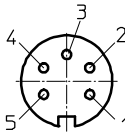
Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Area of application

- 24 V DC supply voltage for outputs



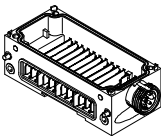
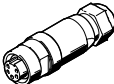
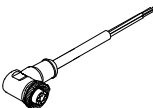
General technical data		
Nominal operating voltage	[V DC]	24
Degree of protection to EN 60529		Depending on connection block
Ambient temperature	[°C]	–5 ... +50
Note on materials		RoHS-compliant
Grid dimension	[mm]	50
Dimensions W x L x H	[mm]	50 x 107 x 35
Electrical connection		7/8", 5-pin
Current supply	Outputs	[A]
		Max. 8
Materials		Die-cast aluminium
Product weight	[g]	187

Pin allocation – Metal interlinking blocks															
Circuitry		Pin	Allocation												
Round plug, 5-pin															
		7/8" <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>0V</td><td>n.c.</td><td>FE</td><td>n.c.</td><td>24V</td></tr></table>				1	2	3	4	5	0V	n.c.	FE	n.c.	24V
1	2	3	4	5											
0V	n.c.	FE	n.c.	24V											
		7/8"  <table><tr><td>1</td><td>0 V outputs</td></tr><tr><td>2</td><td>n.c.</td></tr><tr><td>3</td><td>FE</td></tr><tr><td>4</td><td>n.c.</td></tr><tr><td>5</td><td>24 V DC load voltage supply for outputs</td></tr></table>			1	0 V outputs	2	n.c.	3	FE	4	n.c.	5	24 V DC load voltage supply for outputs	
1	0 V outputs														
2	n.c.														
3	FE														
4	n.c.														
5	24 V DC load voltage supply for outputs														

Terminal CPX-P

FESTO

Technical data – Interlinking block with additional supply for outputs

Ordering data					
Designation				Part no.	Type
Interlinking block with additional supply for outputs					
	7/8" connection, metal interlinking block	5-pin	–	550210	CPX-M-GE-EV-Z-7/8-5POL
		5-pin	For ATEX environment	8022158	CPX-M-GE-EV-Z-7/8-5POL-VL
Connection sockets 7/8"					
	Power supply socket	5-pin		543107	NECU-G78G5-C2
	Angled socket, 5-pin – open cable end, 5-pin	2 m		573855	NEBU-G78W5-K-2-N-LE5
Mounting accessories					
	Screws for mounting the bus node/connection block on an interlinking block	Bus node/polymer connection block		550219	CPX-M-M3x22-4x
		Bus node/metal connection block		550216	CPX-M-M3x22-S-4x

Terminal CPX-P

Technical data – Pneumatic interface VMPA-FB

FESTO

Function

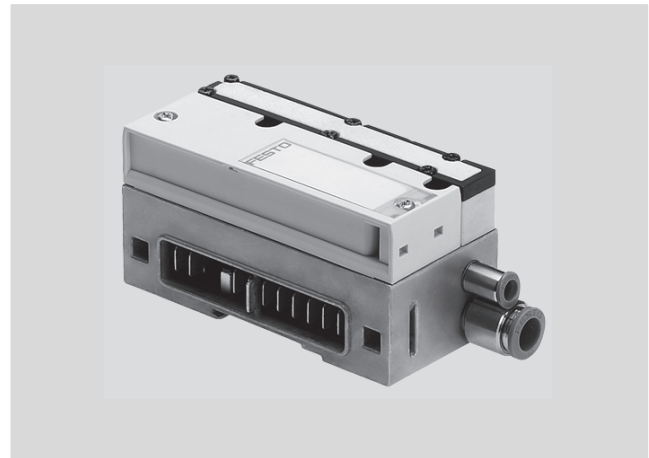
The pneumatic interface VMPA-FB establishes the electromechanical connection between the CPX-P terminal and the valve terminal MPA-S.

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-P 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 electric module with digital outputs. Valves, which are galvanically isolated, can be supplied with power via the interlinking block CPX-GE-EV-V.

Area of application

- 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



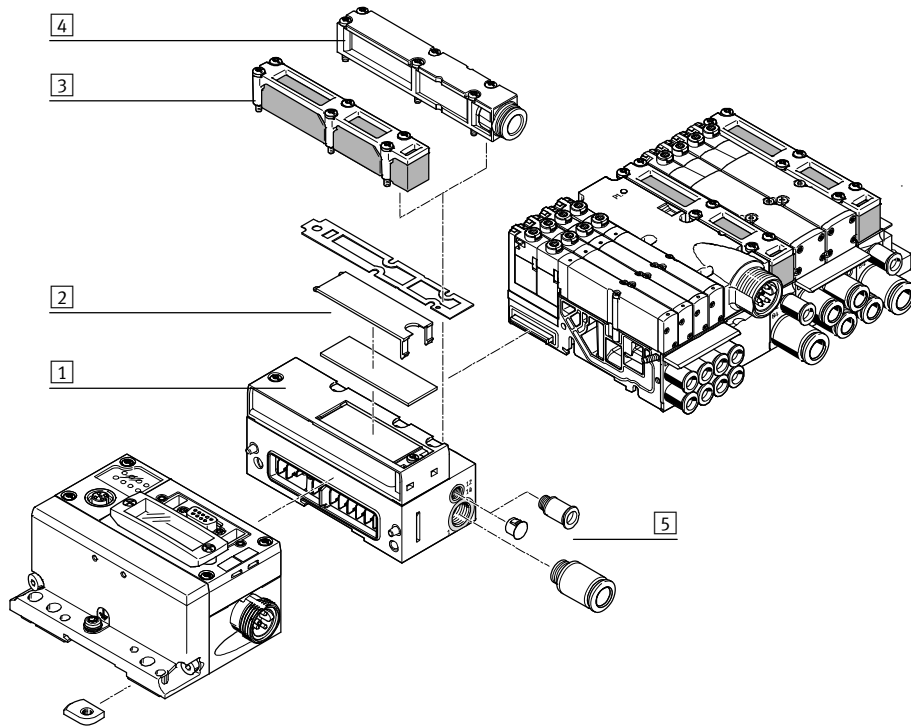
General technical data			
Type		VMPA-FB-EPL-G	VMPA-FB-EPL-E
Number of solenoid coils		128	
Pilot air supply		Internal	External
Pilot air port 12/14		–	M7
Pneumatic connection 1		G1/4	G1/4
Operating pressure	[bar]	3 ... 8	–0.9 ... 10
Pilot pressure	[bar]	3 ... 8	3 ... 8
Nominal operating voltage	[V DC]	24	
Degree of protection to EN 60529		IP65	
Ambient temperature		–5 ... +50	
Materials	Cover	PA	
	Housing	Die-cast aluminium	
Product weight	[g]	Approx. 320	

Terminal CPX-P

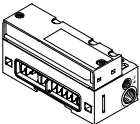
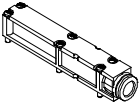
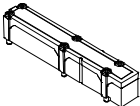
Technical data – Pneumatic interface VMPA-FB

FESTO

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				
	Ducted exhaust air	Internal pilot air	552286	VMPA-FB-EPLM-G
		External pilot air	552285	VMPA-FB-EPLM-E
	Flat plate silencer	Internal pilot air	552288	VMPA-FB-EPLM-GU
		External pilot air	552287	VMPA-FB-EPLM-EU
Exhaust plate				
	For ducted exhaust air, with push-in connector	For tubing O.D. 10 mm	533375	VMPA-AP
		For tubing O.D. 3/8"	541629	VMPA-AP-3/8
	Flat plate silencer		533374	VMPA-APU

Terminal CPX-P

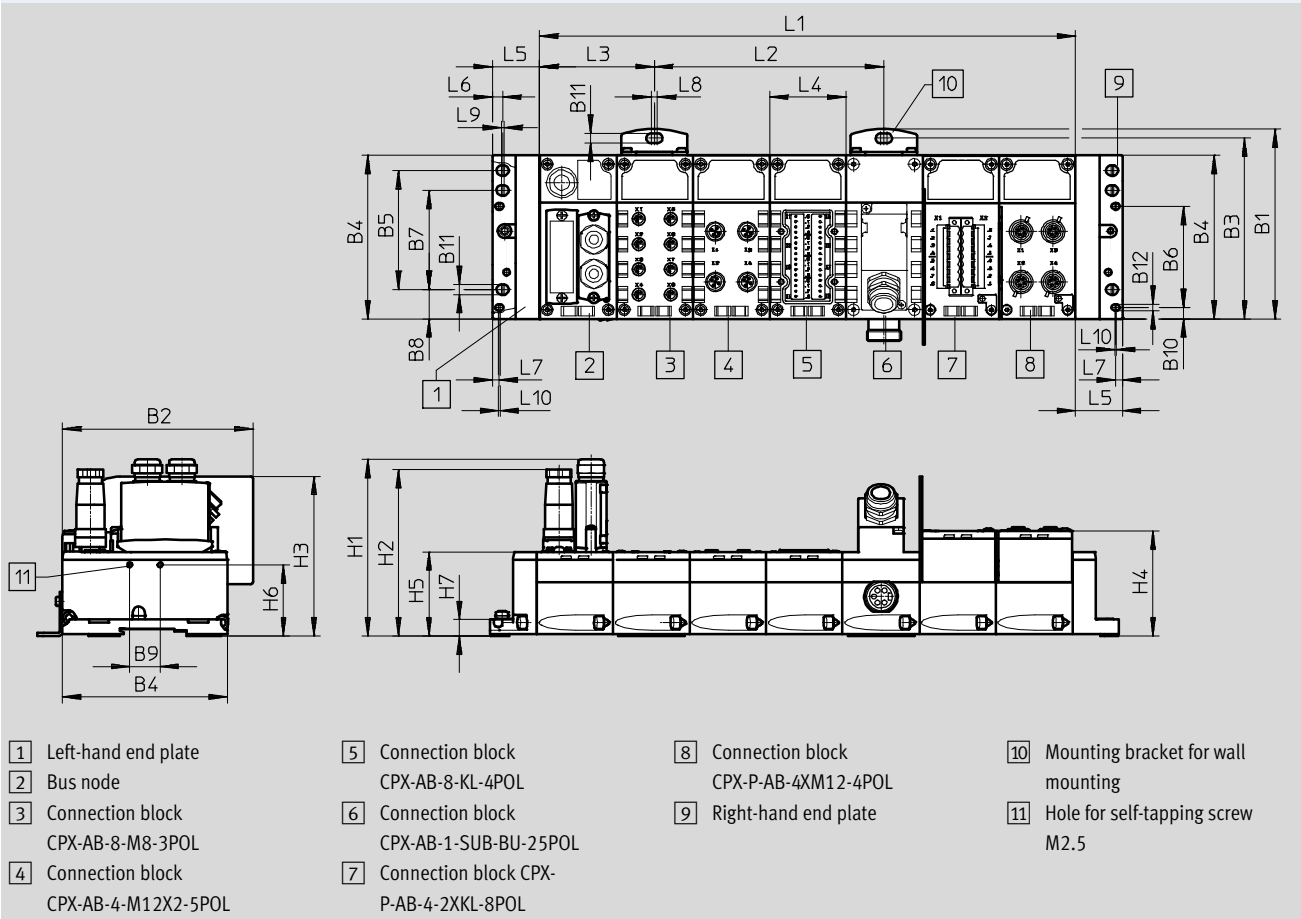
Technical data

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Dimensions – Metal interlinking block

Download CAD data → www.festo.com

With bus nodes and connection blocks



Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
CPX-P	124.9	124.6	118.9	108.1	78	66.3	65	19.3	20	7.9	6.6	4.4

Type	H1	H2	H3	H4	H5	H6	H7
CPX-P	116	109	106.2	69.2	55.1	46.6	10.8

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
CPX-P	nx50.1	150.3	125.3	50.1	30.4	6.8	4.5	4	1.5	1

Terminal CPX-P

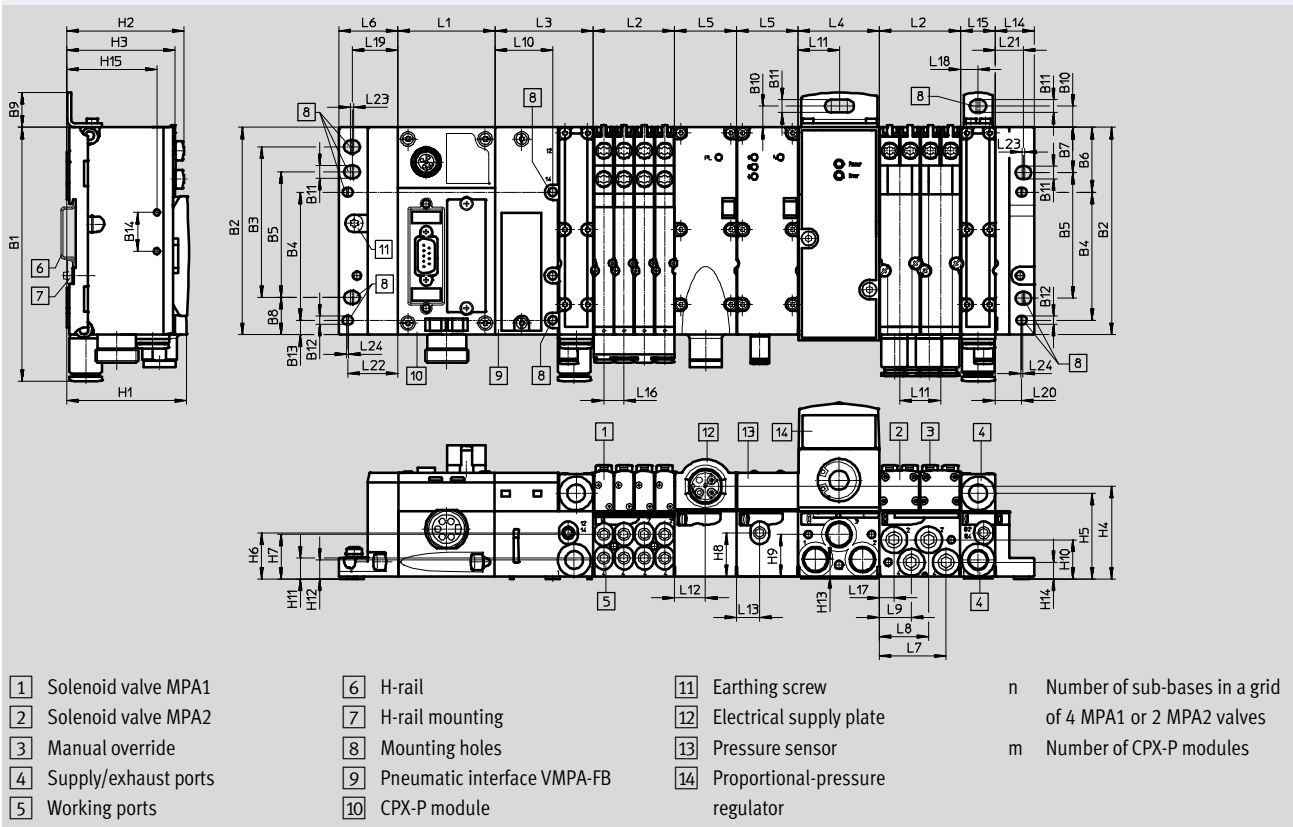
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

With bus nodes and valve terminal MPA-S



Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
CPX-P	131.4	107.3	78	66.3	65	33.5	23.5	19.3	18	11	6.6	4.4	7.5	20

Type	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15
CPX-P	62	60.5	56	48	44.3	23.9	23.1	22.6	21.8	20.3	10.8	9.8	8.8	8.7	46.6

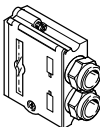
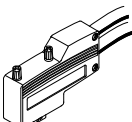
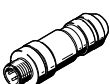
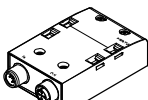
Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12
CPX-P	m x 50.1	n x 42	51.2	42	32	30.4	34.7	25.7	16.7	30	21	16

Type	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24
CPX-P	12	20	18	10.5	7.7	9	23.7	13.5	14.5	25.9	1.5	1

Terminal CPX-P

Accessories

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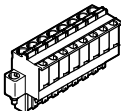
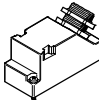
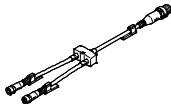
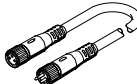
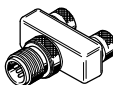
Ordering data – Accessories						
Designation				Part no.	Type	
Connectors						
	Sub-D socket, 9-pin		For DeviceNet®		532219	FBS-SUB-9-BU-2x5POL-B
	Sub-D plug, 9-pin		For PROFIBUS DP		532216	FBS-SUB-9-GS-DP-B
	Sub-D plug, angled		For PROFIBUS DP		533780	FBS-SUB-9-WS-PB-K
	Bus connection, adapter to 5-pin M12 plug/socket	Sub-D plug, 9-pin	B-coded	For PROFIBUS DP	533118	FBA-2-M12-5POL-RK
		Sub-D socket, 9-pin	Micro Style	For DeviceNet®	525632	FBA-2-M12-5POL
	M12 socket, 5-pin	Screw terminal	For FBA-2-M12-5POL		18324	FBSD-GD-9-5POL
		Screw terminal	For FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP		1067905	NECU-M-B12G5-C2-PB
	M8 plug, 3-pin	Solderable	For NEDY-L2R1-V1-M8G3-N-M8G4		18696	SEA-GS-M8
		Screw-in	For NEDY-L2R1-V1-M8G3-N-M8G4		192009	SEA-3GS-M8-S
	M12 plug, 4-pin	Spring-loaded terminal	For cable diameter 4 ... 8 mm		575719	NECU-M-S-A12G4-IS ¹⁾
			Screw terminal	D-coded	For Ethernet	543109
		For cable diameter 2.5 ... 2.9 mm		570955	NECU-S-M12G4-P1-Q6-IS ¹⁾	
				192008	SEA-4GS-7-2,5	
		For cable diameter 2x3 mm or 2x5 mm		570956	NECU-S-M12G4-D-IS ¹⁾	
		For 2x cable diameter 3 ... 5 mm		18779	SEA-GS-11-DUO	
		For cable diameter 4 ... 6 mm		570953	NECU-S-M12G4-P1-IS ¹⁾	
				18666	SEA-GS-7	
		For cable diameter 6 ... 8 mm		570954	NECU-S-M12G4-P2-IS ¹⁾	
				18778	SEA-GS-9	
		Insulation displacement connector	Connection cross-section 0.25 ... 0.5 mm ²		525928	SEA-GS-HAR-4POL
	M12 plug, 5-pin	Screw terminal	For 2x cable diameter 2.5 ... 5 mm		192010	SEA-5GS-11-DUO
			For cable diameter 4 ... 6 mm		175487	SEA-M12-5GS-PG7
			For FBA-2-M12-5POL		175380	FBS-M12-5GS-PG9
			For FBA-2-M12-5POL-RK and CPX-AB-2-M12-RK-DP		1066354	NECU-M-S-B12G5-C2-PB
	Connection block, adapter to 5-pin 7/8" plug	Sub-D socket, 9-pin	–	For DeviceNet®	571052	CPX-AB-1-7/8-DN
	Connection block, adapter to M12 plug/socket	Sub-D plug, 9-pin	B-coded	For PROFIBUS DP	541519	CPX-AB-2-M12-RK-DP
	Open Style bus connection for 5-pin terminal strip			For DeviceNet®	525634	FBA-1-SL-5POL
	5-pin terminal strip			For Open Style connection	525635	FBSD-KL-2x5POL

1) Component preferred for operation in intrinsically safe circuits.

Terminal CPX-P

Accessories

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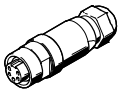
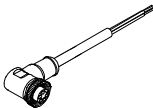
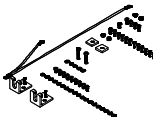
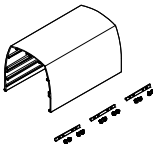
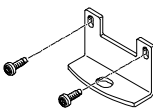
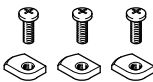
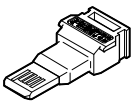
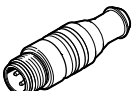
Ordering data – Accessories						
Designation				Part no.	Type	
Plug connectors						
	RJ45 plug			534494	FBS-RJ45-8-GS	
	Socket, 8-pin	Spring-loaded terminal	Black	565712	NECU-L3G8-C1	
			Blue	565711	NECU-L3G8-C1-IS ¹⁾	
		Screw terminal	Black	565710	NECU-L3G8-C2	
			Blue	565709	NECU-L3G8-C2-IS ¹⁾	
	Sub-D plug, 25-pin			527522	SD-SUB-D-ST25	
Connecting cables						
	Modular system for all types of sensor/actuator distributors			–	NEDY-... ➔ Internet: nedy	
	Modular system for choice of connecting cable			–	NEBU-... ➔ Internet: nebu	
	Push-in T-connector	1x plug, M8, 4-pin	2x socket M8, 3-pin	8005312	NEDY-L2R1-V1-M8G3-N-M8G4	
		1x plug M12, 4-pin	2x socket M8, 3-pin	8005311	NEDY-L2R1-V1-M8G3-N-M12G4	
			2x socket, M12, 4-pin	562248	NEDU-M12D4-M12T4-IS ¹⁾	
			2x socket, M12, 5-pin	8005310	NEDY-L2R1-V1-M12G5-N-M12G4	
	Connecting cable M8-M8	3-pin	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	5-pin	Straight plug/straight socket	1.5 m	529044	KV-M12-M12-1,5
				3.5 m	530901	KV-M12-M12-3,5

1) Component preferred for operation in intrinsically safe circuits.

Terminal CPX-P

Accessories

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Ordering data – Accessories				
Designation			Part no.	Type
Connectors and accessories – Power supply				
	Power supply socket, straight	7/8" connection, 5-pin	543107	NECU-G78G5-C2
	7/8" power supply socket, 5-pin, angled socket/open cable end, 5-pin	2 m	573855	NEBU-G78W5-K-2-N-LE5
Hood				
	Mounting rail for attaching the hood	1000 mm	572256	CAFC-X1-S
	Mounting kit for CPX hood		572257	CAFC-X1-BE
	Hood section for CPX-P 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 an interlinking block	Bus node/polymer connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x
	Screws for mounting an inscription label on the bus node (CPX-FB33)	12 pieces	550222	CPX-M-M2,5X8-12X
Mounting				
	Attachment for wall mounting (for long valve terminals, 2 mounting brackets and 4 screws)	Version for metal interlinking plates	550217	CPX-M-BG-RW-2x
	Mounting for H-rail		526032	CPX-CPA-BG-NRH
Function elements				
	Memory card for PROFINET bus node, 2MB		4798288	CPX-SK-3
	Terminating resistor, M12, B-coded for PROFIBUS		1072128	CACR-S-B12G5-220-PB
	M12 adapter, 5-pin to mini USB socket, and controller software		547432	NEFC-M12G5-0.3-U1G5

Terminal CPX-P

Accessories

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Ordering data – Accessories				
Designation			Part no.	Type
Covers and attachments				
	Hood for CPX-AB-8-KL-4POL (IP65/67)	8 cable through-feeds M9 1 cable through-feed for multi-pin plug	538219	AK-8KL
	Set of fittings for cover AK-8KL		538220	VG-K-M9
	Screening plate for connection block - CPX-AB-4-M12X2-5POL - CPX-AB-4-M12X2-5POL-R		526184	CPX-AB-S-4-M12
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Transparent cover for DIL switch and memory card		548757	CPX-AK-P
	Cover for RJ45 connection		534496	AK-Rj45
	Cover cap for closing off unused ports (10 pieces)	For M8 connections	177672	ISK-M8
		For M12 connections	165592	ISK-M12
	Coding element (96 pieces of each)	For NECU-L3G8	565713	CPX-P-KDS-AB-2XKL
	Insulating plate for safe separation of intrinsically safe and non-intrinsically safe areas of the CPX terminal		565708	CPX-P-AB-IP ¹⁾
Inscription labels				
	Inscription labels 6x10 mm, 64 pieces, in frame		18576	IBS-6x10
	Inscription label holder for connection block		536593	CPX-ST-1

1) Component preferred for operation in intrinsically safe circuits.

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